

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

KUMASI

DEPARTMENT OF BUILDING TECHNOLOGY

COLLEGE OF ART AND BUILT ENVIRONMENT

KNUST

COMPARATIVE ESTIMATION OF THE IMPACT OF TRANSACTION COST OF
TRADITIONAL AND DESIGN-BUILD PROCUREMENT SYSTEMS IN PUBLIC
CONSTRUCTION WORKS

BY

JOSEPH DADZIE

A THESIS SUBMITTED TO THE DEPARTMENT OF BUILDING
TECHNOLOGY, COLLEGE OF ART AND BUILT ENVIRONMENT
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF
MASTER OF SCIENCE
(PROCUREMENT MANAGEMENT)

NOVEMBER 2015

DECLARATION

I hereby declare that this submission is my own work towards the MSc 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.

JOSEPH DADZIE (PG1770914)

Student Name and ID

Signature

Date

Certified by:

DR. DE-GRAFT OWUSU-MANU

Supervisor

Signature

Date

Certified by:

DR. BERNARD K. BAIDEN

Head of Department

Signature

Date

ABSTRACT

The study set out to compare the magnitude of transaction costs for the design-bidbuild and design-build procurement methods in construction works in district assemblies in Central Region of Ghana. The study adopted a quantitative approach and to that effect, a descriptive design was adopted to study 42 purposively sampled employees from six district assemblies including Cape Coast Metropolitan Assembly, Mfantseman Municipal Assembly, Ekumfi District Assembly, Ajumako District Assembly, KEEA Municipal Assembly and Abura Dunkwa District Assembly. Questionnaires were used to collect data from the sampled respondents and the statistical tools used to analyse the data collected included descriptive tools such as means, medians, frequencies, and percentages. Paired sample t-test was used to compare the differences in transaction costs for pre-contract phase and post-contract phases. The independent sample t-test was also used to compare the differences in transaction costs between the traditional and design-build procurement systems. The study found that the respondents were of the opinion that the Public Procurement Acts 663 was not efficient and convenient for procurement in the district assemblies. This assertion was mainly due to politicisation of the processes involved in the procurement, poor staffing, poor implementation and ambiguity in the clauses of the Act. The study also revealed that the estimated TC for the traditional procurement system was higher than that of the design-build system over a six-month period. In most cases, the pre-construction TCs incurred by all the other district assemblies were higher than the post-construction costs. The study recommended streamlining vendors for competitive bidding of contracts, computerising transactions, and building stronger relationships with service providers and vendors.

DEDICATION

This work is dedicated to God Most High, Dr. De-graft Owusu-Menu and my entire family for their immerse contribution toward the success of this work.

KNUST



ACKNOWLEDGEMENT

Very special credit and thanks goes to Almighty God for being a faithful and loyal father to me and all who in one of many ways were used by Him to help ensure that this work is a success. I am very grateful to my Supervisor Dr. De-Graft Owusu-Manu

for his calm disposition and optimistic attitude which has such a great influence on my work and life as well. You motivated me to complete this study when it seemed impossible to do so because of time constraint. I want to thank Dr. Bernard K. Baiden Head, Department of Building Technology and his entire team for their invaluable support, direction and advice throughout the whole study. I want to thank those authors whose materials this work quoted from. I want to thank my entire family, friends and loved ones including Mr. Godfrey Dadzie, Miss Dinah Dadzie, Mr. and Mrs. Charles Mpong, Mrs Christabel Arthur-Fynn, Mrs. Christiana Dzah, Miss Regina Afful, Miss Anthoniette Krampah Appiah, Madam Ruth Annan Brew, Mr. Kofi Andoh Mensah, Mr Bernarn Essel, Mr. Alfred Essel, Mr. Selorm Akaba, Mr. Godfred Takyi, Miss Sabina Lartey, Mr. Jonathan Forster Nyarko, Rev. Francis Ackonu, Rev Alberta Appiah, Mr. Josiah Arkoh-Korsah. Mr. James Odoom and the team for their diverse support they have given me to make the work come to fruition. I want to also thank the respondents in the Metropolitan/Municipal/District Assemblies, in Central Region who provided the empirical data, to make my studies a success. Finally, to my classmates and colleagues at work including my class representative Mr. Emmanuel Afukpa Bow, Mrs. Rita Jubilant Prempeh, Mr Christopher M. A. Memphis, Mr. Samuel Essah Okore, Mr. Christian HackmanBaffoe, Mr. Christian Damale and Mr. Foster Yirenkyi, for the unflinching support.

TABLE OF CONTENTS

DECLARATION.....	ii
ABSTRACT	iii
DEDICATION	iv
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES ABBREVIATIONS AND ACRONYMS	x
CHAPTER ONE	1
INTRODUCTION.....	1
1.0 General	1
1.1 Background	1
1.2 Statement of the problem	3
1.3 Research Aim	4
1.4 Research Objectives	5
1.5 Research Questions	4
1.6 Methodology	5
1.7 Scope of the Study	6
1.8 Significance of the Study	6
1.9 Organization of the Research	7
CHAPTER TWO	8
LITERATURE REVIEW	8
2.1 Procurement in Ghana	8

2.1.1 Methods of Procurement	8
2.1.2 Project delivery methods.....	9
2.1.2.1 Traditional (design-bid-build) system.....	10
2.1.2.2 Design-build system.....	11
2.1.3 Project delivery systems and Transaction cost	11
2.1.4 Procurement in the Public sector	12
2.2 Ghana's Construction Industry	13
2.2.1 Construction procurement in Ghana	14
2.2.2 Risk management in construction projects	14
2.3 The Theory of Transaction Cost Economics	15
2.3.1 The concept of Transaction Cost	17
2.3.2 Transaction cost in construction procurement	18
2.3.2.1 Classification of TCs.....	18
2.3.2.2 Sources of Transaction Cost	19
2.3.2.3 Opportunism	20
2.3.2.4 Bounded Rationality	20
2.3.2.5 Uncertainty	21
2.3.2.6 Asset Specificity	23
2.3.2.7 Transaction frequency	24
2.3.3 The Transaction Cost Economy (TCE) in the Procurement Selection Process ..	24
2.4 Governance systems in the economic organization	27
2.4.1 Market Governance	27
2.4.2 Vertical integration (Hierarchy governance)	28
2.4.3 Governance system and the sources of Transaction cost	28
2.4.4 A revised approach: Relational Governance.....	31
2.5 The Conceptual Model	32
2.5.1 Information cost and Procurement cost (INFO and PROC)	33
2.5.2 Administration cost and Enforcement cost (ADMIN and ENFO).....	33

CHAPTER THREE	34
METHODOLOGY	34
3.1 Introduction	34
3.2 Research Design.....	34
3.2.1 Research purpose	35
3.3 Population	35
3.4 Sample technique	36
3.5 Data Collection	37
3.5.1 Sources of Data	37
3.5.1.1 Primary Data	37
3.5.1.2 Secondary data	37
3.5.2 Instrument Used for the Data Collection	37
3.5.2.1 Questionnaires.....	37
3.6 Analysis of Data	38
3.7 Validity and Reliability	38
3.7.1 Reliability	38
3.8 Ethics.....	39
3.8.1 Organization Entry	39
3.8.2 Voluntary partaking	40
3.8.3 Informed consent	40
3.8.4 Confidentiality	40

CHAPTER FOUR	41
4.0 RESULTS AND DISCUSSION	41
4.1 Introduction	41
4.2 Occupational context of the respondents	41
4.3 Perception of the Public Procurement Act 663	44
4.4 Magnitude of transaction costs in public construction procurement systems	50
4.5 Comparing the differences in transaction costs between the procurement systems adopted	52
4.6 Compare transaction costs for pre-contract phase and post-contract phase of public construction projects	56
4.7 Mechanisms used to reduce transaction costs in the selected procurement systems	60
CHAPTER FIVE	63
5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	63
5.1 Introduction	63
5.2 Summary of the dissertation	63
5.3 Summary of major findings	64
5.4 Conclusions	66
5.5 Recommendations	66
5.6 Suggestions for further research	67
REFERENCES	68
APPENDIX	1
.....	74

LIST OF TABLES

Table 3.1 Detail of population	36
Table 3.2: Staff Questionnaires and Reliability Statistic Result	39
Table 4.1: Level of knowledge of PPA 663 according to working experience	45

Table 4.2: Perception about cost of project phase according to procurement system .	49
Table 4.3: Procurement and transaction costs for 2013 accounting year	50
Table 4.4: Procurement and transaction costs for 2014 accounting year	51
Table 4.5: Transaction costs for traditional and build-design procurement for six-months	53
Table 4.6: Statistical differences in TC for traditional and design-build procurement for six months	55
Table 4.7: Post- and pre-construction transaction costs in the district assemblies	57
Table 4.8: Statistical differences in TC for post- and pre-construction TCs for six months	59
Table 4.9: Mechanisms to reduce transaction costs	61
Table 4.10: Mechanisms to ensure reasonable procurement transaction costs	62
LIST OF FIGURES	
Figure 4.1: Level of procurement unit of respondents	42
Figure 4.2: Respondents' years of experience with procurement practices	43
Figure 4.3: Number of construction procurements engaged annually by procurement entity	44
Figure 4.4: Evaluation of efficiency and convenience of the Public Procurement Act 663.....	46
Figure 4.6: Reasons for inefficiency and inconvenient use application of PPA (Act 663.....	47
Figure 4.7: Procurement option adopted by district assemblies	48

ABBREVIATIONS AND ACRONYMS



TC	Transaction Cost
TCE	Transaction Cost Economy
KEEA	Komenda Edna Eguafo Abrem
CCMA	Cape Coast Metropolitan Assembly
PPA	Public Procurement Act
ICT	Information and Communication Technology
ADB	African Development Bank
CPS	Country Procurement Systems
RIBA	Royal Institute of British Architects
DB	Design-Build
BOT	Build Operate and Transfer
NCT	National Competitive Tender
GDP	Gross Domestic Product
NSW	New South Wales
CIOB	Chartered Institute of Builders
DMA	Direct Measurement Approach
IMA	Indirect Measure Approach
PPP	Public Private Partnership
U K	United Kingdom
MMDAs	Metropolitan Municipal and District Assemblies SPSS Statistical Package for Social Science

CHAPTER ONE

INTRODUCTION

1.0 General

This chapter introduces the topic and offers the reader with a prelude to the study. The background of the study as the research context is presented and statement of research problem addressed in this chapter. It also state the main aim of the study main aim of the study is stated, which is followed by specific research objectives, and the research questions. Lastly, content of the dissertation is provided which gives the general arrangement and organization of the dissertation.

1.1 Background

According to Van Weele (2010), procurement refers to the acquisition of goods, services and works from external source using purchasing approach. The definition also extends to include all acquirements from both in-house providers and third party. (Kakwezi and Nyeko, 2010). The procurement decision making process may comprise the use of such economic methods of analysis as cost benefit analysis or cost-utility analysis, in order to ensure minimum risk in the acquisition of goods and services. Public procurement therefore is the “procurement of goods and services on behalf of a public authority, such as a government agency” (Hans-Joachim, 2012). Merrow (2011) submitted that the success or failure of a construction project is very largely influenced by the procurement system employed; and that poor management of projects would have a negative effect on the project. In the public sector, procurement is of pertinence because of the relatively huge sums involved in public works. Chan et al. (2009) also indicated that the public sector is the single largest client of the construction industry and as such public procurement in the construction sector is of grave importance to the success of public works.

The costs that are incurred, besides the cost of the material of service being sought after, are indicated in the Transaction Cost (TC) theory. Commons first introduced the theory of Transaction Cost in 1931. The theory of Transaction Cost Economics was later developed and institutionalized as a research discipline in economic discourse by Oliver Williamson in the 1970s (Hardt, 2009).

The transaction cost theory argues that transactions in the market are accompanied by costs which can be reduced if the right mechanisms are put in place (Coase, 1988; Williamson, 1971). Such costs may accumulate from drafting, negotiating, and safeguarding and exchange (Williamson, 1985). Wenan and Mengjun (2010) further established that in construction procurement, the Transaction costs are also affected by changes in design and information requirements.

Public procurement in different countries and sub-sectors of the economy practice varied forms of procurement systems. This study however focuses on the traditional (design-bid-build) and build-designs as Ho and Tsui (2009) described. In the context of the contractual arrangements of these procurement options, the TCE theory has traditionally examined the customer-supplier relationships that exist with the assumption that this relationship is associated with TCs (including costs of information, negotiation, competitive advantage, contract administration and management, market structure, enforcement and measuring/monitoring of performance) (Heide and Stump, 1995; Artz, 1999; Melese and Franck, 2005).

In Ghana, the public procurement methods can be organized either through competition (where potential suppliers/ contractors are invited to make an offer of price and terms which shall be the basis of the subsequent contract if the offer is accepted); or negotiation with only one contractor based on the specifications of the contract; or

through public-private partnership agreement between the stakeholders (Asamoah-Amono, 2010).

1.2 Statement of the problem

The theoretical underpinning of procurement as a contractual relationship has been explored by several researchers who have found that procurement is also underlain by the transaction cost theory which opines that there are added costs to the cost of materials, which arise from the transactional activities, such as the cost of finding materials, negotiation costs, and the cost incurred in monitoring (Ho and Tsui, 2009; Rajeh, 2014). Procurement works done in Ghana have not extensively analysed the issue of transaction costs. Some of the widely researched areas have been: risks in procurement (Laryea, 2011; Adu-Gyamfi, 2013), the procurement process (Mensah and Ameyaw, 2012), and procurement fraud (Williams, 2013).

As early as 1985, Williamson proposed that the comparative costs of planning, adapting, and monitoring task completion under alternative procurement systems be examined. Turner (1997) furthermore extended the notion to envisage other important factors such as engineering, economic, environmental, and social factors, in the procurement selection process. This presents the need to elucidate the theory of costs of transactions in procurements in order to prompt the development of practical concepts and techniques that bring about increased productivity and to assess the circumstances under which they are suitable (Cox et al. 1998).

The TCE theory suggests that the high price quotations of government projects as evidenced in the Ghanaian situation may be underlain by the transaction costs, as well as the appropriateness of the adopted procurement system. However, given the relatively larger sums involved in public construction works as well as the need to

operate within stipulated budgets, there is the need to reduce extra costs that may occur as transaction costs.

This study therefore analyses and compares the transaction costs for the two most popular procurement systems used by public construction works (thus, the traditional and design build) in order to understand the contribution of transaction costs to high price quotations in public construction works, and whether the adoption of different procurement methods yield different transaction costs.

1.3 Research Questions

The following research questions were articulated in order to fulfill the stated aims and objectives of the study:

1. What are the perceptions of the professional staff about effectiveness of the Public Procurement Act 663?
2. How large are transaction costs in construction procurement systems adopted for public construction works?
3. How different are transaction costs for pre-contract phase and post-contract phase of public construction projects?
4. What are the differences in transaction costs between the procurement systems adopted; and
5. What mechanisms are implemented to reduce transaction costs in the selected procurement systems to prevent budgetary deficit?

1.4 Research Aim

The general purpose of this research is to compare the magnitude of transaction costs for the design-bid-build and design-build procurement methods in construction works in

order to develop a conceptual model for the selection of a more viable procurement system that would yield a higher efficiency and productivity in public construction.

1.5 Research Objectives

In order to achieve the stated aim, the following specific objectives were set:

1. To evaluate the perception of professional staff about the effectiveness of the Public Procurement Act 663;
2. To determine the magnitude of transaction costs of traditional and designbuild procurement systems in public construction projects;
3. To compare transaction costs for pre-contract phase and post-contract phase of traditional and design-build procurement systems in public construction projects;
4. To compare the differences in transaction costs between the procurement systems adopted; and
5. To examine the mechanisms used to reduce transaction costs in the selected procurement systems to prevent budgetary deficit.

1.6 Methodology

The methodology adopted for this research involved the gathering and critically reviewing the literature relevant to supply chain risks contour in logistics collaborations. This served as a guide to identify previous works undertaken, contributions made, criticisms, limitations, current findings and their effective applications in the Ghanaian construction environment.

Quantitative research methods were adopted to gather information concerned with the study. The quantitative approach is chosen because it helps in collection of thoughtful data from a randomly large sample. The use of structured questionnaires was exercised to gather information on the study. Details of the methodology were discussed in chapter three of this research work.

1.7 Scope of the Study

The research focuses on the situation of the Local Government of the Central Region. However, the analysis and findings relates to other entities in the public and private sectors whose activities bother on transaction costs in public construction. The study involved mainly stakeholders in the public and private sectors in the identification and analysis of the strategic issues concerning the transaction cost impact on the public procurement system for construction works.

1.8 Significance of the Study

This research seeks to come up with a conceptual ideal for selecting the most suitable and most economical system of procurement that would help enhance productivity by increasing performance quality and client satisfaction whereas reducing costs. The research presents a prospect for the use of TCE as a tool for determining the degree of TCs for different procurement systems in construction. It is a review of the theory of Transaction Cost Economics in the light of the relationships that exist among various procurement systems and how to make a prudent choice of procurement method based on that. By so doing, this study seeks to propose a means of reducing TCs in construction and for that matter minimizing construction prices and maximizing productivity and profitability of projects.

In Ghana moreover, there seems to be a dearth in studies on the transaction costs of public projects. This study might be the pioneering research into the transaction costs of public construction works in the country and is seminal in enhancing the general understanding of the impression that the system of procurement adopted has on the magnitude of transaction cost and for that matter, the overall productivity economics of public construction in Ghana. It would therefore contribute in no small way in adding

up to the stock of relevant information in this discipline and be a great aid and catalyst for further academic researches.

1.9 Organization of the Research

This thesis has been grouped into five (5) chapters. The Chapter One is made up of the general introduction and background to the research. This chapter also contains the problem statement and the necessity for the research. The main objective, the specific objectives, the scope of the study and the research questions are found in the same chapter, and the research questions formulated. The literature review is dealt with in Chapter Two. This covers the theoretical and conceptual discussions underscoring procurement and transaction costs. The methodology employed for the study is discussed in the Chapter Three. The research design, sampling methods, the population of the study, research instruments and methods of data analysis are presented under the methodology. Chapter Four is for the empirical analysis of data from the field. The results are also discussed in relation to theory and previous research findings. Chapter Five wraps up the research by reviewing the main contributions of the research to knowledge. The summary results of the research findings are also presented in this chapter. Recommendations, limitations of study as well as opportunities for further research are identified outlined.

CHAPTER TWO

LITERATURE REVIEW

2.1 Procurement in Ghana

Procurement brings in the idea of the principal-agent relationship in the purchasing process which consequently, makes a case for a much knowledgeable contractor/supplier offering services as an agent to build or procure some materials for and on behalf of a principal. In public procurement, the public authority is the principal who employs the construction firm as the agent to engage in some construction works on the behalf of the government agency. In principle, Jesen and Meckiling (1976) described an agency relationship as a contract under which one or more persons (the principal) engage(s) another person (the agent) to perform a service on their behalf which involves delegating some decision making authority to that agent.

2.1.1 Methods of Procurement

The methods of procurement for works globally can be categorized into two: the International Competitive Tendering (ICT) and Other Methods of Procurement (African Development Bank, 2012; World Bank, 2011; Millennium Challenge Corporation, 2009). This broad categorization by the international community considers the rationale of open competition as its underlying factor for efficient public procurement (World Bank, 2011; UNCITRAL, 2011). The ICT however is the most preferred method of procurement (ADB, 2012a; MCC, 2009).

The ICT embodies the need to provide a fair opportunity for all prospective and eligible tenderers to compete for an award of a contract (World Bank, 2011). This, though done in a non-discriminatory manner, gives due attention to the consideration of economy and efficiency (ADB, 2012a) and accentuates transparency in the procurement process (World Bank, 2011).

That notwithstanding, other constraints and limitations may hinder the applicability of ICT in the procurement of works (Millennium Challenge Corporation, 2009). These constraints led to the formulation of the “Other methods of Procurement” as identified in the World Bank’s guidelines for borrowers and the African Development Bank’s rules and procedures for procurement of goods and services. The usage of these methods is however allowed only where ICT will not be the most efficient and economic method of procurement.

The methods adopted from the African Development Bank and World Bank are: Limited International Bidding, National Competitive Bidding and Shopping.

Ghana has made many strides in the reformation of its Country Procurement Systems (CPS) over the years (World Bank, 2008). This positive progress led to a slight increase in the use of CPS from 52% in 2005 to 57% in 2007 (European Networks on Debt and Development, 2010). This indicates increased confidence in using the legislative framework and policies guiding public procurement in Ghana by its development partners (OECD/DAC, 2011). It also shows the prominence of procurement as a vital governance system in the delivery of goods, works and services by the government to its citizens’ (OECD/DAC, 2011).

2.1.2 Project delivery methods

According to Leadra et al (2006), the procurement delivery process is the key factor in determining whether a project would succeed or fail (as cited in Thwala and Mathonsi, 2012). Over the years the construction industry has undergone much transformation (increased size and complexity of projects, greater financial constraints, political and social changes, change in information technology among others) that have resulted in the emergence of other alternatives to the traditional design-bid-build system. (Royal Institute of British Architects (RIBA), 2000; Thwala and Mathonsi, 2012). Popular among the methods that have emerged are the Design-

build; Construction Management Agency; Construction Management at risk and the Integrated Project Delivery among others. For the purpose of this study however, two of the methods will be considered, the traditional (design-bid-build) and the design-build.

2.1.2.1 Traditional (design-bid-build) system

This is the system in which the client first appoints consultants (architects or engineers) to design the project after which he invites contractors to tender in (usually on a competitive basis) for the construction of the already designed project. Stauffer (2006) identified that the owner normally retains increased control over the project. It must also be noted that here the owner establishes direct relational contact with two different and independent parties, thus the design consultant and the building contractor.

The fact that the design is more precise and detailed at the onset of the project and that the owner can choose an architect or engineer of standing repute are added advantages of this method. However, there is more likely to be a higher overall cost and a longer schedule since each party would seek to represent his own interest. Moreover, there is the likelihood of conflicts. Since the architect would have no control over the construction of the project he designed, and since the contractor would be required to build a project whose design he had no input in, it would be difficult to determine who to be held responsible if something goes wrong (Stauffer, 2006).

2.1.2.2 Design-build system

The design-build method is a broad term describing a procurement route in which a client only appoints a main contractor who would be responsible for carrying out the project; both design and construction. The design-build is not a recent concept but one

that has been in the world over 4000 years; in the ancient concept of a master builder who took full responsibility of everything involved in putting up a building; from the design stage to the actual completion and hand over (Tyler, 2010). The design-build system is again emerging as a cost-efficient alternative to the traditional construction method which has ruled the construction industry over the past 200 years (Tyler, 2010). According to Tyler (2010), the benefits of the design-build system includes single responsibility; early knowledge of the firm price, value-engineering, time strategies and quality enhancement. Brook (2008) also said that the design-build systems benefits from accelerated project delivery since the design and construction phases have been integrated, although incomplete documentation which is a source a source of uncertainty may happen quite often, making cost prediction and estimation difficult.

2.1.3 Project delivery systems and Transaction cost

The Traditional (Design-bid-build), Design-Build, Management, Alliance, Build Operate and Transfer (BOT), and PPP are among the popular procurement delivery systems (Brook 2008, Murdoch and Hughes 2008). Traditional procurement system often completes the design before construction begins. This ensures a greater chance of having a more definite tender price since the scope of the project would already have been defined before the project takes off. This system normally can be envisaged to have higher pre-contract costs since more time would have to be spent in developing the scope of the project before a contract is executed.

Other systems normally would begin construction before designs are completed.

Brook (2008) identified that one major advantage of such systems (DB, BOT, and Management) could be speedy construction. This is because the construction phase runs alongside the design phase and would not have to wait till the design is

completed. However, incomplete designs would make it difficult to predict and estimate costs of the project, thus increasing uncertainty and consequently, transaction costs (Tadelis and Williamson, 2010). TCs therefore may tend to be comparatively lower at the pre-contract phase but higher afterwards. Contrariwise, Alliance systems may produce higher pre contract TCs because of the level of preparatory activities involved in setting up alliances.

2.1.4 Procurement in the Public sector

Public procurement could be defined as any process by which government or its agencies purchase goods or services from the private sector (Pavel, 2009; Reimarova, 2011). In Ghana, the Public Procurement Act, 2003 (Act 663) is a leading authority in procurement works. Section 35(1) of Act 663 mandates all public procurement entities to procure works contracts through competitive tendering as open competition is the basis for efficient public procurement' (African Development Bank, 2012a).

Open competition has been identified as the bedrock of cost efficient public procurement (African Development Bank, 2012a; World Bank, 2011; European Networks on Debt and Development, 2010). Increasing competition among contractors will ultimately lead to value for money in the procurement of public works, all things being equal. In ensuring transparency within public sector procurements, Section 35(1) of the Public Procurement Act of Ghana 2003(Act 663) mandates all procurement entities and organizations procuring works to use competitive tendering method as default. This therefore suggests that national and international competitive tendering procedures, as spelt out in section 44 and 45 of Act 663 respectively shall apply in public procurement.

Research indicates that the adherence of public procurement works through the NCT to the provisions of the Public Procurement Act of Ghana (Act 663) has significantly improved over time (World Bank, 2003; PPA Annual Report, 2007; PPA Annual Report, 2010; World Bank, 2008; Ameyaw et al, 2012b). A study of 179 contracts in Ghana by Ameyaw et al (2012b) reveals that 62% of these contracts were procured using NCT whilst 4% of 205 goods contract studied were procured through NCT. Comparatively, works procurement contracts has witnessed a significant increase in competition than goods. The use of NCT as a default method for works procurement is noted to have an impact in the development of the local industry. Domestic contractors are given the opportunity to compete favourably among themselves in the provision of works. Transparency, fairness and development of domestic industry underpin the rules, procedures and regulations governing the conduct of NCT as contained in the Public Procurement Act 2003 (Act 663).

2.2 Ghana's Construction Industry

The construction Industry in Ghana contributes immensely to the Gross Domestic Product (GDP). It is in this vein that the decision of construction firms to outsource or subcontract its acquisition of certain goods, specialist works (like glazing, cladding wall finishing (Reynobond / Alucubond), central air conditioning systems, and lift installations, etc.) and both incidental and professional services is of utmost importance; not only to the particular firm but also to the nation at large. The construction firm's total performance on a project has a direct relationship with the project delivery/completion time and the amount of revenue that can accrue to the firm in most cases on complex projects is influenced by the actions or inactions of these outsourced firms or subcontractors. Delays in project completion do not only affect construction companies in terms of their profit margins alone, but have a ripple effect

on the country in terms of the industry's ability to contribute to the country's Gross Domestic Product.

2.2.1 Construction procurement in Ghana

The choice of a procurement method is a critical decision that must be taken into consideration in the procurement of construction projects as ultimately it can either lessen or intensify project risks (New South Wales Government, 2008). Cartlidge (2009) ascertains that construction in whatever form involves various amounts of risk and the procurement strategy adopted will largely influence the allocation of risk on a project. Different procurement methods have different inherent risks associated with them and will therefore impact differently on project risk (NSW Government, 2008). The complex nature of the construction industry today calls for a proper assessment and evaluation of risks (CIOB, 2006).

Acquaye (2011) opines that poor procurement practices as a result of ignorance of the requisite procurement procedures have led to a number of contract failures. He further contends that, the choice of a procurement method affects the apportionment of risks between the parties during contract implementation. Selecting the appropriate procurement method will therefore contribute to obtaining best value for money and the management of procurement risk eventually (NSW Government, 2008).

2.2.2 Risk management in construction projects

Risk management is an indispensable phase in the success of every project (Rezakhani, 2012). The risk management system includes risk identification, assessment, mitigation and monitoring (Kpodo, 2011). In the quest to substantially achieve cost, time, quality safety and environmental sustainability objectives in a project, it is essential to manage risks on

construction projects by holistically and systematically identifying and analyzing rate of occurrence and impact of those risks

(Zou et al, 2006). Construction activities have been noted to have many risks (Mousa, 2005; Abbasi et al, 2005; Klemetti, 2006; BanaitieneandBanaitis, 2012) and the effect of these risks can be quantified in monetary terms, property damage or personal injury (Abbasi et al, 2005)all of which may add up to TCs. Nonetheless, the identification of these risks, the extent of occurrence and the degree of severity should they occur have a correlation with the choice of method used in procuring the works. It is therefore necessary to assess the extent of occurrence and impact of project risk factors on the various procurement methods used in Ghana to procure works under the Public Procurement Act 663, with a central focus on National Competitive Tendering (NCT) method.

The primary aim of every works procurement contract is to provide a cost effective, timely and satisfactory and sustainable project. However, since risks are inherent in every construction project and cannot be ignored, it is imperative to assess the extent of occurrence and impact of these risks on public works procured through Ghana's public procurement methods. Consequently, the choice of a procurement method is seen to have a direct impact on the delivery of construction project objectives based on the extent of occurrence and impact of occurrence of inherent risk factors associated with construction projects as well as an effect on overall cost.

2.3 The Theory of Transaction Cost Economics

The works of Oliver Williamson in the early 1970s began the history of Transaction Cost Economics (TCE) theory and it was in Williamson's work in 1979 that the term "transaction cost economics" first appeared (Williamson, 1979; Hardt, 2009).The ideas of Transaction Cost Economics (TCE) was developed to present a methodology of analyzing what impact the

governance of an economic organization has on economic value. TCE was developed in three operational stages. First, it considered the transaction as the basic unit of analysis and identified the key issues that brought about differences in transactions. Secondly it explored the characteristics of the various modes of governance of economic organizations. The last stage was to determine that different modes of governance were more effective for different types of transactions, by applying what they called the “discriminating alignment” hypothesis to complete the analysis (Williamson, 1971, 1975, 1985a; Tadelis and Williamson, 2010).

According to Martins et al. (2010), the TCE was developed because the neoclassical economic theory, focusing on the perfect competition paradigm (which measures efficiency by the input to output ratio without scrutinizing the actual operations that go on) failed. TCE however considers the firms as a hierarchy that adds value by economizing on transaction costs. Thus, the primary goal of the TCE is to address the query of why the modern society carry out economic transactions the way they do; thus, what influences the procurement of transactions, whether internally or outsourced (Martins et al., 2010; Williamson, 1994).

According to Rajeh et al (2014), TCE could furthermore, help to advance the procurement phase if the following steps are observed: 1) improving risk profile in order to develop a service strategy; 2) identify service goals, objectives and priorities and well specifying them in contractual agreements; 3) identify capacity development requirements by enhancing long-term strategic procurement approaches; 4) ensure adequate funding and better cost estimation; and 5) define the most feasible contractual approach under certain circumstances.

2.3.1 The concept of Transaction Cost

John R. Commons in 1931 introduced the idea that transactions form the basis of economic thinking. However, it is generally supposed that Roland Coase originated the

term "transaction cost" when he used it in formulating a theoretical framework for determining when specific economic tasks would be performed by both the firm and the market. However, the term did not appear in his works till the 1970s. Though he is not the originator of the specific term, Coase deliberated the "costs of using the price mechanism" in his 1937 paper, *The Nature of the Firm*, thus introducing the concept (Jacobides, 2008). Successively, he explored pricing mechanisms and found that there are costs that related to searching for relevant prices, negotiating, and making a contract (Coase 1992, Coase 1988, Coase 1960).

However, it is Tibor Scitovsky who introduced the label of 'transaction cost' into the economic vocabulary in 1940 (Hardt 2006). It is obvious that Transaction Cost Economics long pre-existed its introduction into research in economics. It has lived very long, but very shortly as a discipline of science. That account of TCE theory started Oliver Williamson in the 1970s. It was in his 1979 paper (*Transaction cost economics: the governance of contractual relations*) that the term "Transaction Cost Economics" was first mentioned.

TCs that occur within an organization can include managing and monitoring personnel and procuring inputs and capital equipment. On the other hand, when firms buy the same good or service from an external provider, the TCs may include the costs of source selection, contract management, performance measurement, and dispute resolution.

2.3.2 Transaction cost in construction procurement

According to Rajeh et al. (2014), Transaction cost economics (TCE) is a useful tool in ascertaining 'unseen' costs associated with the pre and post-contract work as far as construction procurement is concerned. He specifically defines transaction cost as the price that market participants have to pay in order to reach an agreement, develop rules to implement this agreement, and establish the appropriate delivery system as

part of the agreement. The majority of studies applying TC concept in construction have different definitions of the concept, and focusing on theoretical and qualitative aspects of the concept. For example, some researchers define TCs as the contract cost while others call it procurement cost.

2.3.2.1 Classification of TCs

Concepts related to transaction costs are inconsistent in definition and there is little agreement how the concept is constructed. Hughes et al. (2006) classified TCs into three project phases: the pre-tendering phase, the tendering phase and the posttendering phase. In the pre-tendering phase, mainly the costs of marketing and information search were included. In the tendering phase, it is the costs of bidding and negotiation. While in the post-tendering phase, it is the costs of dispute resolution, monitoring and control, and contract enforcement. Similarly, the study by Wittington (2008) included TCs from the costs of advertisement and bids preparation and award, to the cost of contract execution.

Gebken and Gibson (2006) also categorised transaction costs into searching costs, bargaining costs, and enforcement costs. Searching costs refer to the costs incurred in finding suppliers, vetting bids, determining whether the required good is available on the market, and identifying the products with the least price. The bargaining costs are the costs incurred in all the processes involved in arriving at a contract agreement that is acceptable to both parties. Policing or enforcement costs are the costs incurred in ensuring that the contracting party abides by the terms of the contract as well as the costs incurred in taking appropriate legal action when a breach arises (Hackett et al., 2007).

Lingard et al. (1998) however introduced two classifications, namely the precontract and the post-contract TCs. According to him, pre-contract costs are incurred in

information, communication, negotiation, bids documentation, and project preliminary design whereas post-contract costs are incurred in disputes resolution, contract administration and enforcement normally in the process of seeing to it that the contract is carried out to the latter.

2.3.2.2 Sources of Transaction Cost

Williamson (1981, 1985) built the theory of transaction cost economics around two main assumptions, namely the economic actors' behavioral assumptions (opportunism and bounded rationality) and transaction characteristics (asset specificity, uncertainty, frequency, complexity, and contestability (Williamson 1985, Williamson 2005, Williamson 2010a)). A contract on the market is plagued with many Economic actors who are behaving opportunistically with bounded rationality and uncertainties. Conventionally, transaction cost economics significantly scrutinizes the customer-supplier relationship as proportionate to contractual arrangement. The relationship is related with transaction costs which may including costs of information, negotiation, competitive advantage, contract administration and management, market structure, enforcement, and measuring/monitoring performance (Melese and Franck 2005, Artz 1999, Heide and Stump 1995). Researchers and academics have given substantial consideration to the subject of in construction, in order to well appreciate the activities and cooperation of stakeholders in projects.

2.3.2.3 Opportunism

Williamson (1975) explains opportunism as “self-interest seeking with guile”. It is human behaviour to seek to maximise one's own welfare even to the detriment of others. Even in business transactions, parties sometimes seek to portray this selfseeking attribute, thus opportunism in procurement. Rawlence, 2010 says

transaction cost will increase when parties attempt to protect themselves from the risk of unforeseen behavioural uncertainty. Some of these opportunistic behaviours that may be anticipated are stealing, cheating, lying, insincere promises and deliberate withholding or distorted disclosure of relevant information.

Opportunism becomes a source of TCs when they contribute to information asymmetry or when they cause a party to incur extra costs in an attempt to forestall such opportunistic behaviours by their counterparty (Williamson, 1985a) or monitoring of performance (Zhou and Poppo, 2008; Rawlence, 2010), or by increased reliance on their prior knowledge of their counterparties (Douma and Schreuder, 2008; Rawlence, 2010). These costs may also relate to renegotiation and delays in delivery, which may significantly undermine expected benefits of the project (Ho and Tsui, 2009). Similarly, if the construction owners outsourced project activities, some extra TCs could be sustained in negotiation, measuring, and monitoring costs because of opportunistic behavior of the actors involved in the contractual agreement (Frank et al., 2007).

2.3.2.4 Bounded Rationality

The concept of bounded rationality is a detour from the classical economic theory assumption of the rationality of the economic man. It suggests that though the every economic actor intends to act rationally, this may not always be so because of the “bounded” access to information or the ability to process it; thus the limited “access to information and computational capacities” of humans (Simon, 1955; Rawlence, 2010). Consequently, the ability of the economic man to make rational decisions in a transaction is hindered by reason of bounded rationality of the human. Williamson, 1981 and Simon, 1978 however note that this must be clearly distinguished from both hyper rationality and irrationality. Where it results in a situation where only one party

has information that can only be accessed by the other at a cost (information impactedness, more recently described as information asymmetry).

This consequently creates a situation where parties would have to incur extra cost in their attempt to make provisions for those contingencies which they may not appropriately foresee because of their bounded rationality. These may include the costs of information asymmetry, planning, correcting incomplete contracts, breaking language barriers and monitoring. This is reflected in administrative, technical, and professional staff growing at the expense of tradesmen and operatives (Lockyer and Scholarios, 2007). Therefore, as information cost increases, there will be higher transaction costs incurred.

2.3.2.5 Uncertainty

Uncertainties may be both external and internal factors that affect the project execution (Walker and Pryke, 2009; Rawlence, 2010; Jin and Zhang, 2011; Li et al., 2013). These are changes that are normally caused either by nature or by the actions and inactions of other economic actors. Those caused by natural events are called primary uncertainties whereas those caused by other economic actors are referred to as secondary uncertainties. Both of these, being unintentional are environmental uncertainties (Williamson, 1985a; Rawlence, 2010). Conversely when these factors happen to be strategic and calculated attempts by other actors, it is termed behavioural uncertainty (Stucliffe and Zaheer, 1998; Rawlence, 2010). Political, legal, social, economic, technological and competition all refer to external environmental uncertainties. While corporate culture, project location, finance and ownership, and information systems all refer to internal environmental uncertainties (Ford and Slocum, 1977; Marcus, 2005; Grimm et al., 2006; Elliott et al., 2008; Foss and Foss, 2008). Thus, when an eventualities of a transaction cannot be easily

predicted excerpt, environmental uncertainty arises; and when the performance of the project is not easily ascertainable ex post, behavioral uncertainty occurs.

Walker and Weber's (1984) went on to extend Williamson's basic framework, introducing two distinction within environmental uncertainty, namely *volume uncertainty* and *technological uncertainty*, a very useful approach for a better understanding of governance choice. They explained *Volume uncertainty* to be when the volume requirements of a transaction relationship cannot be accurately forecast. High volume uncertainty results in producers encountering unexpected production costs or excess capacity whereas on the side of buyers there usually is "stock-outs" or excess inventory.

Technological uncertainty arises where the technical requirements of a transaction cannot be accurately forecast; sometimes following from changes in standards and specifications of the transaction components that cannot be safely predicted; or from a general technological advancement.

Winch (1989) identified other set of uncertainties within the construction process such as task, natural, organizational, and contracting uncertainties that cause most of the problems in construction. The high level of uncertainties forces may end up in dispute and conflicts which may produce hostile relationships; since contractors may be forced to jack up their bids or file for some extra claims due to the extra work and rework they may have to carry out. These in turn are more likely to increase TCs because of their resulting information incompleteness, the time spent in contract documentation and negotiation, increased number of staff for contract administration and enforcement of the contract such as quality control etc.

2.3.2.6 Asset Specificity

Williamson (1998) mentioned that “in TCE asset specificity is the big locomotive to which transaction cost economics owes much of its predictive content”. This declaration has received great support from many other researches (e.g., David and Han, 2004; Shelanski and Klein, 1995).

Asset specificity occurs when assets are personalized to a particular transaction and cannot be easily reassigned to another relationship without a cost. Williamson (1981) considers that asset specificity is the most important element in describing transactions. It is largely an issue of specialisation of assets such that buyers cannot easily turn to alternative supplies whereas suppliers on the other hand can easily sell goods to many other buyers.

Asset specificity has seen three main classifications (Rao, 2003; Rawlence, 2010). *Site specificity*, is when firms build their assets close to each other in the same geographical location such that each benefits from the economies of each other. *Physical asset specificity* refers to the situation where specialised machinery or equipment are required to offer a particular service. *Human asset specificity* also deals with the situation where some specialised knowledge is required to carry out production.

Parties tend to become mutually dependent when specificity is present; thus making it unattractive and cost incurring to transact with other alternatives. As a result of this, one party would usually have more power over the other.

2.3.2.7 Transaction frequency

Transaction frequency is a significant part of the framework of transaction costs, although it has not received as much consideration in empirical literature as have

asset specificity and uncertainty (Williamson, 1985; Rindfleisch and Heide, 1997). Transaction frequency talks about the extent to which transactions recur; and this has much impact on the costs incurred.

When transactions are carried out repeatedly with the same provider, it helps decrease the transaction costs involved. This is because as transactions are frequently carried out, certain transactional structures become more and more institutionalised; and the costs of certain equipment that may somewhat have been dedicated to the particular transaction would also be continually set off such that the contracting party benefits from such cost amortisations (Rawlence, 2010).

2.3.3 The Transaction Cost Economy (TCE) in the Procurement Selection

Process

In order to choose the most appropriate type of contract and appropriately forecast the performance of a contractual relationship over a project's life and deal with the all-important issue of asset ownership and the asset specificity problem, it is essential to have adequate knowledge of the Transaction Cost Economics theory. TC analysis could highlight the improvement of formalized governance mechanisms and such suitable strategies as long-term agreements and alliances in order to substantially minimize if not completely eliminate the risks that come with uncertainties, opportunism and asset specificity. Angelis et al. (2008) associate the reason behind such strategies to the elimination of coordination and motivation costs and ultimately reduce TCs.

Rajeh et al. (2014) in their study to examine the time and cost importance of procurement processes, postulated that contractors would be able to make more appropriate procurement decisions where there are mechanisms that help determine the magnitude of transaction costs.

The transaction costs at both pre-contract and post-contract phases are greatly influenced what procurement systems are implemented on that project. Pre-contract costs include all the costs presented by all activities carried out before the execution of a transaction contract (thus, costs of contract initiation, preliminary designs, feasibility studies, negotiation and contracting). Post-contract costs are also related to activities such as monitoring, controlling, resolving disputes and implementation activities which normally take place after the contract has been signed and the transaction is actually taking place. An evaluation of the time professionals spend on procurement activities daily relative to other project activities is a good measure for post-contract TCs.

Walker and Wing (1999) tried to outline the relationship that exists between Project Management Theory (PMT) and TCE; and made a forecast of the benefits that will accrue from a merger of the two approaches in a bid to improve construction management. They compared a traditional organization structure with a design-built organization structure in evaluating the question of why the design process is separated from the construction process in the traditional system.

According to them, the theory of Transaction Cost Economics provides an alternative basis for integration with the PMT, thus addressing such issues as opportunism, moral hazard and shirking, which was not covered by the management theory.

Chang and Ive (2007) also developed the Direct Measurement Approach (DMA) and the Indirect Measurement Approach (IMA) as a modification to the Transaction Cost Economics theory which will be more applicable to construction. The DMA (which bases on identifying and measuring TC elements) and the IMA (which explains the effectiveness of governance structures relative to TCs) was to aid in predicting the magnitude of Transaction Costs and at the same time exploring the relationship between TCs and procurement routes used in construction. Their study

however did not deal extensively with the framework for measuring the TCs, thus impeding the clarity of the relationship so established.

Again, Jin and Zhang (2011) formulated a basic strategy based on TC elements for identifying the determinants of efficient risk allocation in Public Private Partnership (PPP). Subsequently, the decision to either buy or make could be taken based on the evaluation of risk response for strategy adoption and furthermore reduce TCs since risk allocation would be refereed on a cost benefit basis. Improper risk allocation strategy would conversely increase TCs.

It is generally observed that studies in construction that have employed the TC perspective are not very much reliable in their suggestions concerning the TCE theory. Some of the models that have been developed have not ran empirical tests on the TCE parameters. A good understanding of the main characteristics of a transaction can develop a cost effective contract design and governance structure (Williamson, 2010).

Significantly, the construction industry does not seem to foster a proper articulation of the relationships between procurement strategies, contractual agreements and tendering procedures. Contractual agreements rather seem to be often driven by the procurement strategy (Hackett et al. 2007; Hughes et al., 2006; Murdoch and Hughes 2008; Dudkin and Valila's, 2006).

2.4 Governance systems in the economic organization

The central question of transaction cost theory is that of which performance strategy would be more efficient: either within the firm (vertical integration) or outside the firm by an autonomous contractor (market governance). Thus, the governance system of the firm is of utmost importance to the assessment and reduction of transaction costs. Two main systems are identified, namely the vertical integration (hierarchy) and the market governance.

2.4.1 Market Governance

This is the system in which buyers and sellers have autonomous control over their own production decisions, and a supplier is expected to deliver according to the standards and requirements of the contract (Tadelis and Williamson). The market system allows firms to outsource works from other independent bodies and therefore has the chance of choosing from as many firms as may be readily available on the market to provide such goods or services.

Research has proven that the advantages of vertical integration is not only based on ownership and integration but even more on the ability to exercise decision control (Heide, 1994). Hence, governance by authority cannot only be achieved internally (i.e within the firm setting) but also contractual provisions in transacting with other firms which would essentially “produce the effects of hierarchies” (Stinchcombe, 1985). Hierarchical Governance can therefore be defined to include enforcement by legitimate authority either through a contractual arrangement or an employment relation, so long as it provides decision-making authority in certain areas.

The coordination of markets are as a result of human actions and not human designs (Hayek, 1945) and for that matter, offers choice, flexibility and opportunity (Powell, 1990). The competition that emerges as a result of each service provider seeking to be the one employed, serves a great advantage to the operation of the firm since each is propelled by the invisible hands of demand and supply to deliver a better quality and satisfaction.

2.4.2 Vertical integration (Hierarchy governance)

Hierarchy may be defined as the choice of both buyer and supplier administration is surrendered to a central government which plans and coordinates activities of production and supply in well planned routine task assignments. The governing

administration in this system possesses unified ownership and control over all production activities.

Hierarchy arises when an organisation expands its boundaries to cover transactions and resource flows that would otherwise have been carried out in the marketplace such that the management takes over the invisible hands of market in harmonising the activities of demand and supply (Powell, 1990). Accountability and reliability, thus the ability of continuously producing larger quantities of a given quality, are major strengths of the hierarchical governance. (DiMaggio and Powell, 1983; Hannan and Freeman, 1984; Powell, 1990)

2.4.3 Governance system and the sources of Transaction cost

TCE posits that both market and hierarchical governances are characterised by their own internal system of attributes with their peculiar strengths and weaknesses (Williamson, 1985). Williamson identified the two main attributes as Incentive intensity (which can be determined by the extent to which a stage of economic activity, normally technologically separable, accrues its net profits); and Administrative authority and control (which has got to do with the autonomy in operating, investment, routine and accounting procedural controls) (Tadelis and Williamson, 2010).

The prior transaction cost theory assumes market governance to be more efficient than the vertical integration because of the profits of competition. Though transactions within companies run by hierarchy may be protected from competitive pressure, they may be woefully exposed and subjected to some strict bureaucratic governance. However, some extents of transactions increase transaction costs and pool up to create “market failure”, and studies from far back as in the 1930s identified that there are costs

that may arise which could be cut down by employing mechanisms other than market (Coase, 1937; Williamson, 1975; Martins et al, 2010; Tadelis and Williamson, 2010). This therefore makes vertical integration a more efficient governance system. The Transaction Cost theory suggest that economic organization is an effort to “align transactions, which are different in character, with governance structures, which are also differ in costs and competencies, in a discriminating, transaction cost economizing way” (Williamson, 1991: 79).

The conceptual and empirical research following Williamson’s book in 1975 presented that asset specificity is a critical element of the choice between markets and hierarchies (Williamson, 1985). The idiosyncratic nature of transaction-specific assets presents a need for strict safeguarding because the market has no mechanism to prevent the opportunistic exploitation of competitors. Vertical integration is therefore a preferred option where transaction specific assets are in question. Contrary to markets, hierarchical control and authority relationships, being processes in vertical integration, are assumed to possess greater defense capabilities.

It appears that uncertainty is too broad a concept, such that, depending on which facet is in view, a different governance may be required in order to reduce transaction cost and thus proposed the establishing of an alternate classification (Klein, 1989). The main consequence of *environmental uncertainty* is an adaptation problem. This difficulty in adjusting and adapting to adjusted agreements which would definitely raise transaction costs can be addressed by employing the hierarchical governance. Further researches nonetheless have contended that when environmental uncertainty is high, firms are encouraged to maintain their flexibility, therefore making a case against hierarchical governance. Walker and Weber (1984) suggested Vertical integration as a better option to forestall volume uncertainty. Environmental uncertainty on the other hand, can be

managed more efficiently through market governance which preserves the firm's flexibility in terminating procurement relationships with one party and moving on freely to another more efficient relationships with greater capabilities (Balakrishnan and Wernerfelt, 1986); therefore evading the situation being locked into an obsolete technological capacity (Heide and John, 1990).

The effect of *behavioral uncertainty* is also a performance evaluation problem; the difficulty in ascertaining contractual compliance ex post. TCE proposes vertical integration as a suitable response to this problem since it provides for a higher level of control and greater monitoring and evaluation capability.

Williamson (1985) presented an argument for hierarchical governance being suitable for frequently occurring transactions since recurring transactions offer opportunity to easily recover overhead costs.

It is also worth noting that transaction cost framework originally predicted that uncertainty would only be a problem where asset specificity existed. Uncertainty coupled with asset specificity therefore requires hierarchical governance because of the allowance to expropriate parties when investment is exposed. Uncertainty alone however (without transaction-specific assets), would call for market governance because of the availability of numerous, readily available potential transaction partners (Williamson, 1975). The effect of uncertainty on the choice governance system therefore becomes conditioned on the presence of asset specificity.

2.4.4 A revised approach: Relational Governance

Originally, transaction cost theory focused on the dichotomy between market and hierarchical governance (Williamson, 1994). However, research has found that the TCE overemphasizes the appeal of integration and categorical contractual defense that is meant to safeguards against transaction hazards in cases of market failure (Poppo and

Zenger, 2002). It is found that managers in many industries rather employ collaborative exchanges (Dyer, 1997); thus, relational governance (alliance). This may be may be a more feasible and sustainable alternative to hierarchy should the market fail.

This mode of governance integrates a large informal constituent and thus may not be easily enforceable in legal terms. Instead, it can be sustained by such non-judicial mechanisms as mutual dependence, trust, parallel expectations, joint action, and procedural fairness (Bradach and Eccles, 1989). Relationships here are typically openended, having no determinate end in view (Heide, 1994). Relational governance disperses the adverse effect of exchange hazards through both sociological and economical methods. The Economists' approach accentuates the rational and calculative approaches with prospects of future benefits (Axelrod, 1984) whereas the Sociologists' approach from the viewpoint of shared values and affections that originate from trust and personal interactions (Uzzi, 1997). Irrespective of the differences, both economists and sociologists agree that relational governance is a self-enforcing safeguard in function; such that it has an adequately large future value that does not encourage any party to default in agreement. (Telser, 1980).

Over the years, relational governance seems to be gaining roots, thus inspiring transaction cost analysts to integrate them in their descriptive frameworks. High asset specificity appeals more to relational governance than market governance because it provides another option of safeguarding the problems asset specificity poses when incorporated into the hierarchy. Relational governance may however not be very effective in addressing uncertainty like the market would, as Williamson (1991) reasoned. This is because relational adaptations require mutual consent to succeed, unlike market adaptation which can be done unilaterally.

2.5 The Conceptual Model

Mohammed Rajeh undertook a study on the management of engineering projects in New Zealand in order to develop a conceptual model for the relationship between transaction costs and project delivery systems (thus the Traditional and the Designbuild systems) by assessing the TCs generated by these different delivery systems in construction projects. The study considered information from construction professionals in management, design and operations, measuring TCs using the professionals' time spent in procurement as a proxy for cost and triangulated with real world scenarios to prove and expound the model.

The test which adopted the Structural Equation Modelling (SEM) as the primary analytical technique was developed on the basis of theoretical expectations and previous empirical studies. The model represents the direct and indirect relationships transaction costs on one hand and the various constructs of costs, namely: Information Costs (INFO), Procurement Costs (PROC), Contract Administration Costs (ADMIN) and Enforcement Costs (ENFO).

2.5.1 Information cost and Procurement cost (INFO and PROC)

The study defined INFO to include two main activities: gathering and communication; and PROC to include attending meetings, preliminary designs, translation of clients' needs, transition observation, training and site visits.

The study said as INFO and PROC are incurred due to the professionals' daily time spent in gathering and procuring information; and as these increases TCs also increase.

2.5.2 Administration cost and Enforcement cost (ADMIN and ENFO)

ADMIN reflects contract administration, conflict resolution and decision-making. ADMIN are caused by uncertainties concerning decision making and the

willingness of parties to go by the terms of contract. ENFO also reflects monitoring, controlling and verifying compliance with standard expectations. These arise from uncertainties as to whether transactions will comply with the specified best practices, quality of goods and services, losses that may arise from possible breach of contracts and the effects of dispute resolutions.

In cost estimates, both ENFO and ADMIN are captured under management contingencies. The study considers ENFO and ADMIN to be caused by professionals' daily time spent in implementing contractual terms and conditions. The results of the study showed the Traditional delivery system to be common among state-owned organizations.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents information on the techniques and procedures that this study employed. The chapter describes the design which was adopted for this research and identifies its data requirements and the sampling procedures used for data collection and analysis.

3.2 Research Design

The choice of research method, which forms the basis of data analysis in any scientific research is very essential and must be guided by scientific principles (Eldabi et al., 2002). The method adopted should therefore ensure proper data collection which will produce credible and reliable analysis and results. Generally, a researcher may employ either qualitative or quantitative method. This research largely adopted the Quantitative design.

Punch (2005) defines quantitative research as an empirical method which deals with data in the form of numbers. This method is suitable for research that seeks to measure quantities or amounts of some variables either to ascertain an existing position or to envisage a future development or pattern. Quantitative research has an advantage of easy extraction and analysis of a large amount of quantifiable data. Because results are quantifiable, it is easier to compare and simplify future developments. Quantitative data also incorporates control measures that warrant for validity of data. This study seeks to provide a more objective result and therefore preferred quantitative design over qualitative which often prefer rather generalized results

3.2.1 Research purpose

The nature of the design of your research questions and objectives would often determine purpose adopted in methodology. A research may either be an Exploratory, a Descriptive or an Explanatory study. Zikmund (2003) classified a research that seeks to clarify a certain ambiguity and is in anticipation of further research to provide conclusive evidence as exploratory. An exploratory research would be required for a problem that seen very little or no prior research and therefore has little or no information to fall on. It may also be used in examining casual relationships among variables.

A descriptive study answers questions of who, what, how, why, when and where about a phenomena (Cooper and Schindler). Explanatory research on another side seeks to explain, is usually quantitative in nature and typically measures relationships between variables to tests existing hypothesis; and normally analyses with statistical techniques. This research employs both descriptive and explanatory approaches.

3.3 Population

The target group of a research is the group or individuals who the research applies to. The target population for this study was the Engineers, Planning Officers, Budget Analysts, Accountants, Procurement Officers, Contract Administrators and Quantity Surveyors of the following organizations: Cape Coast Metropolitan Assembly, Mfantseman Municipal Assembly, Ekumfi District Assembly, Ajumako District Assembly, KEEA Municipal Assembly and Abura Dunkwa District Assembly all in Central Region. Six (6) MMDA were randomly selected out of twenty (20) MMDA in the Central Region. This represent 30 percent of the entire MMDA's in Central Region. According to Hummel Brunner, Rak and Gray (1996) the accepted minimum percentage is 25 percent. The selection of Six (6) MMDA's out of Twenty (20) MMDA's was because of time constraint. Table 3.1 presents detail of population. Given the relatively small population, a census of the targeted respondents was conducted.

Table 3.1 Details of population

No	Name of organization	Number of Targeted Staff
1	Cape Coast Metropolitan Assembly,	7
2	Mfantseman Municipal Assembly	7
3	Ekumfi District Assembly	7
4	K E E A Municipal Assembly	7

5	Abura Asiebu kwamankese District Assembly	7
6	Ajumako District Assembly	7
Total population		42

Source: Field Data, 2015

3.4 Sample technique

This study used the purposive sampling technique. Purposive sampling is a nonprobabilistic approach in which the researcher decides on which individuals or groups would be most appropriate sample for the research. The criteria for purposive selection may be based on factors such as specialized knowledge and willingness to participate. This technique was employed because this research requires specialized knowledge from only certain key professionals.

3.5 Data Collection

3.5.1 Sources of Data

Primary and secondary data are the two kinds of data that are principally used in the field of research. Both primary and secondary data was used for this research.

3.5.1.1 Primary Data

This data was acquired from professional staff of the selected organizations: Cape Coast Metropolitan Assembly, Mfantseman Municipal Assembly, Ekumfi District Assembly, Ajumako District Assembly, KEEA Municipal Assembly and Abura Dunkwa District Assembly all in Central Region.

3.5.1.2 Secondary data

The study also sourced data from secondary sources such as lecture notes internet, reports, journals, books, articles and other documents from organizations for the literature review.

3.5.2 Instrument Used for the Data Collection

The instrument such as self-completed questionnaires was used for data collection which were served to professional staff of the selected MMDAs in Central Region of Ghana. All the questionnaires were administered and collected by hand to the various respondents. Attached in the appendix are the detail questionnaires.

3.5.2.1 Questionnaires

According to Shao (1999), a questionnaire can be defined as a statements or formal set of questions formulated for sourcing required data in accordance with certain research objectives. This study used structured questionnaires which comprised of both open ended and close ended questions. Since the target respondents are busy people who may not have much time to spare, questionnaires, which are easy to answer and more time effective were used. Another reason for using questionnaires was because it the person of the researcher does not affect the responses that will be received; since this research requires very credible information.

The researcher moreover, was careful to target staff who would provide sincere and truthful answers and would be diligent to complete the process to the best of the researcher's knowledge. In view of this study Forty-Two (42) questionnaires were administered to select staff from the selected MMDAs. The questionnaires were administered based on the professional knowledge of the staff. (See Appendix 1).

3.6 Analysis of Data

The data collected was coded and entered for analysis into the Statistical Package for Social Science (SPSS) version 16. The statistical tool used for the data analysis was Descriptive statistics and the result presented in percentages, graphs, bar charts and frequency tables.

3.7 Validity and Reliability

According to Joppe (2000), validity is a major determinant of the true measure of the research. Validity and reliability are thus very essential considerations in every information gathered for a research. The researcher made an Engineer, two (2) staff of Assembly and two building technology lecturers from Cape Coast Polytechnic who are friends, to read through the items and make suggestions.

3.7.1 Reliability

A measure of the degree to which a research instrument yields consistent results or after repeated result is known Reliability (Chronbach 1953). Cronbach's alpha coefficient was used as a test of the internal consistency of the data for quality control in this study by carrying out a test and re test of the questionnaires of Seven (7) respondents. The reliability was calculated using Chonbach's alpha coefficient.

Table 3.2 below displays the results reliability coefficient of the questionnaires

Table 3.2: Staff Questionnaires and Reliability Statistic Result

Cronbach's alpha	Quantity of items
0.711	17

From the above Table 3.2 the total reliability coefficient of the staff questionnaire was 0.711. And an alpha of 0.70 and above is usually accepted for a reliability measuring

tool which means that the instrument used was reliable for data collection. Forty-Two (42) questionnaires were administered to select staff of selected MMDAs by hand delivery. Forty-Two (42) were returned representing 100 percent response rate for the respondents that were used for the study. Through the data cleaning and management all the Forty-Two (42) of responses were valid for data analysis. The response rate was therefore 100 percent.

3.8 Ethics

The following ethical considerations which were encountered in the study:

3.8.1 Organization Entry

The organizations (Cape Coast Metropolitan Assembly, Mfantseman Municipal Assembly, Ekumfi District Assembly, Ajumako District Assembly, KEEA Municipal Assembly and Abura Dunkwa District Assembly all in Central Region) were informed by the researcher by writing to them officially. The verbal and letter of confirmation from the various Head of Department of the Assemblies was used to gain access to the organization and staff as well.

3.8.2 Voluntary partaking

The researcher clearly informed Respondents before administering the questionnaires that it was a voluntary option to either participate or not, although their participation would be greatly valued. Participants were also told that they had the choice to decide not to continue at any point without any requirement to explain.

3.8.3 Informed consent

Respondents were duly provided with all the necessary details concerning the research in a briefing by the researcher before the questionnaires were given out. They were

made aware of the purpose of the study as well as the expected usefulness of the outcome of the study.

3.8.4 Confidentiality

The researcher assured all respondents that data collected was purely for academic purposes and for that matter would be treated with the strictest sense of confidentiality and security. This was done in order to improve quality and sincerity of responses; encourage participation and to safeguard the respondents' privacy, in accordance with the proposition of DeVaus (2002).

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the study in relation to assessing the transaction costs of construction works of district assemblies in Central Region. The results of statistical significance and practical implications of the results are presented and discussed in relation to the specific objectives. The study targeted 42 respondents within different occupational fields in the district assembly, but who are related to the procurement processes in the assemblies. The first section of the analysis dwelt on the occupational characteristics of respondents, while the subsequent sections focused on the specific objectives of the study.

4.2 Occupational context of the respondents

This section discusses the occupational context of the respondents. The variables studied included the name of the procurement entity, the procurement unit of the respondents, their occupational experiences, and the respondents' knowledge about transaction costs. These variables were studied to provide a contextual setting for the study and to serve as a basis for disaggregating responses on the transaction costs.

Figure 4.1 represents the various procurement units that the respondents worked under. The importance of this is to know how close the respondents are related to procurement operations, in terms of their occupational duties and section of operation.

According to the study, 33.3 percent of the respondents worked on the District Review Board. This category of respondents was in essence, a group of highly ranked evaluators of the districts' procurement process. The percentage of respondents that worked on the District Tender Committee and in the District Works Department was 23.8 percent each. Less than a tenth of the respondents worked in the procurement unit (9.5%), and this was the same for the Evaluation Panel (9.5%). The results indicated some level of diversity in the units from which the respondents were sampled. Thus, the response would represent the perspectives of the various sub units.

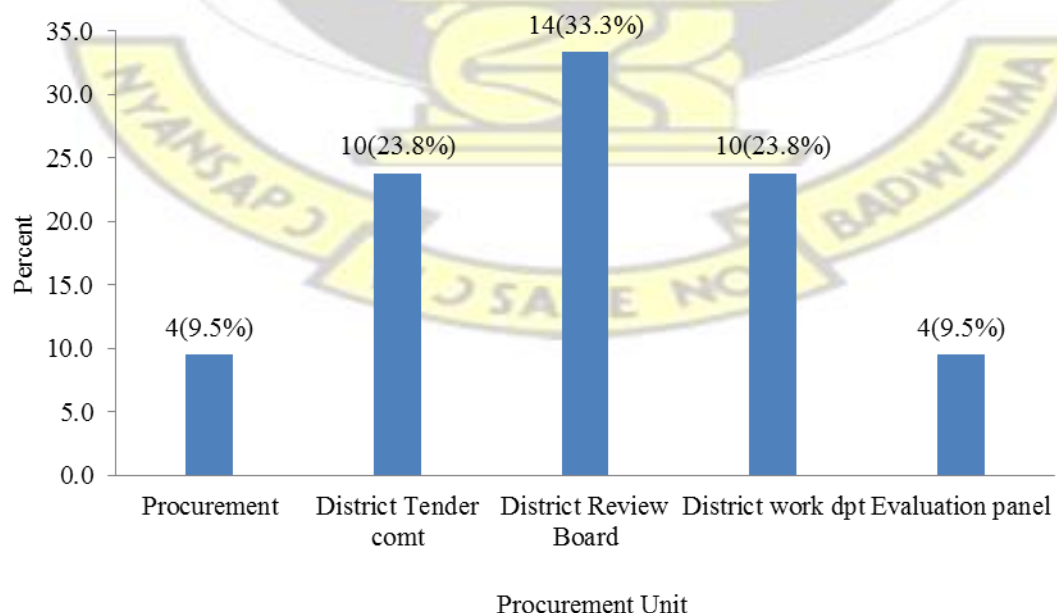


Figure 4.1: Level of procurement unit of respondents

Source: Field survey, 2015

The respondents' length of experience with procurement practices was also examined. This was to put the responses into context and to have an idea of the depth of knowledge that the respondents might have on procurement issues. The assumption is that longer experiences with procurement would make respondents more knowledgeable. From Figure 4.2, it was found that the respondents had had at least three years of experience with procurement and it extended over 12 years of experience with procurement practices. About 33.3 percent of the respondents had gained 3 to 5 years of experience with procurement practices, whereas 31 percent had about 6-8 years of experience with procurement practices. The least number of respondents (14.3%) were those that had the longest experience in procurement practices (more than 12 years).

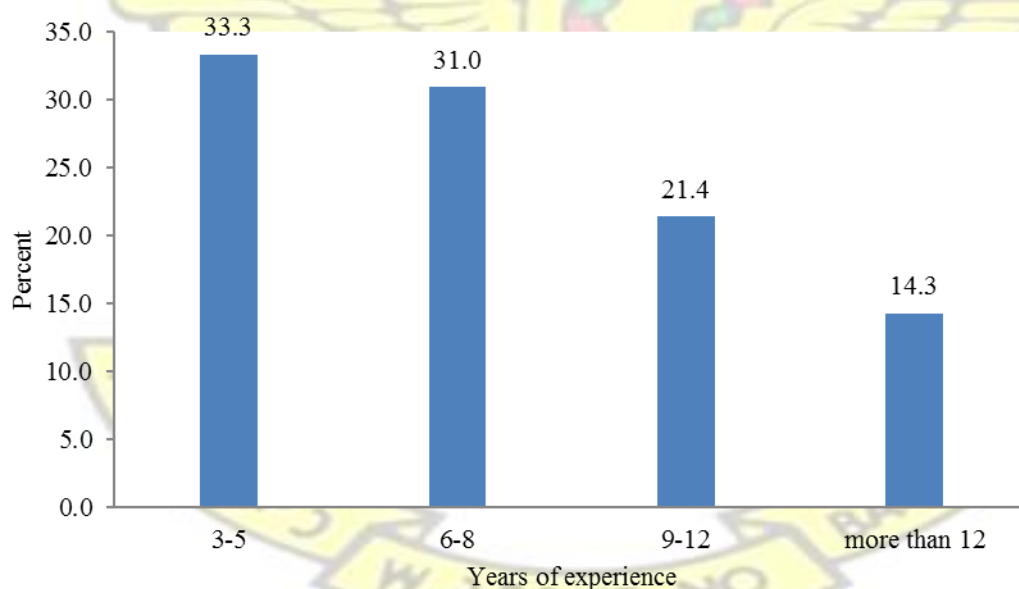


Figure 4.2: Respondents' years of experience with procurement practices Source:

Field survey, 2015

The study also explored the average number of construction procurements that the respondents' respective procurement entities engage in annually. This was also to give an indication of the experience of the procurement entity in procurement activities as well as the volume of procurement-related activities within the entity. The results in Figure 4.3 indicated that the majority (76.2%) of the entities engaged in less than three construction-related procurements annually. This showed that over a span of one year most the assemblies involved in this study would engage in an average of three construction projects. This might be explained by the relatively large sums involved in construction and the fact that construction projects are relatively takes longer time to complete.

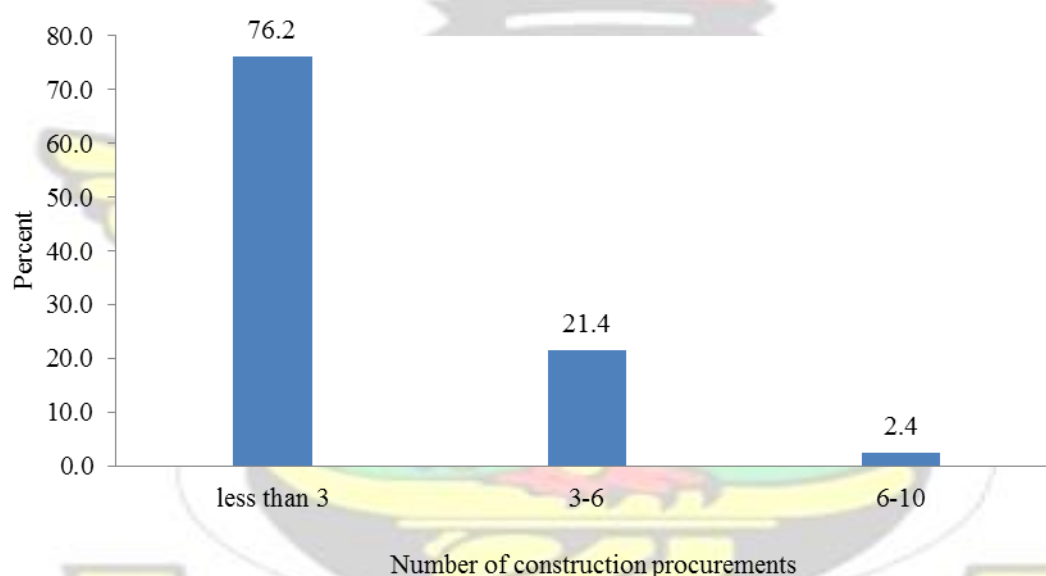


Figure 4.3: Number of construction procurements engaged annually by procurement entity

Source: Field survey, 2015

4.3 Perception of the Public Procurement Act 663

The procurement process in the district assemblies is governed by the Public Procurement Act 663. Personnel involved in the procurement processes are to use the Act as the basis for their procurement practices. The study therefore investigated the

respondents' depth of knowledge of the Act, by asking directly their opinions on their personal knowledge about the content of the Act. Table 4.1 shows a cross-tabulation between the experience of the respondents and their evaluation of their personal knowledge of the Public Procurement Act 663 (2003). Respondents who indicated that they knew the content of the Act very well were 38.1 of the total population. Similarly, 38.1 percent of the respondents also indicated that they had fair knowledge of the Act and 23.8 percent expressed that they did not know the content of the Act so well. Thus, the study showed that, at the district assembly level, most of the procurement staff had at least a fair knowledge of the procurement Act.

In further analysis of the results, it was indicated that while most of the respondents with three to five years of working experience said they knew the content of the Act very well, the majority of those who had work from six to eight years and for more than 12 years noted that they only had a fair knowledge of the Public Procurement Act 663. This was in contrast to the hypothesis that longer years of experience would be associated with deeper knowledge of the Act. However, given that the evaluation of knowledge of the Act was by the respondents themselves, there could be the bias factor or a misrepresentation of the real level of knowledge about the Act by the respondents.

Table 4.1: Level of knowledge of PPA 663 according to working experience

Level of knowledge	Years of experience				Total
	3-5	6-8	9-12	More than 12	
Very well	8(57.1)	4(30.8)	2(33.3)	2(22.2)	16(38.1)
Fairly well	3(21.4)	7(53.8)	4(66.7)	2(22.2)	16(38.1)
Not so well	3(21.4)	2(15.4)	-	5(55.6)	10(23.8)
Total	14(100.0)	13(100.0)	6(100.0)	9(100.0)	42(100.0)

Source: Field Survey, 2015

The respondents were asked to indicate their general impression of the PPA 663. This served as an evaluation of the Act in terms of its efficiency and convenience in managing transaction costs. In Figure 4.4, it is shown that 57.1 percent of the respondents noted that the Act is inefficient and inconvenient. On the other hand, 23.8 percent indicated that the Act is fairly efficient and convenient. Others (11.9%) were also of the view that the Act was efficient but not convenient to procurement practices. The disaggregated results revealed that with the exception of district engineers, most of the planning officers, budget analysts, accountants, procurement officers, contract administrators, and quantity surveyors, noted that the Act is neither convenient nor efficient.

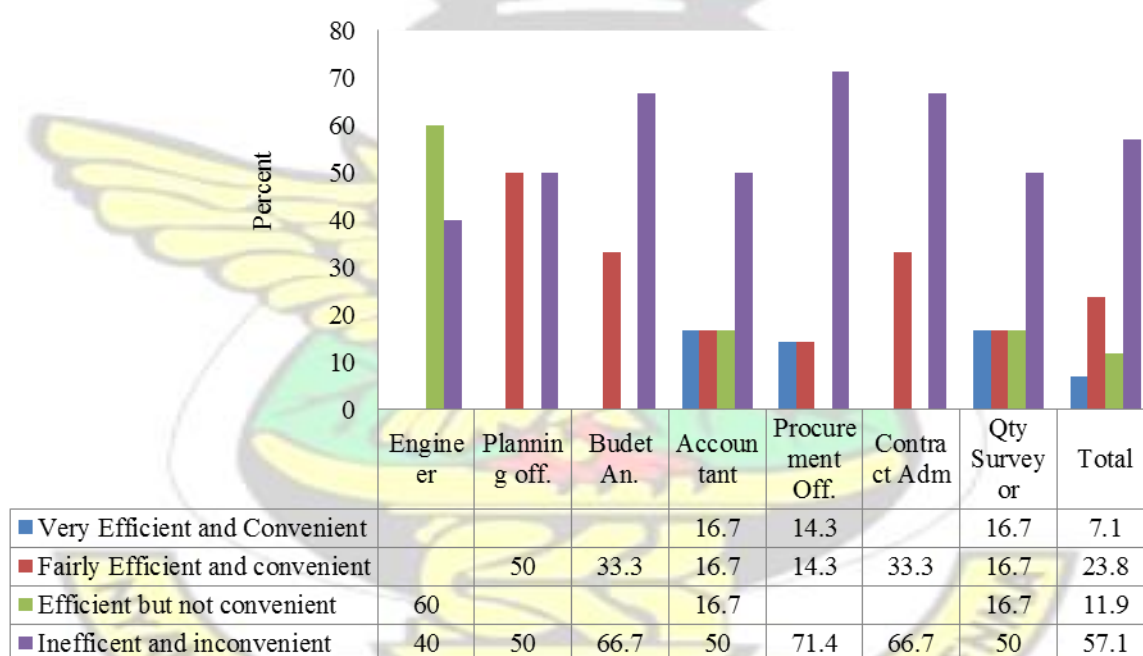


Figure 4.4: Evaluation of efficiency and convenience of the Public Procurement Act 663

Source: Field survey, 2015

The peculiar reasons for the disposition of the respondents on the efficiency and convenience of the Public Procurement Act were also given. The respondents were

asked to identify the most critical factor that militates against the effectiveness and convenience of the Public Procurement Act 663. From Figure 4.5, 42.9% of the respondents attributed inefficiency and inconvenience of the Act to politicisation.

This has been addressed by McCord's (2012) indication that in many public entities, work practices and procedures are often done along political lines. Thus, political interference remains one of the major challenges in public entities due to the direct influence of government officials who are politically aligned. In further examination of the results, 21.4% of the respondents also referred to incompetence of staff as the major factor underlying inefficiency and inconvenience of the Act. In the way, the problem lies with the human factor for interpretation and implementation of the Act. Similarly, 16.7% of the respondents were of the view that some challenges pertaining to the implementation of the Act led to inefficiency and inconvenience. Others (14.3%) were of the view that the major detrimental factor to the efficiency of the Act had to do with some ambiguity in the clauses of the Act.

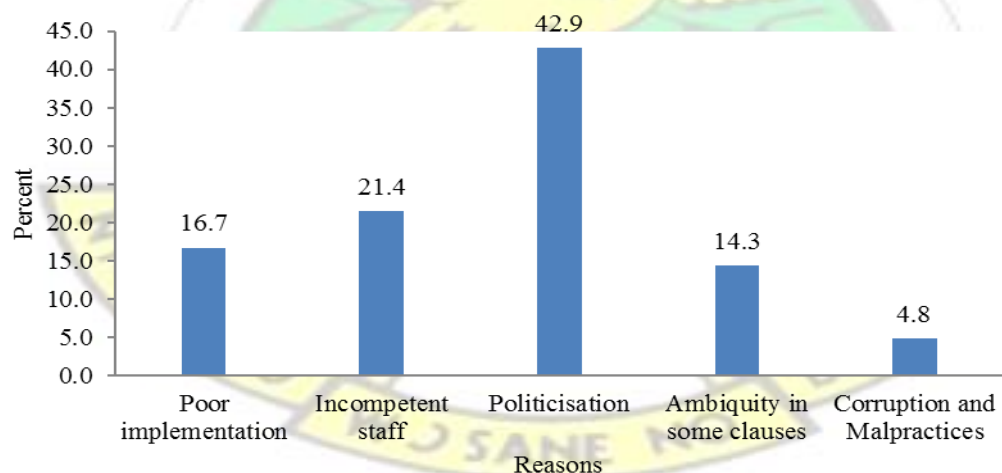


Figure 4.6: Reasons for inefficiency and inconvenient use application of PPA (Act 663)

Source: Field survey, 2015

The study also explored the type of procurement that the respective procurement units usually utilise. Two major forms of public procurement were identified in the literature, which conformed to the traditional (design-bid-build) and the design-build system. According to the study, it was found that in 78.6% of the cases, the traditional procurement system was utilised by the district assemblies, whereas, 21.4% of the respondents revealed that their respective procurement units usually adopted the design-build system. In further analysis, it was also revealed that all the respondents from CCMA and KEEA, as well as most of the respondents from Mfantseman Municipal Assembly, Abura Asiebu District Assembly and Ajumako District Assembly indicated that they usually use the traditional system of procurement. In essence, the result showed that in most cases the district assemblies would opt for the traditional procurement system.

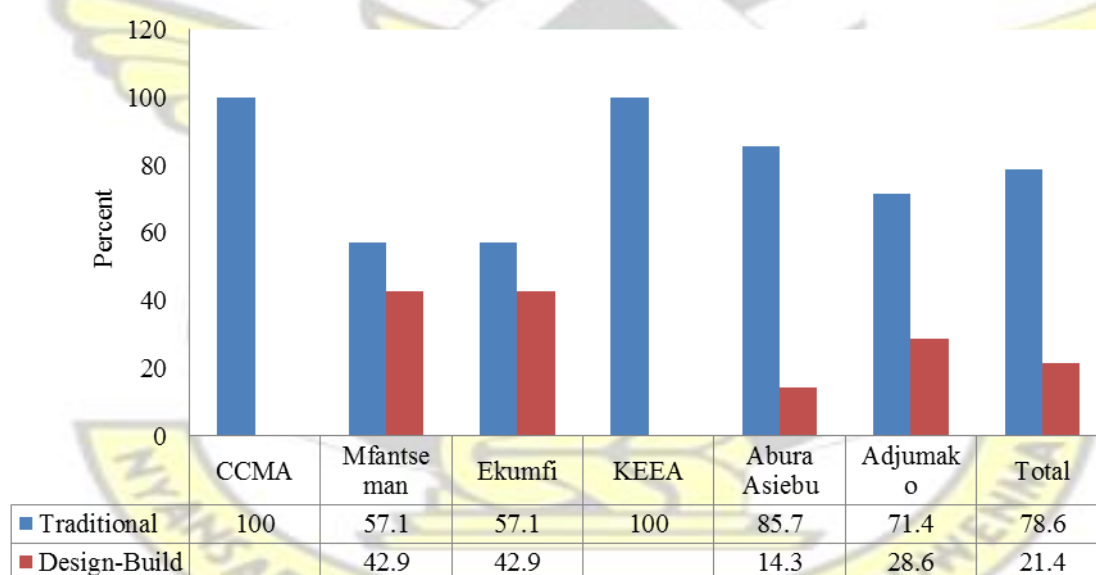


Figure 4.7: Procurement option adopted by district assemblies

Source: Field survey, 2015

The respondents were also asked to indicate the most costly stage of the procurement process. According to 59.5 percent of the respondents, the most stage of procurement

process is the administrative phase. Other respondents (35.7%) also thought that the enforcement stage was most costly, whereas 4.8 percent indicated that the most costly phase was the information seeking. According to Solino and Gago de Santos (2010), administration of procurement involves the cost of meetings, as personnel time, travel expense, communication, consulting/service fees, licensing fees, and insurance premiums. The respondents were therefore of the opinion that these costs were usually greater than auditing fees, inspection charges and investments in measurement devices, arbitration, legal court fees, and costs to bring social pressure, which form part of enforcement costs.

The results also showed that in most cases, regarding the traditional system, administration costs were most significant. On the other hand, 55.6 percent of cases of design-build system were associated with higher enforcement costs. The inference was that, administration costs were usually highest for traditional procurement, whereas enforcement costs were highest for design-build procurement system. The test of association between procurement systems and procurement costs showed that the distribution of responses was associated with a phi-value of 0.291, which according to Rea and Parker (1992), represents a weak association between the procurement system and the cost of the procurement phases. The probability value of 0.169 also showed that, with a margin of error set at 5%, the relationship found between procurement systems and the cost of procurement phases, from the perspective of the respondents, was not statistically significant.

Table 4.2: Perception about cost of project phase according to procurement system

	Traditional	Design-build	Total
Information	1(3.0)	1(11.1)	2(4.8)
Administration	22(66.7)	3(33.3)	25(59.5)

Enforcement	10(30.3)	5(55.6)	15(35.7)
Total	33(100.0)	9(100.0)	42(100.0)

Phi-value = 0.291; chi-square = 3.552; p-value = 0.169

Source: Field survey, 2015

4.4 Magnitude of transaction costs in public construction procurement systems

Transaction costs can account for a significant portion of procurement costs. According to Gebken and Gibson (2006), the depths of costs incurred through

transactional activities varies according to the type of project, the scale of the project, stakeholders, negotiations, delivery systems, sourcing of materials, and cost of information seeking. There are numerous sources of transaction cost pertaining to the different phases of construction projects. The total transaction cost covering a two year period is also analysed and compared for the district assemblies.

Table 4.3 presents that total procurement cost and related transaction costs for the various district assemblies for the 2013 accounting year. It was found that the highest procurement cost of GH¢2,244,625.00 was recorded by CCMA for the 2013 accounting year. This was associated with transaction cost of GH¢42,000.00, which formed about 1.87% of the total procurement cost. This also represented the lowest transaction to procurement cost ratio recorded among the district. However, in monetary terms, CCMA recorded the highest transaction cost for the 2013 accounting year.

Table 4.3: Procurement and transaction costs for 2013 accounting year

District	Procurement cost (PC)	Related transaction cost (TC)	Ratio of TC to PC
Abura Asiebu Kwamankese	291709.02	31130.00	10.67
Ekumfi	349321.96	32670.00	9.35

Ajumako	503621.00	39710.00	7.88
K.E.E.A	346615.00	21000.0	6.06
Mfantseman	1660674.05	41800.00	2.52
CCMA	2244625.00	42000.00	1.87

Source: District Assembly Data (2015)

On the other hand, Abura Asiebu Kwamankese District Assembly reported total procurement cost of GH¢29,1709.02 for the year 2013 and a related procurement cost of GH¢31,130.00. The proportion of transaction cost to procurement cost was 10.67% which was the highest recorded among the all the districts. Relative to the total procurement costs, the study deduced that the transaction costs were highest for Abura Asiebu Kwamankese District Assembly, followed by Ekumfi District Assembly, Ajumako District Assembly, K.E.E.A Municipal Assembly, Mfantseman Municipal Assembly and Cape Coast Municipal Assembly. The highest magnitude of transaction cost for the 2013 accounting year was therefore recorded by Abura Asiebu Kwamankese District Assembly.

Table 4.4 represents the procurement and transaction costs for the 2014 accounting year among the districts. It was found that the highest procurement cost of GH¢2,075,723.00 was recorded by CCMA for the 2014 accounting year. This was associated with transaction cost of GH¢60,000.00, which formed about 2.89% of the total procurement cost. This also represented the second lowest transaction to procurement cost ratio recorded among the district. However, in monetary terms, CCMA recorded the highest transaction cost for the 2014 accounting year.

Table 4.4: Procurement and transaction costs for 2014 accounting year

District	Procurement cost (PC)	Related transaction cost (TC)	Ratio of TC to PC
Mfantseman	1862790.85	49500.00	2.66
CCMA	2075723.00	60000.00	2.89
Ekumfi	445342.04	34100.00	7.66
Ajumako	408510.51	38500.00	9.42
AburaAsiebuKwamankese	264345.35	30800.08	11.65
K.E.E.A	310039.00	32900.00	10.61

Source: District Assembly Data (2015)

Abura Asiebu Kwamankese District Assembly recorded a total procurement cost of GH¢264,345.35 for the year 2014 and a related procurement cost of GH¢30,800.00. The proportion of transaction cost to procurement cost was 11.65% which was the highest recorded among the all the districts. KEEA, with a TC to PC ratio of 10.61%, came close to Abura Asiebu Kwamankese District Assembly in terms of the proportion of TC to PC. Relative to the total procurement costs, the study revealed that the transaction costs were highest for Abura Asiebu Kwamankese District Assembly, followed by K.E.E.A Municipal Assembly, Ajumako District Assembly, Ekumfi District Assembly, Cape Coast Metropolitan Assembly, and Mfantseman Municipal Assembly. The highest magnitude of transaction cost for the 2014 accounting year was therefore recorded by Abura Asiebu Kwamankese District Assembly. On the other hand, the lowest was recorded by Mfantseman Municipal Assembly.

4.5 Comparing the differences in transaction costs between the procurement systems adopted

In Abura Asiebu Kwamankese District Assembly, it was found that the average transaction cost over a six month period using the traditional procurement system was GH¢2,885.71 but GH¢2,557.14, when the design-build system is adopted. This

suggested that using design-build system was lower than adopting the traditional system. In Ajumako District Assembly, the mean TC using traditional procurement system over a six month period was GH¢2,842.85, but GH¢2,471.42 when the designbuild system is used.

Table 4.5: Transaction costs for traditional and build-design procurement for six-months

System	N	Minimum	Maximum	Mean	Std. Error	Std. Dev
Abura Asiebu Kwamankese District Assembly						
Design-Build	14	1900.00	5000.00	2557.1429	224.51762	840.06802
Traditional	14	2000.00	5500.00	2885.7143	241.30077	902.86479
Ajumako District Assembly						
Design-Build	14	1800.00	4500.00	2471.4286	188.52480	705.39522
Traditional	14	2000.00	5000.00	2842.8571	218.56532	817.79656
Ekumfi District Assembly						
Design-Build	14	1500.00	4500.00	2328.5714	197.07436	737.38475
Traditional	14	2000.00	4000.00	2571.4286	172.70586	646.20617
Mfantseman District Assembly						
Design-Build	14	1500.00	4500.00	2242.8571	201.01782	752.13980
Traditional	14	2000.00	5500.00	2750.0000	238.75823	893.35151
Cape Coast Municipal Assembly						
Design-Build	14	2000.00	6000.00	3178.5714	265.23441	992.41630
Traditional	14	2500.00	7000.00	3607.1429	315.26446	1179.61160
KEEA						
Design-Build	14	1500.00	4000.00	2378.5714	170.38372	637.51751

Traditional	14	2000.00	4000.00	2628.5714	161.86705	605.65104
-------------	----	---------	---------	-----------	-----------	-----------

Source: District Assembly Annual Accounts

Over a six month period, the TC using traditional procurement system was GH¢2,571.42, but GH¢2,328.57 when the design-build system in Ekumfi District

Assembly. In the Mfantseman Municipal Assembly, the transaction costs of GH¢2,750.00 accumulated over a six month period using traditional system of procurement was higher relative to the TC incurred over the same period, through design-build system GH¢2,242.85. Similar findings were made for the CCMA and KEEA where the construction-related TC over six months for traditional system of procurement was higher than the TC cost using design-build system over the same period. In CCMA and KEEA, the average TC using traditional procurement system was GH¢3,607.14 and GH¢2,628.57, respectively, but for design-build procurement system, the TC was GH¢3,178.57 and GH¢2,378.57, respectively.

The statistical significance of the transaction costs for the six-month period through traditional and design-build procurement was tested using the paired-sample t-test. The study showed that the difference in the transaction costs for the six-month period through traditional and design-build procurement for only Abura Asiebu Kwamankese District Assembly (t-stat = -2.490; p-value = 0.027), Ajumako District Assembly (t-stat = -5.040; p-value = 0.000) and Mfantseman Municipal Assembly (tstat = -3.288; p-value = 0.006) were statistically significant. However, the difference in the transaction costs for the six-month period through traditional and design-build procurement for Ekumfi District Assembly, Cape Coast Metropolitan Assembly and KEEA were not statistically significant.

Table 4.6: Statistical differences in TC for traditional and design-build procurement for six months

District/Municipal Assembly	Paired Differences						T	Df	Sig. (2- tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
AburaAsiebu	-328.571	493.696	131.94595	-613.623	-43.519	-2.490	13	.027	
Ajumako	-371.42	275.760	73.70014	-530.648	-212.209	-5.040	13	.000	
Ekumfi	-242.85	460.291	123.01804	-508.621	22.907	-1.974	13	.070	
Mfantseman	-507.14	577.080	154.23127	-840.339	-173.946	-3.288	13	.006	
Cape Coast	-428.57	1253.566	335.02970	-1152.35	295.216	-1.279	13	.223	
KEEA	-250.00	448.501	119.86714	-508.957	8.95722	-2.086	13	.057	

Source: District Assembly Annual Accounts

55
KNUST



4.6 Compare transaction costs for pre-contract phase and post-contract phase of public construction projects

The study also compared the transaction costs for pre-construction and postconstruction phases. The costs incurred at the pre-construction phase, in this study, include cost of information gathering, communication, attending meeting, translation of clients' needs, project preliminary design, transition observation and training. These were compared for the traditional and build-design procurement systems over the past six months for each district assembly.



Table 4.7: Post- and pre-construction transaction costs in the district assemblies

Phase	Mean	Std. Deviation	Std. Error Mean
Abura Asiebu Kwamankese District Assembly			
Pre-construction	2960.00	1314.534	587.87754
Post-construction	2200.00	273.861	122.47449
Ajumako District Assembly			
Pre-construction	2720.00	1116.691	499.39964
Post-construction	2200.00	273.861	122.47449
Ekumfi District Assembly			
Pre-construction	2720.00	1116.691	499.39964
Post-construction	2200.00	273.861	122.47449
Mfantseman District Assembly			
Pre-construction	2680.00	1158.447	518.07335
Post-construction	2000.00	122.000	139.00000
Cape Coast Municipal Assembly			
Pre-construction	2800.00	836.660	374.16574
Post-construction	3800.00	1303.840	583.09519
KEEA			
Pre-construction	2660.00	882.043	394.46166
Post-construction	2200.00	273.861	122.47449
District Assemblies' data (2015)			

At the post-construction phase, the average transaction cost incurred over the past six months for Abura Asiebu Kwamankese District Assembly was GH¢2,960, whereas the average TC was GH¢2,200 for the pre-construction phase, over the same period of time under consideration.

The pre-construction cost in all the cases, with the exception of Cape Coast Municipal Assembly was higher than the post-construction phases. In the unique case of CCMA, the post-construction cost of GHG¢3,800 and the pre-construction cost of GH¢2,800 showed that in CCMA, it was more costly, or the Assembly made more expenses on monitoring the project.

The statistical significance of the differences in the pre- and post-construction TCs were analysed using a paired sample t-test. From Table 4.8, it is shown that none of the observed differences in the transaction costs incurred during the pre- and post-construction phases of public projects at the district assembly level was statistically significant. This showed that in most cases, the post and pre-construction phases of public projects were associated with similar levels of transaction costs. This was indicated by the p-values of all pairs of pre-construction and post-construction TCs which were higher than the default alpha of 0.05. For example the mean difference between the TC of post- construction phase and pre-construction phase of projects in Abura Asiebu Kwamankese District Assembly over the past six months prior to this study, was GH¢760.00. This showed that for the six-month period, average postconstruction TCs was GH¢760 higher than average post-construction TCs. This was associated with a t-statistic of 1.222, at 4 degrees of freedom and a p-value of 0.289, which is greater than the error margin of 0.05. Therefore, with 95 percent confidence level, the study indicated that this difference was not statistically significant. Similar conclusions were drawn across all the other district assemblies given that the probability values associated with the mathematical difference in the post- and pre-construction related TCs, were greater than the margin error of 0.05.

Table 4.8: Statistical differences in TC for post- and pre-construction TCs for six months

Paired Differences								
Assembly	Mean	Deviation	Mean	95% Confidence Interval of			the Difference Df	Sig. (2 tailed)
				District/Municipal	Std.	Std. Error		
				Lower	Upper	T		
AburaAsiebu	760.00	1390.323	621.77166	-966.314	2486.319	1.222	4	.289
Ajumako	520.00	1217.374	544.42630	-991.565	2031.5697	.955	4	.394
Ekumfi	520.00	1217.37	544.42630	-991.565	2031.5697	.955	4	.394
Mfantseman	680.00	1158.447	518.07335	-758.403	2118.4022	1.313	4	.260
Cape Coast	-1000.00	2000.000	894.42719	-3483.380	1483.3280	-1.118	4	.326
KEEA	460.00	991.463	443.39599	-771.064	1691.0646	1.037	4	.358

Source: Authour's field survey (2015)

KNUST

59



4.7 Mechanisms used to reduce transaction costs in the selected procurement systems

Transaction costs can take a significant proportion of the budget and cause shortages when underrepresented. It is therefore important to device strategies to reduce transaction costs. In this study, the respondents were asked to indicate their opinion on the mechanisms for reducing transaction costs in their various procurement units based on the experience they have had working in the district assemblies.

Table 4.9 represents both multiple responses obtained for the mechanism for reducing transaction cost as well as the percentage of respondent that agreed to the various mechanisms stated. It was found that 12.3 percent of the responses suggested making bulk purchases and maintaining a well-established negotiation system with suppliers, as the most pertinent solution to procurement. This was supported by 16.7% of the respondents for each assertion. Negotiating for lower prices also came fore, appearing in 17.5% of the responses and indicated by 23.8% of the respondents. Others also pointed out that, streamlining vendors, computerising transactions, building strong relationships with service providers, automating orders and standardising payment systems could reduce transaction costs in the district assemblies.

These suggestions provided are founded in literature. For example, the thought of bulk purchases assumes the idea of economies of scale which, in economic theory, contributes to lowering costs of goods purchased. Computerisation and automation of transactions aim to improve efficiencies and reduce human errors which may lead to added costs of transactions (Melese and Franck, 2005). Streamlining vendors would

reduce transactional costs for tendering to a wide array of vendors. Thus by focusing on the needed vendors these costs could be reduced (Wenan and Mengjun, 2010).

Table 4.9: Mechanisms to reduce transaction costs

Mechanism	Frequency	Percent of responses	Percent of Respondents
Negotiating lower prices	10	17.5%	23.8%
Establish standard products	8	14.0%	19.0%
Streamlining vendors	6	10.5%	14.3%
Computerising transactions	6	10.5%	14.3%
Making bulk purchases	7	12.3%	16.7%
Well established negotiation system	7	12.3%	16.7%
Strong relationship with service providers	5	8.8%	11.9%
Automating orders	4	7.0%	9.5%
Standardising payment systems	4	7.0%	9.5%
Total	57*	100.0%	

*Multiple responses; sample size = 42

Source: Field survey, 2015

4.10: Mechanisms to ensure reasonable procurement transaction costs

The respondents were asked to note their opinions on how the government could ensure reasonable procurement transaction costs in the public sector. In that regard, Table 4.10 presents the responses obtained. It was found that 31.7% of the responses were focused on enforcing anti-corruption schemes in procurement in public entities.

Next to this, 24.4% of the respondents advised to make the bidding process more competitive. Other suggestions made included restructuring the procurement evaluation system, effective enforcement of the PPA (Act 663), hiring qualified staff to handle procurement in public entities and offering employee training of the PPA (Act 663) and other procurement issues.

Table 4.10: Mechanisms to ensure reasonable procurement transaction costs

Mechanism	Frequency	Percent of responses	Percent of Respondents
Enforcing anti-corruption in procurement	13	26.5%	31.7%
Make bidding more competitive	10	20.4%	24.4%
Enforcing public procurement effectively	8	16.3%	19.5%
Qualified staffing	8	16.3%	19.5%
Restructure procurement evaluation	7	14.3%	17.1%
Staff training	3	6.1%	7.3%
Total	49*	100.0%	

*Multiple responses; sample size = 42

Source: Field survey, 2015

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter shows a summary of major findings of the study and draws appropriate conclusions and necessary recommendations all drawn from the findings. The chapter concludes with suggestions of areas for further research.

5.2 Summary of the dissertation

The study set out to compare the magnitude of transaction costs for the design-bidbuild and design-build procurement methods in construction works in district assemblies in Central Region of Ghana. The study adopted a quantitative approach and to that effect, a descriptive design was adopted to study 42 purposively sampled employees from six district assemblies including Cape Coast Metropolitan Assembly, Mfantseman Municipal Assembly, Ekumfi District Assembly, Ajumako District Assembly, KEEA Municipal Assembly and Abura Dunkwa. Questionnaires were used to collect data from the sampled respondents and the statistical tools used to analyse the data collected included descriptive tools such as means, medians, frequencies, and percentages. Cross-tabulations and their associated p-values were employed to test for the statistical significance of associations between the study variables. Paired-sample t-test was used to compare the TCs for the districts and also for the different procurement systems.

5.3 Summary of major findings

The study explored the perceptions of the PPA 663 as the first objective and the following were found that:

- Most of the respondents indicated they were very or fairly knowledgeable in the application of the PPA 663
- In most cases the respondents noted that the PPA 663 was inefficient and inconvenient
- The reasons given for inefficiency and inconvenience of the PPA 663 included politicisation, staff incompetence, poor implementation, corruption and malpractices, as well as ambiguity in some of the clauses in the Act.
- Within the context of the PPA 663, mostly the procurement practices of the district assemblies conformed to the traditional procurement system.
- The respondents were of the opinion that the administration stages of procurement incurred highest transaction costs, as against the information gathering and enforcement stages.

The second objective was to determine the magnitude of transaction costs in public construction procurement systems and the major findings were that:

- Based on the 2013 and 2014 accounting year records, the transaction costs in procurement could be as high as 10.67 percent of total construction procurement cost and as low as 1.87 percent.
- On the average, Abura Asiebu Kwamankese district assembly recorded the highest ratio of TC to PC, whereas CCMA recorded the lowest.

The third objective of the study was to comparing the differences in transaction costs between the procurement systems adopted and the results were that:

- In all the district assemblies, the estimated TC for the traditional procurement system was higher than that of the design-build system over a six-month period.
- The estimated TC for the traditional procurement system and the design-build system over a six-month period was only statistically different in Abura Asiebu Kwamankese District Assembly, Ajumako District Assembly and Mfantseman Municipal Assembly.

The fourth objective compared the transaction costs for pre-contract phase and post-contract phase of public construction projects. The main findings were that:

- With the exception of CCMA, the pre-construction TCs incurred by all the other district assemblies were higher than the post-construction costs.
- None of the observed differences in the transaction costs incurred during the pre- and post- construction phases of public projects at the district assembly level was statistically significant.

The final objective elicited the respondents' opinion on the mechanisms used to reduce transaction costs in the selected procurement systems. The main findings were that:

- Streamlining vendors, computerising transactions, building strong relationships with service providers, automating orders and standardising payment systems could reduce transaction costs in the district assemblies.
- The respondents also suggested that the government could intensify the enforcement of anti-corruption sanctions in public procurement, make bidding more competitive, restructure procurement evaluation and employ the right

calibre of procurement staff, in order to improve the effectiveness of the PPA 663.

5.4 Conclusions

The following conclusions were drawn based on the major findings of the study. They are aimed at answering the research questions. The respondents were of the opinion that the PPA 663 was not efficient and convenient for procurement in the district assemblies due to politicisation mostly, but also because of poor staffing poor implementation and ambiguity in the clauses of the Act. The transaction costs in procurement could be as high as 10.67 percent of total construction procurement cost and as low as 1.87 percent. Moreover, the estimated TC for the traditional procurement system was higher than that of the design-build system over a six-month period. In most cases, the pre-construction TCs incurred by all the other district assemblies were higher than the post-construction costs.

5.5 Recommendations

The following recommendations were based on the major findings and conclusions of the study. The study recommends that in order to reduce transaction costs and improve the efficiency of the PPA 663, the district assemblies should:

1. Streamline vendors for competitive bidding of contracts. This could reduce politicisation in the procurement system. List of vendors should be compiled by the various assemblies to know the vendors who would be capable of supplying their needs at every point in time. Those vendors should be taken through some training to enhance their capacity. In doing that vendors who are more capable for competitive bidding would always be available for selection.

2. Computerise transactions, for example, in terms accounting practices, placing orders, inventory management and store-keeping. Internet procurement will reduce a lot of cost in traveling to and source for information. It also help store information that would be readily available at the press of a button.
3. Build stronger relationships with service providers and vendors, which capitalise on economies of scale and negotiating for lower prices through competitive bidding. Building strong relationship with vendors will help the entity to have better negotiation with them during tendering.
4. Capitalise on anti-corruption sanctions in public procurement, and enforce strict measures of preventing, detecting and punishing procurement fraud in the assemblies.
5. Aggregate procurement items to reduce transaction cost on each item. Combining similar items to make bulk procurement will help reduce the transaction cost for individual items. Example, the cost of advertising more than one project in the newspaper is the same as the cost of advertising one project on the same page.

5.6 Suggestions for further research

The study can also be expanded to cover other district assemblies and public entities for a holistic view of transaction costs and procurement practices in public entities in the country.

REFERENCES

Abdul-Razak, S. (2013). The impact of project risk factors on the selection of public works procurement methods in Ghana: a focus on NCT. MSc Procurement

- Management thesis submitted to Department of Building Technology, Kwame Nkrumah University of Science and Technology, 2013.
- African Development Bank, (2012) *Rules and procedures for procurement of goods and works, Procurement and Fiduciary Services Department (ORPF)*
- Allen, L. N. (2001). Comparison of the Design-build to Design-bid-build as a project delivery method. Masters thesis in Contract Management, Naval Postgraduate School, Monterey California, 2001.
- Ameyaw, C., Mensah, S. and Osei-Tutu, E. (2012). —*Public procurement in Ghana: The implementation challenges to the public procurement law 2003 (Act 663)* || *International Journal of Construction Supply Chain Management* Vol. 2, No. 2 (pp. 55-65)
- Asamoah-Amono, E. K. (2010). *Implementation of design-build procurement in Ghana*. Retrieved on July 24, 2015 from https://www.ucviden.dk/studentportal/files/9463045/peocurement_systems.pdf
- Badu, A., and Owusu-Manu, G. (2009). Improving access to construction finance in Ghana. *Journal of Business and Enterprise Development*, 111 -129
- Bajari, P., and Tadelis, S. (2009). Incentives versus transaction costs: A theory of procurement contracts. *The RAND Journal of Economics*, Vol. 32, No. 3, pp. 387-407.
- Brook M (2008) *Estimating and Tendering for Construction Work*, London, Butterworth-Heinemann.
- Chang C and Ive G (2000) *A Comparison of Two Ways of Applying Transaction Costs Approach(I): Methodological Debates*, London, University College, Unpublished.
- Chang C and Ive G (2007) “The Hold-Up Problem in the Management of Construction Projects: A Case Study of the Channel Tunnel”. *International Journal of Project Management* **25(4)**: 394-404.
- Chan, C., Forwood, D., and Roper, H., and Sayer, C. (2009). *Public infrastructure financing: An international perspective*. Productivity Commission Staff working paper, Australian Government Productivity Commission.

- Commons, J. R. (1931). Institutional economics. *American Economic Review*, Vol. 21, pp. 648–657.
- Dudkin G and Valila T (2006) "Transaction Costs in Public-Private Partnerships: A First Look at the Evidence". *Competition and Regulation in Network Industries* 7(2): 307-330.
- Eriksson, P. E. (2007). Procurement Effects on competition in client-contractor relationships. *Journal of Construction Engineering and Management*, Vol. 134, No. 2, pp. 103-111.
- European Network on Debt and Development (Eurodad), (2010); *For whose gain? Procurement, tied aid and the use of country systems in Ghana. A case study summary April 2010. Available online at www.eurodad.org*
- Gebken, R. J., and Gibson, G. E. (2006). Quantification of costs for dispute resolution procedures in the construction industry. *Journal of professional issues in engineering education and practice*, 132(3), 264-271.
- Hackett, M., Robinson, I., and Statam, G. (2007). *Procurement, tendering, and contract administration*. Oxford: Blackwell.
- Hans-Joachim, P. (Ed). (2012). Public procurement 2012: An overview of regulation in 40 jurisdictions worldwide (8th ed.). In D. I. Gordon, (2013). *Bid protests: The costs are real, but the benefits outweigh them*. Retrieved on July 11, 2015 from http://scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=1330&context=faculty_publications
- Hardt, L. (2009). The history of transaction cost economics and its recent developments. *Erasmus Journal for Philosophy and Economics*, Vol. 2, Issue 1, Summer 2009, pp. 29-51, <http://ejpe.org/pdf/2-1-art-2.pdf>
- Heide, J. B., and Stump, R. L. (1990). Performance implications of buyer-supplier relationships in industrial markets: A transaction cost explanation. *Journal of Business Research*, Vol. 32, No. 1., pp. 57-66.
- Ho, P., and Tsui, C. (2009). The transaction costs of Public-Private Partnerships: implications on PPP governance design. presented at the meeting of the Lead 2009 Specialty Conference: Global Governance in Project Organisations, South Lake Tahoe, CA.

- Hughes, W. P., Hillebrandt, P., Greenwood, D. G., and Kwawu, W. E. K. (2006). *Procurement in the Construction Industry: The impact and cost of alternative market and supply processes*. London: Taylor and Francis.
- Hummel S.A., Rak L.J., and Gray J., (1996) Contemporary business statistics with Canadian appliance 2nd edition Pretite Hall, Canada incorporation: Ontario Vol. 1, pp 47-56
- Jensen, M. C., and Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs, and ownership structure. *Journal of Financial Economics* Vol. 3 pp.305-360.
- Kajewski, S., Cheung, E., and Chan, A. P. C. (2010). The researcher's perspective on procuring public works projects. *Structural Survey*, Vol. 28, No. 4, pp. 300-313.
- Kakwezi, P., and Nyeko, S. (2010). *Procurement processes and performance: Efficiency and effectiveness of the procurement function*. Retrieved July 13 2015 from http://www.ippu.or.ug/index.php?option=com_docman&task
- Kashiwagi, D., Parmar, D., and Savicky, J. (2003) The impact of minimising specifications and management at the university of Hawaii. *Journal of Facilities Management*, Vol. 2, No. 2, pp.131-141
- Kpodo, S. (2011) *General risk management principles: The quantity surveyor Issue 1, June 2011*
- Laryea, S. (2011). *Risk accountability in the tender process of contractors in Ghana and UK*. *International Journal of Project Organisation and Management*, 3 (3-4), 290-306.
- Leadra, O., Austeng, K., Haugen, T.I and Klakegg, O.J. (2006) Procurement routes in public building and construction projects, *Journal of Construction Engineering Management*, Vol. 132, Issue 7, pp. 689 – 696.
- Martins, R.; Serra F. R.; Leite A., Ferreira, M. P.; and Li, D. (2010). Transaction cost theory influence in strategy research: A review through a bibliometric study in leading journals. *Center of Research in International Business and Strategy. Indea - Campus 5, Rua das Olhalvas, Instituto Politécnico de Leiria, 2414 - 016 Leiria Portugal*. Working paper n° 61/2010 April 2010

- Mensah, S., and Ameyaw, C. (2012). *Sustainable procurement: the challenges of practice in the Ghanaian construction industry*. Proceedings 4th West Africa Built Environment Research (WABER) Conference, 24-26 July 2012, Abuja, Nigeria, 871-880.
- Merrow, E. W. (2011). *Industrial megaprojects: Concepts, strategies and practices for success*. Hoboken, New Jersey: John Wiley and Sons Inc.
- Millennium Challenge Corporation (MCC), (2009) *Program procurement guidelines*, October 23, 2009.
- Murdoch J and Hughes W (2008) *Construction Contracts: Law and Management*. 4th ed., London: Taylor and Francis.
- New South Wales Government, (2008) *Procurement practice guide: Procurement method selection*. NSW Client Support Centre, Britain
- Organisation for Economic Co-Operation and Development/ Development Assistance Committee (OECD-DAC) (2011), *Strengthening country procurement systems: Results and opportunities*. Available online at www.oecd.org
- Pavel, J. (2009). *Veřejné zakázky v České republice*. Studie Národohospodářského ústavu Josefa Hlávky. Praha, Národohospodářský ústav Jana Hlávky, 2009.
- Poel, P. (2005). *Informal institutions, transaction costs and trust. A case study on housing by the migrants in Ashanti-Mampong, Ghana*. Masters thesis presented for the study International Development Studies at the University of Amsterdam, 2005.
- Rajeh, M., Tookey, J., Rotimi, J. O. (2014). *Determining the magnitude of transaction costs in construction procurement systems: An exploratory study*. Retrieved on July 11, 2015 http://www.irbnet.de/daten/iconda/CIB_DC27491.pdf.
- Rawlence, S. (2010). *Integrating transaction cost and institutional theories in an emerging market context: The case of the Tiger Leaping Gorge, Southwest China*. PhD Dissertation, The University of Edinburgh, 2010.
- Reimarová, H. (2011): *Transaction Costs in Public Procurement* (Diploma thesis). Prague. Charles University in Prague, Faculty of Social Sciences, Institute of Economic Studies. 78 pages. Supervisor: PhDr. Mgr. Jana Chvalková

- Rezakhani, P. (2012) —*Classifying key risk factors in construction projects*®, *Buletinul Institutului Politehnic Din Iași Publicat de Universitatea Tehnică „Gheorghe Asachi” din Iași Tomul LVIII (LXII), Fasc. 2, 2012 Secția Construcții. Arhitectură, Kyungpook National University, Korea*
- Stauffer, G. K. (2006). Design-bid build: a procurement method selection framework. MSc Thesis presented to the School of Civil Engineering; Purdue University.
- Tadelis S. and Williamson O. (2010). Transaction Cost Economics. 2010
- Thwala, W. D. and Mathonsi, M. D. (2012) Selection of procurement systems in the South African construction industry: An exploratory study. *Acta Commercii 2012, ISSN: 1680-7537*.
- Turner, J. R., and Simister, S. J. (1997). *Project contract management and a theory of organization*. London: Taylor and Francis.
- Tyler P. (2010). Benefits of design-build. *BandC Midsouth, Spring 2010* (pp14-15).
- Van Weele, A J. (2010). *Purchasing and supply chain management: Analysis, strategy, planning and practice* (5th ed.). Andover: Cengage Learning.
- Wenan, Y., and Magnum, W. (2010). A Study on Constructing Index Systems of Construction Market Performance Appraisal. *American Economic Review*, Vol. 61, No. 2, pp.112-123.
- Williamson, Oliver E. 1975a. Markets and Hierarchies: Analysis and Antitrust Implications. New York: Free Press.
- Williamson, Oliver. 1979. Transaction cost economics: the governance of contractual relations. *Journal of Law and Economics*, 22 (2): 233-261.
- Williamson, Oliver E. 1983. "Credible Commitments: Using hostages to support exchange," *American Economic Review*, 73 (September): 519-540.
- Williamson, O. E. (1985). Assessing Contract. *Journal of Law, Economics, and Organization*, American Journal of Sociology, Vol. 1, No. 1, pp. 177-208.
- Williamson, Oliver E. 1985. The Economic Institutions of Capitalism. New York: Free Press.
- Williamson, Oliver E. 1991. "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives," *Administrative Science Quarterly*, 36 (June): 269-296.

- Williamson, Oliver E. 1993. "Transaction Cost Economics and Organization Theory," *Institutional and Corporate Change*, 2 (2): 107-156.
- Williamson, Oliver E. 1996. *The Mechanisms of Governance*. New York: Oxford University Press.
- Williamson, Oliver E. 1999. "Public and Private Bureaucracies," *Journal of Law, Economics, and Organization*, 15 (April): 306-342.
- World Bank (2003), *Ghana country procurement assessment report – 2003 main report vol. 2*
- World Bank (2008): *Ghana 2007 external review on public financial management, Vol. 2, Public Procurement Assessment Report*
- Williamson O E (2010) "Transaction Cost Economics: The Natural Progression". *American Economic Review* **100(3)**: 673-690.
- World Bank (2011) *Guidelines - Procurement of goods, works, and non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers*
- Zou, P.W.X., Zhang, G., Wang, J. (2006) *Identifying key risks in construction projects: life cycle and stakeholder perspective*. Sydney: Faculty of Built Environment, University of New South Wales

APPENDIX 1 SURVEY QUESTIONNAIRE

THE COMPARATIVE ESTIMATION OF THE IMPACT OF TRANSACTION COST OF TRADITIONAL AND DESIGN-BUILD PROCUREMENT SYSTEMS IN PUBLIC CONSTRUCTION WORKS.

Please respond to the following by either writing in the blank space provided or
ticking the appropriate box.

SECTION I

1. Name of Procurement Entity

(Organization).....

.....

.....

2. Which level of procurement do you belong to?

☐ Procurement Unit

☐ District Tender Committee

☐ District Review Board

☐ District Work Department

Evaluation Panel

☐ Others (Specify).....

3. In what capacity do you work in the procurement organization?

.....

4. How many years of experience do you have in procurement practices?

☐ Less than 3 years

☐ 3 – 5 years

☐ 5 – 12 years

more ☐ than 12 years

5. What is the average number of construction procurements your organization makes annually?

- ☐ Less than 3
- ☐ 3 – 6
- ☐ – 10
- ☐ More than 10

6. How well do you know the Public Procurement system according to ACT 663 (2003)?

- ☐ Very well
- ☐ Fairly well
- ☐ Not so well
- ☐ Barely know

7. What is your general impression of the system?

- ☐ Very efficient and convenient
- ☐ Fairly efficient and convenient
- ☐ Efficient but not convenient
- ☐ Inefficient and inconvenient

8. Do you know the concept of Transaction cost?

☐ Yes

☐ No

9. If yes, was your knowledge on it acquired formally?

☐ Yes

☐

No

10. What type of system does your construction procurement unit utilize?

☐ Traditional system

☐ Design-build system

11. Do you believe that there is a relationship between the transaction costs and the procurement system used?

☐ Yes

☐ No

12. In your opinion, why does your organization prefer this system?

.....

.....

.....

.....

.....

13. Averagely, what stage of your procurements incurs most cost?

- ☐ Information
- ☐ Administration
- ☐ Enforcement

14. Please complete the table with appropriate values and answers for the
Estimated Transaction Cost for Design-Build method of Construction
Procurement for project constructed within the past six (6) Months

Paradigm	Pointer	Transaction Cost Amount
Information Cost (INFO)	Information Gathering (IG)	
	Communication (CM)	
Procurement Cost (PROC)	Attending Meeting (AM)	
	Translation of client's Needs (TN)	
	Project Preliminary Design (PD)	
	Transition Observation(TZ)	

	Training (TR)	
	Site visits(SV)	
	Project Preliminary Design (PD)	
Administration Cost	Contract Administration (AD)	
(ADMIN)	Conflicts resolution (CR)	
	Decision making (DM)	
Enforcement cost (ENFO)	Contract Enforcement(EN)	
	Verifying Compliances (CV)	

Estimated Transaction Cost for Traditional Method of Construction Procurement for the same project

Paradigm	Pointer	Transaction Cost Amount
Information Cost (INFO)	Information Gathering (IG)	
	Communication (CM)	

Procurement Cost (PROC)	Attending Meeting (AM)	
	Translation of client's Needs (TN)	
	Project Preliminary Design (PD)	
	Transition Observation(TZ)	
	Training (TR)	
	Site visits(SV)	
Administration Cost (ADMIN)	Contract Administration (AD)	
	Conflicts resolution (CR)	
	Decision making (DM)	
Enforcement cost (ENFO)	Contract Enforcement(EN)	

	Verifying Compliances (CV)	
--	--------------------------------	--

15. How do you find the evaluation and record management system in your organization?

- ☐ Very effective
- ☐ Fairly satisfactory
- ☐ Poor
- ☐ Inexistent

16. What mechanisms are in place in your organization to ensure transparency and reduce transaction cost?

.....

.....

.....

.....

17. What measures do you think the government can put in place to ensure reasonable procurement transaction costs in the public sector?

.....

.....

.....

.....

.....

KNUST

