

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
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TOPIC:

**FACTORS INFLUENCING THE SELECTION OF PROCUREMENT
METHODS FOR CONSTRUCTION WORKS IN GHANA**

**A Thesis submitted to the Department of Building Technology in
partial fulfillment of the requirements for the award of Master Of
Science (MSc) in Procurement Management**

BY:

BENEDICTA BOATEMAA AFRIYIE
(PG9154813)

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DECLARATION

I hereby certify that all material contained within this report is my own work towards the award of MSc Procurement Management and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University.

All sentences or passages quoted in this dissertation from other people's work have been specifically acknowledged by clear cross-referencing to the author.

Benedicta Boatemaa Afriye
(PG9154813)	Signature	Date

Certified by:

Dr. Gabriel Nani
(Supervisor)	Signature	Date

Certified by:

Dr. Bernard Kofi Baiden
(Head of Department)	Signature	Date

ABSTRACT

Procurement according to the Aqua Group, (1999) is the procedure whereby goods and services are obtained or acquired from other sources which attracts some fee. The importance of selection of a procurement method has been pointed out by (Chan, 1996), who found out that the procurement method selected can influence the time performance of construction projects. The main intent of this study was to examine the various factors that influence the selection of the methods for procurement of works in Ghana. To achieve this goal, the study wanted to attain the research objectives, which are: to identify the various procurement methods frequently used for works in Ghana, to identify the key stakeholders who participate in the selection of procurement methods for works, and to identify the factors which are considered when deciding on the method of procurement to use for works. A review of literature identified six (6) procurement methods frequently used for construction projects in Ghana i.e. NCT, ICT, Two-Stage tendering, RFQ, Restricted tendering and Single Source. Seven (7) factors were also identified as having the tendency to persuade the method of procurement that will be considered for selection in construction projects in Ghana. These factors were speed, estimated value of the project, flexibility in accommodating design changes, quality specification, complexity of project, security reasons and tendency for disputes and arbitration. The strategy and method used was a questionnaire survey and a descriptive statistics (mean and standard deviation), non-parametric chi-square, cross-tabulation and frequency analysis with percentages were used to do the analysis. The study revealed that NCT method was frequently used for construction projects in Ghana. It was also observed that, there were seven (7) most significant factors that has an influence on the method of procurement to select for a project and also “the estimated value of the project” seem to have a strong influence on the method of procurement to be selected for a project. In conclusion, the NCT and RT were the most dominant methods used and both are deemed to be competitive. It is therefore highly recommended that the key stakeholders involved in the method selection for use should consider carefully all the available procurement methods for works; study them, analyze their pros and cons to know their effect on the project. They should also critically look at the selection criteria of the method to be adopted and know how it will effectively help the project. Lastly, the client’s project performance criteria must be established and match against the performance outcomes of the various methods to be considered before selecting it for the project.

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DEDICATION

I dedicate this work to my loving husband, EDWARD YAW AFRIYIE, and my daughters,
NNSHIRA ABENA KONADU AFRIYIE, KENNSA YAA POKUAAA AFRIYIE and YENESDA
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LIST OF ABBREVIATIONS AND ACRONYMS

PPA	Public Procurement Authority
NCT	National Competitive Tendering
ICT	International Competitive Tendering
RT	Restricted Tendering
PP	Public Procurement
CPS	Country Procurement Systems
CGIAR	Consultative Group on International Research
AfDB	African Development Bank
UN	United Nations
PU	Procurement Unit
ETC	Entity Tender Committee
GhIA	Ghana Institution of Architects
GhIS	Ghana Institution of Surveyors
GhIE	Ghana Institution of Engineers

CHAPTER ONE

INTRODUCTION

1.1Background

Construction project procurement has a scope which is quite immense. It deals with bringing together as well as organizing multiples of firms and organizations that are brought in to design, manage and build construction projects. Some of these projects include houses, shopping malls, office structures, bridges, roads etc. The processes and outcomes involved in construction projects affect all the people in the industrialized world. The Ghanaian construction industry contributes an average of 8.5% of its Gross Domestic Product (Ghana Statistical Service, 2007), therefore the construction industry's efficiency in this country is very important. Construction works in almost every country are procured through a number of methods be it open competitive, restricted, selective or negotiated. Project procurement can be described as processes whereby construction products are obtained by clients.

Procurement comes out of the word procure which literally means “to obtain by care or effort”; “to bring about” and “to acquire”. Method is about "a procedure, technique, or way of doing something, especially in accordance with a definite plan". In this context, project procurement focuses mostly on the processes, procedures and organized methods that are required to obtain or acquire a construction project. (Masterman, 1996) narrated project procurement as structures put together or designed as a blueprint which can be used to design and execute construction projects for clients.

The importance of selection of a procurement method has been pointed out by (Chan, 1996), who ascertained that the procurement method have a great influence on the time performance when it

comes to construction projects. A project which is driven by the different types of procurement methods always has a massive effect on time. Similarly, (Naoum, 1991) affirmed that the procurement method that were being used were having major effects on cost and time overruns. (Bowen *et al.*, 1999) was also of the view that the selection of procurement methods inappropriately was the major cause of the construction industry's poor performance. This brings about the effect on project delivery when choosing a particular procurement method type for a project. The choice of the best method for procurement for a particular project to be adopted by the client has a great effect on the performance of the project.

1.2 Problem statement

The choice of a specific Procurement method to use for a Construction project is a huge menace that the construction industry faces and it is dependent on factors such as type of client, level of risk, time availability, etc. The type of procurement method to be adopted by the client has a great effect on the performance of the project. Many projects face poor performance when the appropriate method of procurement is not used. Some tend to have higher project costs exceeding the estimated cost; others end up not selecting the right contractor capable of completing the works which delays the works and cause the client not to achieve value for money as intended.

The unveiling of the Public Procurement Act, 2003 (Act 663) made the procurement of public projects fair, transparent, efficient and effective. The Act 663 clearly states the various methods to be used as and when, depending on the project type and worth. Ever since Ghana discovered oil in commercial quantities, it has become important for the construction industry to play a vital role in the nation's development because it is our dream to become a middle income country by 2015. There are many procurement methods in recent times available for use in the industry but the study

concentrated on the methods of procurements normally used in Ghana i.e. Competitive Tendering, Two-Stage Tendering, Restricted Tendering, Single-Source Tendering and Request for Quotations.

Selecting an appropriate tenderer to undertake a particular project is normally based on the lowest evaluated price according to the Act 663 and this normally brings about problems along the project's lifetime. Researchers and Practitioners have then realized that considering the lowest evaluated price is not promising enough to be a criterion to select a tenderer in order to achieve the overall lowest project cost upon completion of the project (Wong et al., 2001). Therefore, it is very important to always consider all the factors that are important during contractor selection for a construction project that was why this study was conducted to investigate into those factors that influenced the selection of a particular procurement method for a project.

1.3 Research questions

The research questions that were set for this study were;

2. What are the various procurement methods that are used for construction projects in Ghana?
3. Which key stakeholders decide on the procurement method to be used for a project?
4. What are the factors that account for the selection of a particular method of Procurement in Ghana's construction industry?
5. What is the effect of the chosen method on project performance?

1.4 Aim and Objectives

1.4.1 Aim

This study is aimed at investigating the factors that influence the selection of the methods for public procurement of works in Ghana.

1.4.2 Objectives

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

1. To identify the various public procurement methods frequently used for works in Ghana.
2. To identify the key stakeholders who participate in the selection of the public procurement methods for works.
3. To identify the factors that are considered in the selection of public procurement methods for Works.

1.5 Methodology

The research design that the study adopted was a descriptive survey design. The target population of the research comprised of people from PPA, Government Institutions and Construction Consultancy firms in the Ashanti region, purposively, Kumasi. Simple random sampling was used to determine the sample size and the instrument used to collect data was questionnaires.

1.6 Significance of study

The intent of this research was to widen the knowledge of the effect of a chosen procurement method on project performance in Ghana. It will help the Public Procurement Entities to know the

right method of procurement to adopt for each project so that there will be no anticipated problems. This study also investigated what the clients considered when choosing a particular procurement method to use for their projects.

1.7 Scope

The study was limited to some selected stakeholders such as procurement professionals, consultants and clients in the Ashanti Regions of Ghana. The main focus was on Public Procurement of works and this was because of the limited resources that were assigned to this research.

1.8 Organization of the Study

The study was grouped into five (5) chapters. Chapter one covers the background to the study, problem statement, research questions, aim & objectives of the study, methodology, significance of the study, the scope of the study. Chapter two will review the literature on the various methods of procurement available, the methods that are normally used for works, the factors that influence the adoption of a particular method and the stakeholders involved in the participation of selecting the procurement method for a project. Chapter three talks about the methodology that was used for the study. It covers the research design, the population, sample and sampling procedures, and data collection. Chapter four, talks about the presentation of data results as well as discussion of the findings. The last chapter which is chapter five provides the summaries, conclusions and recommendations made from the findings of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents an extensive review of the related literature regarding the topic being studied. It considers the various procurement methods available that are normally used for works, the factors that influence the adoption of a particular method and the stakeholders who are involved in selecting the various methods of procurement for a project and lastly how these methods adopted affect project performance in terms of cost, quality and time.

2.2 Effect of Procurement on Construction Projects Performance

Performance can be described as the degree at which a task can be accomplished by measuring it against the available standards in terms of speed, accuracy, cost and its completeness. Generally, a successful project is a project which is done completely within its set budget, finished on time, produced according to the set specifications and to the stakeholder's satisfaction. (The project management Institute, 2004) agrees that, from the perspective of project management, it talks more about the needs and expectations of the stakeholders being either exceeded or met when dealing with a project. That is considering the major project elements. That is time, cost and quality.

The performance of construction projects has always been a critical issue of concern to globally because projects consists of clearly defined goals which are expected to be achieved and resources which are expected to be judiciously utilized.

According to (Pinto and Slevin, 1998) there are two main parameters for project performance. These are:

- I. Internal Factors – This consists of three major variables, these are quality, cost and schedule.
- II. External Factors - This involves how the major stakeholders are satisfied with the performance of a specific project and how the organization's effectiveness is perceived.

Chan and Kumaraswamy, (2002) also posited that construction time is a crucial and important factor because it serves as a benchmarking tool for accessing the projects performance and the efficiency of the project organization. Also, it is said that procurement represents a very crucial part in a project's success. Dissanayaka and Kumaraswamy, (1999) agreed that choosing the wrong procurement system attributes greatly to the poor performance of construction projects. Elfving, (2005) agreed that majority of the cogent factors that have massive effect on costs are mostly qualitative. Some of these factors are client priority on construction time; the planning capability of the contractor, the various procurement methods market conditions among other things the level of construction activity.

2.3 Methods of Procurement for Works

Ashworth and Hogg, (2007) explained a Procurement method to be managing the absolute procedures used in construction when delivering projects. The methods of Procurement have become a vital concern in the construction industry because the acquisition of these projects always incorporates an array of processes which are sequential and interrelated. There are also a lot of procurement methods available for an entity to adopt in the procurement of construction projects. The developments of Procurement methods applicable today metamorphosed from the fact that

construction project delivery ought to be enhanced; that is to say the projects has to be completed within the assigned budget prepared as well as the stipulated time. According to (Daniel, 2006) procurement methods importance lies on the optimization of all the limitations that are involved in delivering projects, thus cost, time and quality. Adesanya, (2008) also agreed in his studies that, projects procurement has continually been a challenge to the managers of investments, the design team and contractors. Babatunde et al (2010) also suggested that, the client normally spells out his brief to the Consultants .i.e. Architect which he in turn uses that to produce a design before the construction of the project can commence. The Architect and Engineers normally liase with the Quantity Surveyor to prepare the designs to be used for the project. The role of the Quantity Surveyor here is to provide explicit advice on cost implication of the design variables that will be used for the project. After this a tender process is commenced and it produces a contractor who will be in charge of the project execution. After the contract award, the lowest evaluated and most responsive tenderer is selected to finish all the works as per the designs received under the Consultants supervision. According to (Daniel, 2006), this became the traditional sequence which was followed by all and now it is being called Design-Bid-Build. Other alternatives of procurement methods which were contrary to this format therefore emerged as the “non-conventional” procurement method.

Researchers have established that the evolvement of the many other alternatives of the procurement methods is as a result of reducing the basic element of time and cost during delivery. Presently, there are a quite a number of procurement methods where all of these methods aim at meeting a quality product at a very economical cost. (Babatunde et al, 2010).

According to (Love et al., 1998) who mentioned in (Davis et al., 2008) that in the procurement delivery systems, there are four (4) main types for construction projects which are detailed as follows:

- i. Traditional
- ii. Design and Construct
- iii. Management Procurement
- iv. Collaborative

2.3.1 Traditional Procurement

(Oladinrin et al, 2013) stated that the traditional procurement method which is also referred to as the competitive bid method is a type of procurement method where three (3) consecutive stages are tagged as tasks that are detached from each other. These stages are the Design, Bid and Build. In this method, the procuring entity accepts that since the stages are disjointed, the design stage will be performed differently from the construction stage. Due to this, the Procurement Entity appoints a Consultant to take care of the design and cost control whereas the responsibilities of carrying out the works will solely lie on the Contractor. The duty of the Contractor extends to the workmanship and materials as well as works to be done by subcontractors and suppliers if any.

Davis *et al*, (2008) also posited that the traditional procurement method sometimes uses the negotiated type of tendering or the two-stage type which is at times called the "Accelerated Traditional Method". This allows both the design and project execution to run parallel to each other to a limited extent and also an early start on site but it involves less certainty about cost. Under the traditional method of procurement, Davis *et al*. (2008) identified three (3) different types of contracts.

These are:

- **Lump sum contracts** – with this system, the overall cost of the project is decided on even before the project itself commences, and an agreement is prepared stating the amount.
- **Measurement contracts** – with this system, the overall project cost is veraciously known when the works are completed and all works measured.
- **Cost reimbursement** – with this system, the project cost is known based on the absolute costs of plants/equipments; materials and labour. After computing all this, a fee is added up to cater for the Contractors overheads and profit.

According to Turner (1990) people always end up using the traditional Procurement method because of some conditions. Some of these conditions are; when a works programme to be used makes provision for adequate time; also when the design that the Consultants bring about is warranted; when a client wishes to employ a designer separately from a Contractor; when the client wants to know the project cost before commencing the construction itself; where the quality of the product is of utmost importance; and also when the risks identified on the project needs to be shared amongst the owner and the contractor.

From researches it was observed that using the traditional method has some of its own advantages and disadvantages. Some of the main advantages according to Davis et al (2008) are that;

- There is accountability because selection is done competitively
- There is fairness because tenderers tender using the same information provided to all
- When the owner manages to influence the design lead directly and this goes out to expedite its quality in the design generally.

- When the cost of project is determined and accepted by all the team members before the contract is awarded.
- Contract variations are most at times simple to organize and managed.
- This procurement method has been tried and tested and the construction market is familiar with this method.

On the other hand there are also disadvantages of using the traditional procurement method. Davis et al, (2008) talked about some of the main disadvantages in their studies is that;

- The method can mostly be prompt in its process. A design that is not closely defined can even be used to prepare the bidding documents. Though this can lead to reducing costs as well as time for the project and also creating disputes.
- The overall project duration for the method takes a very long time comparatively because of its nature which uses a sequential strategy and the project execution cannot be started before the designs are available.
- The contractor is not invited at the design stage because his inputs are not needed for the planning of the project.

2.3.2 Design and Construct Procurement

As opined in Turner (1997) in this method, the contractor is absolutely responsible for designing and executing the project. Oladinrin et al (2013), also agrees that this procurement method allows the contractor to take full responsibility of the construction cost as well as the design cost at an earlier stage as compared to the traditional method. That is, he takes care of all the stages in the project, right from the conception period through the design stage to the execution stage.

Davis et al (2008), also argues that the duties of the contractor should be explicitly stated when the contract is being prepared and also state the extent to which the contractor is liable for the design unless otherwise stated in the contract. The design liability is absolute in its sense, therefore the contractor warrants fitness for the purpose intended. If the contractor uses external consultants in the design of the project, it should be clearly stated and understood by all parties before acceptance of tender is considered.

The design and construct method proposes conviction on the project costs and generates cost benefits. The client can be offered competitive price because the contractor is given the freedom to use their purchasing power and market knowledge (Davis et al, 2008). When the design and construction is closely integrated, it brings about a more productive programming and always ensuring a quicker commencement on site.

According to Turner (1990) number of series of variations of design and construct prevail and this includes:

- Direct – that is where no contention is attained in tenders. Some potential contenders are apprised even before the process of tendering but they select only one of these tenderers.
- Competitive – tenders are accepted through competing contractors on designs and prices
- Develop and Construct – this is where an unperformed stage of the building is designed by consultants, then competitive tenders received from some selected contractors is used to establish and finish the design in order to be used to execute the project.
- Package deal – this method is adopted for potential bidders who are in competition for a project and will use a substantial portion of their own or that of somebody's proprietary

building system or they will be executing alterations which are repetitive in nature. When the system is used, the capacity of innovation becomes limited.

Novation – This is the stage at which the contractor steps in to take charge of things in the earlier stages of the contract from the client, finishes the whole design and then goes ahead to construct the project.

Turner (1990) also in his studies outlined some conditions for the use of design and construct procurement. These include:

1. When the building is functional rather than prestigious
2. When the programme can be sped up by super-imposing the design and construction exercises.
3. When a single organization is expected to take full responsibility as well as all the risks involved in the design and execution.
4. When the building is simple, not complicated and doesn't need any technical attention.
5. When the brief that was used to determine the scope design for the project can change.

According to (Davis et al, 2008) the advantages of Design and Construct Procurement include:

- There is certainty of price before the beginning of the construction, when the client doesn't do any changes to the original brief given.
- The client usually accords with just a single firm and this really cut down the needed resources and also the time used to contracting designers and contractors separately.

- This method improves constructability because of what the contractors contribute during the design stage.
- The Project time can be reduced due to overlap of design and construction activities.

According to (Davis et al, 2008) the disadvantages of Design and Construct Procurement include:

- The procuring entity can experience some difficulties in the preparation of an adequate and sufficiently comprehensive brief.
- There is difficulty in the evaluation of tenders because each tenderer's design, project programme and price may be different.
- It will be expensive for the procuring entity to change the project scope.

2.3.3 Management Procurement

There are considerable alternatives of Management Procurement forms in existence. These include; Management Contracting, Construction Management and Design and Build (Davis et al, 2008). The procurement methods have exquisite differences amongst them. The Contractor has straight forward links which is contractual to all the other works contractors, and he has absolute power over all the construction works in the case of Management Contracting. Whereas with the Construction Management method, remuneration is paid to the contractor to professionally take charge of the management, development of a programme and coordinating the design and construction activities.

2.3.3.1 Management contracting

According to Seeley (1997) Management contracting is a scheme that selects a Main Contractor using the competitive method or just negotiates with the contenders so that he works hand in hand with the professional employed. Oyegoke (2001) also posited that “in a management contract, the

permanent works are constructed under a series of construction contracts placed by the management contractor after approval by the client.” Sub-contractors are also appointed to undertake all the other physical works through a competitive tendering. This normally has a Management Contractor who is also the same as the Main Contractor. The Management Contractor administers management expertise for remuneration. At the feasibility stage of the project, the Management Contractor is selected to join the team of consultants employed by the client. The Management Contractor at this stage comes in to help in working out the design programmes well as the operations on the site.

He also does management and coordination of the work packages to the sub-contractors individually and making available site services for the works, plants/equipments, amenities etc. for the project execution (Oladinrin et al., 2013). The remuneration given to the Management Contractor doesn’t depend on the cost of workdone but rather on the extent and nature of the workdone. For an enormous and complicated project that shows some explicit complications which weighs against the use of a fixed price contract procedures.

Seeley (1997) also opined that, usually the procedures integrates the following activities and requirement but there is a wide ambit of views surrounding the best strategies to be altered in management contracting. The Management Contractor is prevented from using the type of labour which is employed directly. He is to plan, manage and organize the project. He also agrees with the professional team so that they divide the works into various packages. He then brings on board his own site supervisor, technical and administrative staff so that they can run the contract for him. This approach unifies a three (3) member team made up of the owner, designer and the construction manager and this allows the owner of the project to get the chance to fully partake in the whole execution process. The owner employs a construction manager for a fee and he represents the

owner and takes all responsibilities of the owner. He is present at every stage of the project as the owner's representative.

2.3.3.2 Construction Management

The Oladinrin et al (2013) described construction management as the group of services which exceeds the expertise of the Architectural and Engineering services affiliated to construction works done at the pre-design, design and construction phases that helps in controlling time, cost and quality of new projects. During Professional Construction Management, project planning, design and construction stages are treated as integrated tasks. Adesanya (2008) commented that this particular approach incorporates a team comprising three (3) parties made up of the owner, designer and a construction manager in a non-adversary relationship.

This gives the owner an avenue to get involved completely in the entire construction process. In this method, the owner employs the services of a Construction Manager who acts exclusively in the owner's interest at every stage of the project. The owner then pays a fee to the construction manager for all services rendered. Alhamzi and McCaffer (2000) gives advice on how to use the funds made available for the project to the maximum; also on how to control the scope of the works and doing better scheduling of the project; avoid delays as much as possible as well as changes and disputes; upgrading the project design and qualities of the project execution; and also maximum adjustability when contracting and procuring. During this period, the team always works together from the inception of the design stage up until the project is completed, with all having a common objective which is having the owner's best interest at heart.

The importance of bringing in the Construction Manager during the entire design process as a collaborative member who should also be independent is to help ensure that all major decisions

about the design is balanced by analyzing the cost consequences properly and also the impact the design will have on the project schedule (Alhamzi and McCaffer, 2000).

The role that the Construction Manager plays on the building project varies substantially and can be undertaken under quite an array of contractual terms. The most purest type of construction management is when the Construction Manager represents the client as his agent and a professional consultant who provides estimates, control costs and schedule services and also undertakes administrative responsibilities during the project execution. All contracts under this arrangement are executed straightly between the owner and the contractors. This approach allows the construction work to be battered into pockets of trade contracts, and this helps eliminate the use of more than one General Contractor. When the General Contractor is eliminated, it avoids fees duplication, increased costs and general conditions costs which are sometimes incurred by the client.

Walker (1999) outlined some advantages of Construction Management approach. These include:

- There is high competition in the construction industry when it comes to enormous projects. This is because these big projects can be packaged in such a way that, it can be split into more manageable activities.
- There is early construction management expertise involvement
- It improves public accountability
- There is limited contract variations
- The design team hardly comes face to face with the supervising consultants which reduces confrontation.

2.3.3.3 Design and Manage

A design and manage system is quite the same as management contracting. With this type, the contractor is normally paid remuneration and he immediately takes responsibility for the design team as well as the works itself (Davis et al., 2008). According to (Turner, 1990) the variations of design and manage that are available are:

- Contractor – the design and management of the works are done by the project design and management firm who takes a fee and conveys the project by taking on a works contractor as the projects sub-contractor to come in and design and/or construct.
- Consultant – this is a client's agents who comes in to design and manage the works, accomplishes a subcontract tender from the works contractors and later have a straightforward contract with the client.

2.3.4 Collaborative Procurement

Cartlidge, (2002) described collaborative procurement as the method where the owner structures a scheme to be used to administer the whole project whereby he/she can select amongst the three (3) other categories of procurement systems which is most befitting for him/her. In this system, the Quantity Surveyor (Q.S) presents an array of services as his major role and these services include contractual issues. This also gives the QS a chance to be an advisor who is independent within the system.

2.4 Procurement Methods for Construction Projects in Ghana

Ghana's Public Procurement Act 663 (2003) outlines some procurement methods for use in the selection of contractors to undertake projects wholly of partly financed by the government of Ghana. Below are some of these procurement methods;

- **International Competitive Tendering (ICT)** – ICT as a method of procurement of works has increasingly been in use and this is as a result of an overall increase in using the Country Procurement Systems (CPS) (European Networks on Debt and Development, 2010). This is mainly due to the rapid infrastructure development in the countries which are generally of high value i.e. above GHc 2 million and also increased complexity of the scope and nature.

This procurement method is open to international and national construction firms. These firms are informed promptly about the entities requirements and also let them have access and have the chance to compete on the required works contracts. Adverts are placed in such a way that all those who are eligible and have the necessary facilities can partake in the tender. It is a competition which is open to the general public and as a result requires formal tendering procedures and documentation (Acquaye, 2011). The Public procurement manual further goes ahead to talk about the International Competitive Tendering. ICT is normally used for high value or complex procurements, or where the works by their nature or scope are not likely to attract local competition. The Public Procurement Act 663, Schedule 3 also gives a requirement where the ICT method of procurement could be used. These are thresholds which the value of works to be procured must not exceed. The contract value threshold stated in the Act 663 for this procurement method is above GHc 2 million.

The World Bank and African Development Bank (AfDB) rules and regulations associated with ICT is much more elaborative and exhaustive as compared to that of Ghana's tendering procedures outlined in Act 663.

- **National Competitive Tendering (NCT)** – This method of procurement can be described as a practice where only local contractors or suppliers are considered in the advertisement of

a tender. The CPS of Ghana strictly reserves the procurement of works contract by NCT for the sole prerogative and right of domestic companies in Ghana (Act 663, Section 44).

This method is open to only national or local firms, and it is done through open tendering. For works procurement which has a complicated technical requirements and standards, it is highly recommended to use a two-stage tendering method. Under this method, they invite tenderers to submit an unpriced technical proposal and later on when there is any need for clarifying some technical adjustments, they submit the final technical proposals which are now priced (Acquaye, 2011).

According to the Public Procurement Manual, NCT is only appropriate for works which are of lower value, where by looking at its characteristics; it will never catch the attention of the foreigners. The Procurement Entity can also with justifiable reasons to the Public Procurement Authority restrict the tendering to only domestic contractors. The contract value threshold stated in schedule 3 of the Act 663 for this procurement method is more than GHc 50,000 up to GHc 1.5 million.

The World Bank and AfDB on the other hand allow foreign companies who intend to partake in any of their projects can do so with no inhibitions or restrictions.

- **Price Quotation** – This is for procurements with small amounts. With this system, three to six selected contractors are invited to submit tenders for a specific procurement. This method is usually based on comparing price quotations submitted by the tenderers (Acquaye, 2011). According to the Public Procurement Manual, it refers to this method of procurement as "shopping" since it makes the basis on looking at other price quotations received from other suppliers or contractors, at least 3. This method is normally used for works that are widely available and some of its activities are repairs, redecoration and buildings that have minimum alterations and don't need detailed specifications. A simple

site visit by the contractor can even help him give an estimate. The CGIAR (2008) also argues that this method of procurement bases his selection on looking at all the price quotations received from three (3) to five (5) organizations for small works.

Schedule three (3) of Ghana's Public Procurement Act, 663 (2003) stipulates that this procurement method is appropriate for works that have an estimated contract value of up to fifty thousand Ghana Cedis (GHc 50,000)

- **Restricted Tendering** – This is a method of procurement which only invites the firms that they think can perform the works without inviting the general public. It is normally used for works that are specialized in nature or can be executed by a specified group of contractors subject to approval by the Public Procurement Authority of Ghana. All the processes required in open competitive tendering are applied here (Acquaye, 2011). According to the Public Procurement Manual, this method of procurement allows entities to invite the contractors that they already know or have a shortlist of some pre-registered contractors that they send invitation to. This method can only be used when PPA grants approval to proceed. It is a method that is appropriately used for projects that are specialized in nature, requires the safety of the public which wouldn't be safe to have a tender that is open competitive. It can also be used for projects which are urgent in nature, which has a limited number of potential contractors and lastly used mostly when using a competitive method which is open fails to award a contract for a project.
- **Single Sourcing** – This is a closed tender where only one contractor is invited to submit his tender. This method is also subject to approval by the public Procurement Authority of Ghana (Acquaye, 2011). According to the Public Procurement Manual, this method of procurement is without competition, thus a direct procurement and can only be used when

the PPA gives approval specifically according to its guidelines. Single source method can be adopted for remedial works projects that are urgently needed and also when only one firm can provide for the works i.e. in the case of a monopoly.

According to (World Bank, 2011), single source tendering is also known as sole sourcing or direct contracting and it normally involves only one contractor to execute the contract works. However, the (AfDB, 2012a) is of the view that when procurement is done through this method, it denies the companies the benefit of open competition.

- **Two - Stage Tendering**

This method of procurement as contained in the PPA Manual (2006) is explained as
"an infrequently used procurement process in which a Procurement Entity invites tenderers in the initial stage to contribute to the detailed specification of the works. Following review and consultations, new detailed specifications for the works are prepared and a restricted tender issued in the second stage to all participants who were not rejected in the first-stage. It is an appropriate method of procurement when it is not feasible for the Procurement Entity to formulate detailed specifications or plans for the works, to identify their characteristics in a defined manner, or the subject of the works is subject to rapid technological advances" (PPA Manual 2006, pp.64).

2.5 Factors influencing choice of Procurement methods

(Love et al, 1998) posited that generally these were the following standards that were used to analyse the clients demand as well as the priorities of the experts for the achievement of each of the procurement method. He also suggested that generally the following factors affect a client's choice when selecting a specific method of procurement: speed (during both design and construction); the

ability for the design to be changed flexibly; quality (the contractor's dignity, his honor, beauty and courage at the design stage); estimated value of the project (threshold); quality specification; complexity of the project (small, medium or large value); Security reasons (delicate works that attracts national security); tendency for disputes and arbitration. In Ghana, the choice of a procurement method is by threshold (estimated contract value) or the nature/condition of that procurement.

2.6 Key Stakeholders involved in the selection of Procurement methods for a project

Freeman, (1984) defined stakeholder as "any group or individual who can affect or is affected by the achievement of an organizations objectives". Mitchell et. al., (1997) identified three (3) main attributes of stakeholders and these are:

- the influence the stakeholder can have on the organization i.e. being it coercive, utilitarian or normative
- legitimate the stakeholders relationship with the organization is, thus either organizational, societal based or individual
- the level of power/authority that the stakeholders can have on the organization by calling for a prompt action.

According to the United Nations Procurement Practitioners Handbook, Stakeholders can be anyone who demonstrate an in-depth interest in the actual delivery and perceived objectives in the procurement activities. Stakeholders incorporate development partners, senior management experts, civil society, end-users and others. It is always imperative to identify the stakeholders' interest and

their importance relating to the project because sometimes the various stakeholders interest could be in difference of opinion with each other.

Ideally, the procurement officer or whoever is in charge of the procurement activities of a particular entity normally has to prepare a co-operative relationship which is very focused with the various stakeholders involved. He has to listen to their ideas and submissions, requesting for their consensus when and where needed, informing them accordingly on all activities, stimulating their needs and wants and also where needed get familiarized with their needs.

The United Nations (UN) has outlined some specific objectives of key stakeholders involved in a project and these may have to do with;

- the projects time delivery
- assents to the precise regulatory frameworks
- reaching out to some exact group of suppliers
- adopting the use of some special brands, if only it is justified.

Normally, these goals or objectives set by the stakeholders has to be put together with the information that has been collected at the time the specification was been prepared, when performing the market analysis, doing feasibility studies as well as performing market analysis as the general procurement approach of the Entity/Organization.

The UN is of the opinion that through a collaborative process, the objectives of the procurement should agree with the outcomes. Also the performance measures should also be agreed with the indicators, thus cost, quality and time that will help the Procurement Officer to determine the

agreed procurement objectives have been achieved (UN Procurement Practitioner's Handbook, 2006)

The decision of which procurement method to use for a particular project is usually discussed amongst the various key stakeholders. The Procurement Unit (PU), Entity Tender Committee (ETC), the PPA, the Estate department of an organization, and the Consultant are some of the key stakeholders who decide on which procurement method to use for a project (Emphasis is mine).

2.7 Procurement methods and their effect on Project Cost

Cost in simple terms means the extent to which the general conditions enhance a projects completion time within the budget that was estimated (Bubashit and Almohawis, 1994). This entails the total cost that is assumed right from when the project begins to the time it is completed. This brings into light how important it is to attach every activity under project management that is performed through every step of the project execution right up to the end of the project. (Chan and Chan, 2004) also indicated that cost is the general cost that a project assumes right from project inception up until project completion including variation costs and also modifications or changes during the construction process and not only restricted to the tender figure. These cost variables show signs of various additional practices that when it is adopted for use in the process, it would have serious implications on the performance of the project costs both directly and indirectly. The way and quantity in which variation orders are given to contractors by the consultants needs a critical attention. In as much as possible, the client should be advised not to constantly make

changes to the design during the construction period before practical completion. This is to avoid the implications it will have on the project cost.

The manner and pace in which the contractors also respond to the variation orders issued also have serious implications on the project performance. In forecasting the performance of Design-Build and Design-Bid-Build projects, Ling et al, (2004) established some variables that have a great effect on cost performance. This incorporates; the quantity of elements that are repeated consistently, the degree to which a design is completed when tenders are requested for, and the amount of capital paid to the contractors engaged. All these variables create awareness to the fact that some practices adopted can affect the project cost performance. For example, when a client chooses a particular procurement method, the traditional method or the design and build will show the extent to which the design could be completed and be used for tendering. Also the group that the client selects as project consultants to prepare the designs will influence the way the design will be prepared i.e. whether there will be repetition or not. Also the stance that the clients take on the project cost will prove whether he/she would cling to the advice which the designers give him/her about the advantages he/she will gain if the design is allowed to have repetitive elements.

There are some contracts that show certain characteristics within them and normally this goes at length to show the caliber of contractors that will show interest in the tender and also succeed to be awarded. Some of these characteristics are that; when there is a chance of an advance mobilization to be paid by the client within the contract. This will definitely attract the contractors who have low level of capital to perform the project. When such a contractor is selected for a project, it clearly shows that this will have a negative impact on the project performance.

2.8 Procurement methods and their effect on Project Quality

According to the (Oladinrin *et al*, 2013) construction quality can be explained as the general features that is needed in order to satisfy a particular need which is fitness for purpose. Some of the requirements that have adverse effect on quality are the level of monitoring projects, the project consultants experience, the contractor's past performance record as well as the quantity of variation orders that will be issued on the project. The effects these factors will have on quality can be avoided if they coordinated competently. It is the duty of the project manager to make sure to bring together all the factors to achieve good quality performance. Quality performance is a very critical procedure which when adopted in the project execution process; it will yield good results (Alarcon & Sarpel, 1998). Those procedures include the form or method of procurement as well as the tendering method to be used.

The Project Management team needs to set up a building process that will result in a successful project conclusion. This is because of the disunited nature of the construction industry and also the uniqueness of the building project. The Project Manager at all times need to have a sense of uniqueness in order not to compromise on project quality by carefully analyzing the processes and procedures involved in the project execution. Some of the procedures that need critical attention include the procedures that the organization uses to select the designers, supervisors as well as the contractors too. Normally through a competitive tendering process, a construction team is selected but at other times the selection is made through negotiation based on a fee. In the situation where both the design and construction are done together, it undergoes competition. Usually, the different methods of selection that we have always have an impact on the success of the project (Chan, 1995).

When it comes to the selection of project consultants, it has been overlooked by many due to the less attention granted. This needs to be avoided since quality is seen as a very critical issue when it comes to project development. (Harris & McCaffer, 2002) posited that it is important to note that when delivering projects, one must take into account the quality performance and safety rather than the cost and time even though they are all interdependent and interrelated. (Tam et al., 2000) maintained that achieving quality management in the construction industry is mostly difficult as compared to the other industries.

2.9 Procurement methods and their effect on Project Time

Time is a very important factor when it comes to construction projects. Generally when more time is spent on a construction project, it tends to incur more money on overheads. Projects that are for commercial purposes normally require early completion so when delayed, it translates into loss of earnings. Time can be examined from design time perspective as well as construction time and overall completion time (Emphasis is mine).

According to the Public Procurement Manual, the estimated lead times for the procurement methods have been discussed. These lead times give an indication as to how long each method adopted will take the procurement process for a particular project. Sarfo & Baah - Mintah, (2013) in their study of assessing the effect of the Act 663 on the public financial management found out that during the whole procurement process, the time that is used to advertise for the procurement opportunities as well as evaluating the tenders delays the process and affect the smooth running of the procurement activities. The laid down procedures in the Act 663 for each of the procurement methods sometimes affect the duration of the project.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter of the research discusses the research methodology that was selected to gather relevant data for this study. Presented here are also the research design, target population, sample size and sampling procedure, sources of data, data collection instruments and data analysis method.

3.2 Research Design

Research design is a plan and procedure used for research that span the decisions from a broad assumption to a very detailed method of collecting data and analyzing them. The overall decision involves which design should be adopted to study a topic. The type of research designed to be used depends on the nature of the research problem or the issues that are being addressed as well as the audiences for the study (Creswell, 2008).

The study adopted a descriptive survey design. Descriptive research design is a scientific approach which deals with a subject's behavior by observing and describing it without having any influence on it (Neuman, 2000). Furthermore, Key (1997) also explained that descriptive design is also used to gather information about the current state of a phenomenon which is used to describe what really exists in relation to the conditions and variables found in a particular situation. This type of research design is normally used to observe natural behaviors without affecting them in any way. With this type of research design, information is normally collected without changing the environment. A

descriptive study is engaged in so that features of the variables in question can be described and determined in a particular situation. This is normally done by using procedures and strategies to depict, clear up and explain the available variables that comprise a phenomena. A major disadvantage is how hard it is to make sure the questions that are asked are clear and not misleading. Neuman (2003) reported that the questions that would be prepared might bring forth unreliable results because it may delve into private matters which will make people uncomfortable answering them. The Researcher will ensure that the questions being asked are precise and concise and not probe into the respondents' private life.

Even so, this type of survey was discovered to be the most appropriate method for this study. This is basically so because it is relatively easier to handle since the data needed is not difficult to get and can be interpreted by using simple descriptive statistics (Blaike, 2000; Sarantakos, 2006). This study chose the descriptive survey design because comparatively, it will produce a number of responses from a wider range of procurement professionals and construction consultants in the Ashanti region on issues concerning procurement methods and its effect on construction project performance.

3.3 Target Population

The target population of a study normally constitutes the group of persons, objects or institutions that defines the objects of the investigation (Patton, 2002). The study population comprised of the management and staff of Public Procurement Authority (PPA), Client/Head of Entity to Government Institutions, management and staff of construction consultancy firms in the Kumasi Metropolis. Public procurement entities in Ghana can be broadly categorized into eight (Act 663, section 14.2) but the research will focus on only three (3) i.e. Government ministries, departments

and agencies; State owned enterprises; and Public Universities, schools, colleges and hospitals. The lack of a comprehensive database on the number of construction consultancy firms in the country made it impossible to have access to all professionals within this sample space due to time and financial constraints necessitated the use of convenience sampling (or haphazard sampling) to select respondents. This incorporates selecting the respondents randomly which is easy to obtain but they must have the features which is required for the research (Saunders et al, 2009). This sampling technique selects haphazardly, respondents that are easiest to obtain for your sample and provides the researcher with inside information which might not be readily available (Dawson, 2002). A sample will be taken from the above population stated because of time and resources constraints.

3.4 Sample size and sampling procedure

Sample size pertains to key questions like "how big" or "small" a sample must be in order for it to be representative (Sarantakos, 2006). The participants were selected from the target population and it is imperative to state that all respondents were approached because they are easily available and accessible. The researcher selected a sample size of 10 procurement staff from Public Procurement Authority (PPA), 10 Clients/Heads of Entity from Government Institutions, 20 Consultants and 20 staff from consultancy firms. The PPA staff was included to help bring to bear the extent to which PPA has affected proper selection of procurement methods. Also, PPA staff helped in bringing out the cases of the selection of wrong procurement methods have on the construction projects performance. The inclusion of the Entity Heads from government institutions, consultants as well as their staff on the other hand in the target population facilitated the researcher to know the factors they consider when choosing a particular method of procurement for a project.

A simple random sampling technique was used to select the Client/Heads of Entity, consultants and staff of the consultants. This method was the best among the others because it made sure that respondents selection was done equally, calculably and no profits to be considered whatsoever (Sarantakos, 1997:138). Kumasi was purposively selected due to easy accessibility, financial and time constraints. A total of sixty (60) respondents were selected for this survey.

3.5 Sources of Data

The main sources of information of this study were collected from only primary data.

3.5.1 Primary Data

Administering questionnaires form the main basis of the primary data used for this study. The data that was collected from this source concentrated on the respondent's background characteristics, their level of knowledge in procurement as well as in construction projects performance in Ghana. The questionnaire was drawn with reference to literature that was reviewed and it sought to address the research objectives and questions.

3.6 Data Collection Instrument

The questionnaire will be the basic instrument used for this study. Prior to the designing of the questionnaires, an exhaustive literature search was performed in order to categorize and determine the variables and concepts that were used previously in other studies. They were then streamlined to suit the goal of this study. The questionnaire was composed of a mix of open close-ended and scale questions. The questions that require a "yes" or "no" answer made provisions for the respondents to have an opportunity to explain the response they chose. The questionnaire brought out responses on issues relating to the background characteristics of the respondents, their procurement practices, the

stakeholders as well as factors that influence the selection of a particular method, knowledge on the procurement methods and construction projects.

3.7 Data Analysis

The data that was collected from the field were analyzed using descriptive statistics and content analysis. The descriptive statistics methods were used to analyse the YES or NO questions or the questions with possible answers for the respondents to tick. The content analysis was also used to analyse the open-ended questions. The Statistical Package for Social Sciences (SPSS version 16.0) and Microsoft Excel were used to process and analyse the data derived from the structured questionnaires. Calculations were made using descriptive statistics (mean and standard deviation), non-parametric chi-square and frequency analysis with percentages because of its ease of use. Results were presented in figures and tables.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter analyses the data which were gathered from the field through the structured questionnaires that were administered. Sixty (60) questionnaires were sent out and all were completed and returned. This gave a 100% response rate. More so, some of the respondents did not answer all the questions and classified as missing which were not included in the presentation. Thus, results of the analysis were based on the valid response.

The first section discussed the demographic characteristics of respondents. The subsequent sub-sections addressed research objectives; identifying the various procurement methods frequently used for works in Ghana, key stakeholders who participate in the selection of the procurement methods for works and the factors that are considered in the selection of procurement methods for Works. Statistical tools used for the analysis were descriptive statistics (mean and standard deviation), non-parametric chi-square and frequency analysis with percentages. Results were presented in figures and tables.

4.2 Demographic Characteristics of Respondents

The demographic characteristics of the respondents in the research constitute; occupation related to procurement, professional background, years of work experience and registration.

4.2.1 Occupation Related to Procurement

This question was asked by respondent to elucidate information on the occupation relative to procurement. This is important for the result of the study as it would provide the needed validity to the answers that they would provide in filling in the questionnaire. From Table 4.1, it was observed that 30 percent of the respondents were consultants and 28 percent were consultant staff, 13 percent were client/head of entity and PPA staff each and 15 percent were in other occupation. Majority of the respondents were in consulting related occupation.

Table 4.1: Occupation related to Procurement

	Frequency	Percent
Valid Consultant	18	30.0
Client/Head of entity	8	13.3
PPA staff	8	13.3
Consultant staff	17	28.3
Others	9	15.0
Total	60	100.0

Source: Field Study, 2014

4.2.2 Professional Background

Having known the occupation related to procurement, the researcher reckoned the need to solicit information from the background of the respondent. Table 4.2 demonstrates the respondents' professional background. Majority of them were Quantity Surveyors representing 40 percent,

followed by Architects representing 19 percent. Civil/structural Engineers and Project Managers represented 5 percent each and Service Engineers represent 2 percent. Form the table below, it were revealed that majority of the respondent professional background were Quantity Surveyors.

Table 4.2: Professional background

		Frequency	Percent
Valid	Architect	11	18.3
	Quantity Surveyor	23	38.3
	Civil/Structural engineer	3	5.0
	Services engineer	1	1.7
	Project manager	3	5.0
	Others	17	28.3
	Total	58	96.7
Missing	Missing	2	3.3
Total		60	100.0

Source: Field Study, 2014

4.2.3 Years of Experience

The researcher also solicited question based on the years of experience of the respondents. Drawing on from table 4.3, it was observed that 32 percent, majority have worked for 6-10 years, 23 percent have worked for 2-5 years. Respondents who have worked more than 20 years represent 17 percent, those worked between 16-20 years and 11-15 years represent 10 percent each. This implies that the

respondents have enough information up their sleeve which they have willingly provided to the research to ensure the validity of the information.

Table 4.3: Years of work experience

	Frequency	Percent
Valid Less than 2 years	5	8.3
2-5 years	14	23.3
6-10 years	19	31.7
11-15 years	6	10.0
16-20 years	6	10.0
More than 20	10	16.7
Total	60	100.0

Source: Field Study, 2014

4.2.4 Registration with Professional Institutions

Respondents practicing as consultants were asked whether they have applied for registration with the Ghana Institution of Architects (GhIA), Ghana Institution of Surveyors (GhIS) and/or Ghana Institution of Engineers (GhIE). Approximately 40 percent of the respondents said they have and 19 percent said they have not applied for registration. Some respondents representing approximately 40 said not applicable. This implies that majority of the respondent belongs to various registered institution.

Table 4.4: Registration in Institution

		Frequency	Percent
Valid	Yes	23	38.3
	No	11	18.3
	Not applicable	23	38.3
	Total	57	95.0
Missing	Missing	3	5.0
Total		60	100.0

Source: Field Study, 2014

4.3 Client Objectives, Project Success and Works Procurement Methods

Respondents were asked to indicate their knowledge on work procurement methods. Table 4.5 denoted the methods of procurement and how respondents ranked them.

Table 4.5: Methods of Procurement

	Statistic	Mean	Std. Error	Std. Deviation	Chi-Square	df	Asymp. Sig.
International Competitive Tendering (ICT)	59	3.86	0.150	1.152	25.322 ^a	4	0.000
National Competitive Tendering (NCT)	59	4.63	0.099	0.763	81.136 ^b	3	0.000
Two stage Tendering	59	3.61	0.164	1.260	29.729 ^a	4	0.000
Restricted Tendering	59	4.10	0.132	1.012	17.949 ^b	3	0.000
Single Source	59	3.97	0.139	1.066	31.424 ^a	4	0.000
Request for Quotation (RFQ)	59	3.97	0.151	1.159	37.695 ^a	4	0.000

Source: Field Study, 2014

Drawing on from the table 4.1, the mean values of the various procurement methods were all greater than the population mean signifying that all the methods of procurement are important. Also, the standard error associated with all the means were relatively closer to zero suggesting that the sample chosen is an accurate reflection of the population. Finally, from the results in table 4.5, the standard deviations of a large majority are less than 1.0 signaling that, there is little variability in the data collected and consistency in agreement among the respondents. Procurement method that was indicated as knowledgeable was National Competitive Tendering (NCT) which was scaled as approximately excellent (mean of 4.63). Respondents indicated Restricted Tendering as knowledgeable with mean value of 4.10. The least mean value was 3.61 indicating the approximately respondents have knowledge about that procurement method, thus Two stage Tendering. Averagely, respondents indicated that, they have knowledge about all the procurement methods. The standard deviations for all the procurement methods were significantly significant. Chi-square tests also show significant different ranking among the categories. This results is in consonance with Daniel, (2006), the importance of procurement methods is on the optimization of all the parameters involved in the project delivery that is time, cost and quality.

4.4 Procurement Methods Considered

Table 4.6 present the result of the question on whether respondents consider all the possible procurement methods for works when starting a new construction project. It was indicated that, about 72 percent of the respondents said they consider all the procurement methods for works when starting new construction project. The other 28 percent indicated that they do not. This results revealed that majority of the respondent considered all possible procurement methods for works before starting a new construction project.

Table 4.6: Consider all possible procurement

		Frequency	Percent
Valid	Yes	43	71.7
	No	17	28.3
	Total	60	100.0

Source: Field Study, 2014

4.5 Recent involvement in Ghanaian Construction Project

It was indicated in figure 4.1 that, 83 percent of the respondents have recently (past 5 years) been involved in Ghanaian construction project where by any of the procurement methods in table 4.5 was used while 17 percent have not.

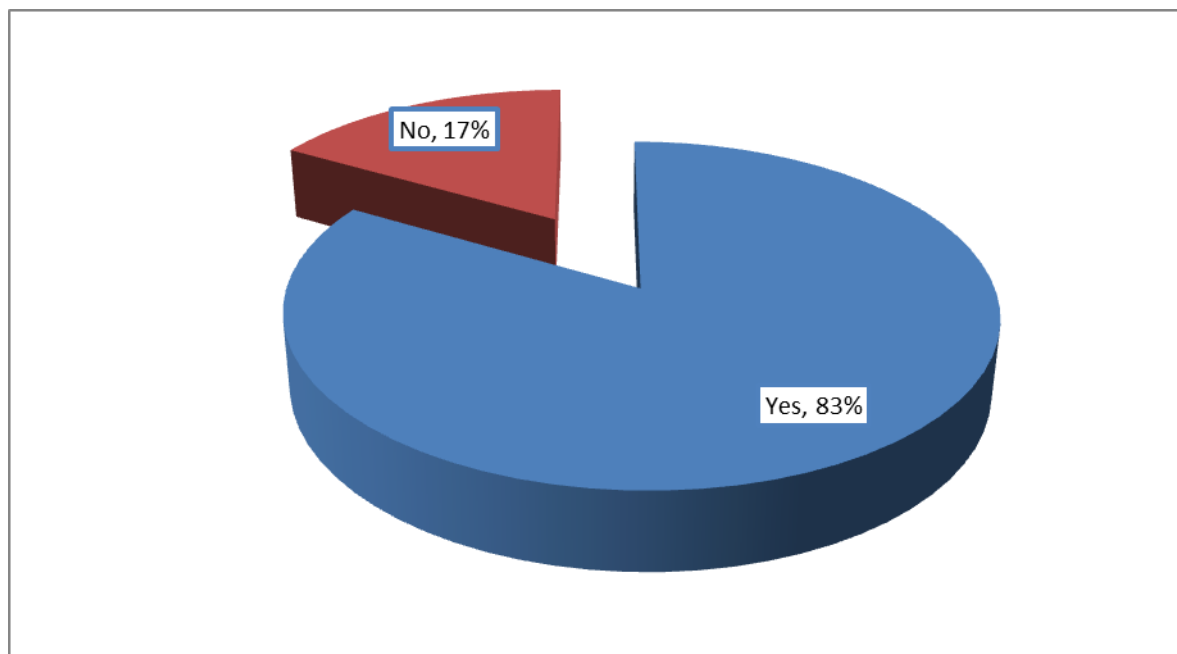


Figure 4.1: Respondents recently been involved in Ghanaian construction project

Source: Field Study, 2014

4.6 The Procurement Method Selected

The 83 percent of the respondents who have recently (past 5 years) been involved in Ghanaian construction project using any of the procurement methods in table 4.5 were asked to indicate the methods they used. Figure 4.2 indicate that 64 percent representing majority of the respondents used National Competitive Tendering, 28 percent used Restricted Tendering, 4 percent used International Competitive Tendering, and 2 percent each used two stage tendering and request for Quotation (RFQ). The method that was mostly used was National Competitive Tendering followed by Restricted Tendering. The other three methods were rarely used.

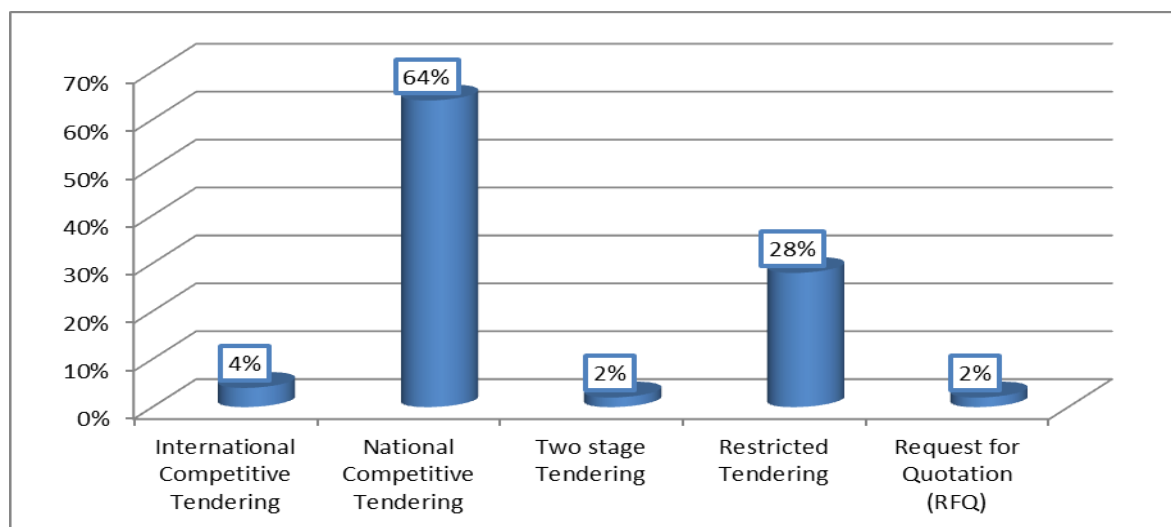


Figure 4.2: Method of Procurement selected

Source: Field Study, 2014

4.6.1 Reasons for a Particular Method of Procurement for the Project

Drawing on from Figure 4.3 below, the r

esults presented the reason for the use of the procurement method. It was observed from the figure below that, 34 percent of the respondents said they used it to allow competition, 30 percent said

because of the estimated value of the project, 28 percent said because it is the best method that satisfies client objectives and 8 percent used it for security reason.

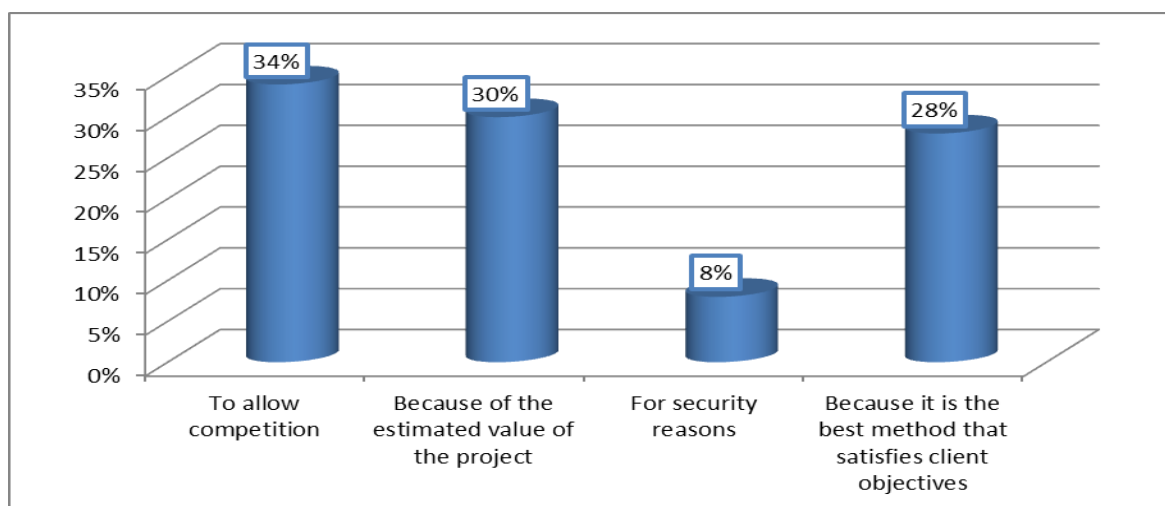


Figure 4.3: Reasons for selecting a method of procurement for the project

Source: Field Study

Table 4.7: Cross-Tabulation of Procurement methods and reasons for their selection

If yes, which work procurement	Why that procurement method selected				
	To allow competition	Because of the estimated value of the project	For security reasons	Because it is the best method that satisfies client objectives	Total
International Competitive Tendering	0	1	0	1	2
	0%	50%	0%	50%	100%
National Competitive Tendering	17	12	0	3	32
	53%	38%	0%	9%	100%
Two stage Tendering	0	0	0	1	1
	0%	0%	0%	100%	100%
Restricted Tendering	0	2	4	8	14
	0%	14%	29%	57%	100%
Request for Quotation (RFQ)	0	0	0	1	1
	0%	0%	0%	100%	100%
	17	15	4	14	50
	34%	30%	8%	28%	100%

Source: Field Study, 2014

Table 4.7 denotes the procurement methods used by respondents and the reason for using those methods. It was observed that 32 of the respondents used National Competitive Tendering and they used it to allow competition representing 53 percent, 38 percent of those who used that method said it was because of the estimated value of the project and 8 percent said, it was because it is the best method that satisfies client objectives. Two respondents used International Competitive Tendering and they used it because of the estimated value of the project and because it is the best method that satisfies client objectives with 50 percent each. One person used Two stage Tendering and another person used Request for Quotation (RFQ) and their reason was the same; because it is the best method that satisfies client objectives. Fourteen respondents used Restricted Tendering, 57 percent used it because it is the best method that satisfies client objectives, 29 percent used it for security reasons and 14 percent used it because of the estimated value of the project.

4.7 Types of Works Procurement Methods and Stakeholders involved in the Selection

Respondents with procurement methods experience in Ghanaian construction industry were asked to indicate the category of procurement methods they normally use on their construction projects. It was observed that 91 percent of the respondents normally used competitive methods and 9 percent normally used non -competitive method from Figure 4.4.

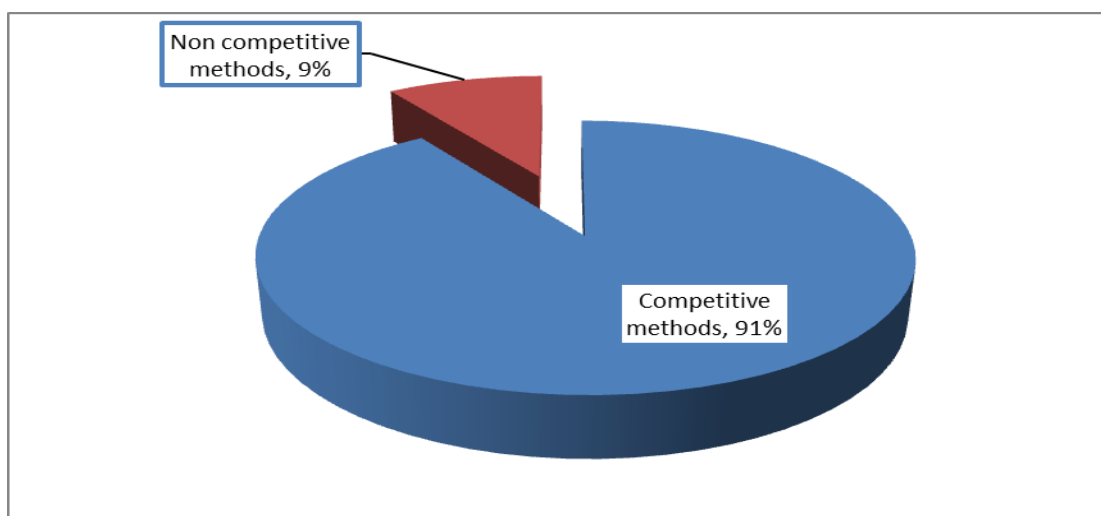


Figure 4.4: Category of procurement methods normally used on construction projects

Source: Field Study, 2014

4.7.1 Procurement You Are Familiar With

They were further asked to indicate categories of procurement they were familiar with and/or have used previously. As shown in Table 4.8, 94 percent of the respondents said they were familiar with competitive procurement method and 84 percent said they have used previously. 83 percent also indicated that they were familiar with the non-competitive procurement method and 68 percent said they have used this method previously.

Table 4.8: Procurement are you are familiar with and/or have used

Category of Procurement methods	Familiar with		Used Previously	
	Yes	No	Yes	No
Competitive	50 94%	3 6%	41 84%	8 16%
Non Competitive	40 83%	8 17%	32 68%	15 32%

Source: Field Study, 2014

4.7.2 Key Stakeholders in the Selection

As part of the researcher's objectives, it was deemed necessary to solicit information from the key stakeholders in the selection of a particular procurement method for a project. Figure 4.6 showed the key stakeholders in the selection of a particular procurement method for a project. Most of the respondents, about 38 percent said Entity Tender Committee were the stakeholders in selecting a particular procurement method for project. 17 percent said Procurement Unit, 15 percent said Public Procurement Authority and 13 percent said Consultants. 15 percent of the respondents said all the stakeholders mentioned were key in the selection of a particular procurement method for a project.

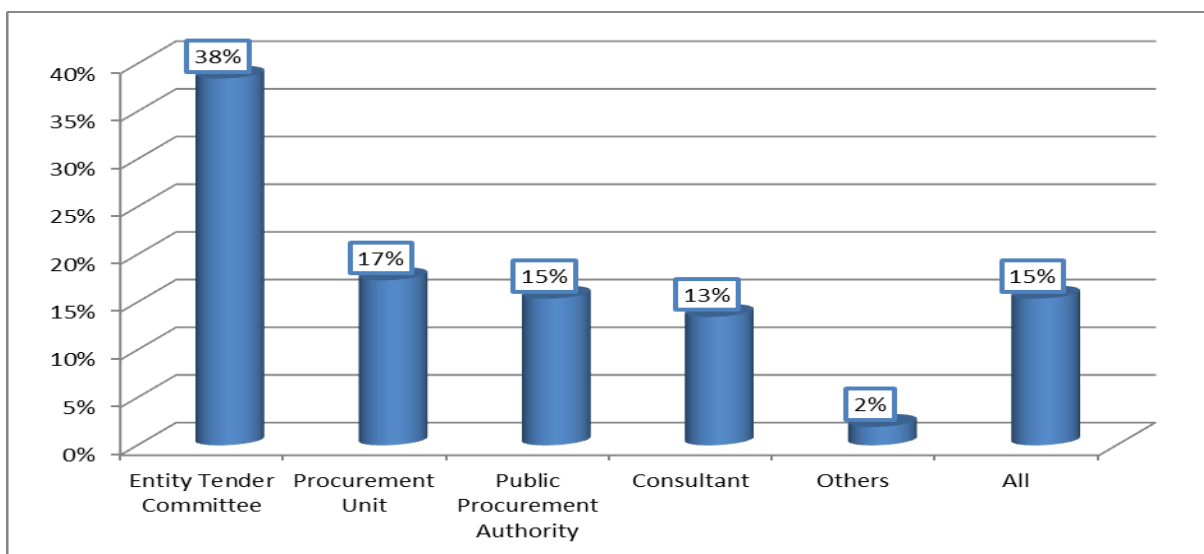


Figure 4.5: Key stakeholders in the selection of a particular procurement method for a project

Source: Field Study, 2014

4.8 The Various Procurement Methods against Project Success

All the respondents agreed that there was a relationship between the procurement methods and the attainment of Client objectives (project success) as shown in Figure 4.7 below.

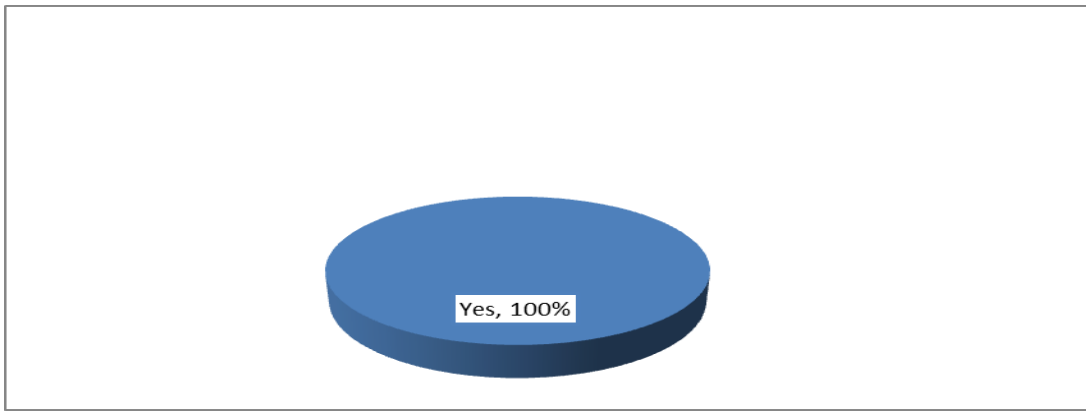


Figure 4.6: Agree there is a relationship between the procurement methods and attainment of client objectives

Source: Field Study, 2014

4.8.1 Performance of Procurement Method in Terms of Cost, Time and Quality

It was observed that 98 percent of the respondents said, the chosen procurement method for a particular project affect its performance in terms of cost, time and quality while 2 percent said the chosen procurement method do not affect its performance.

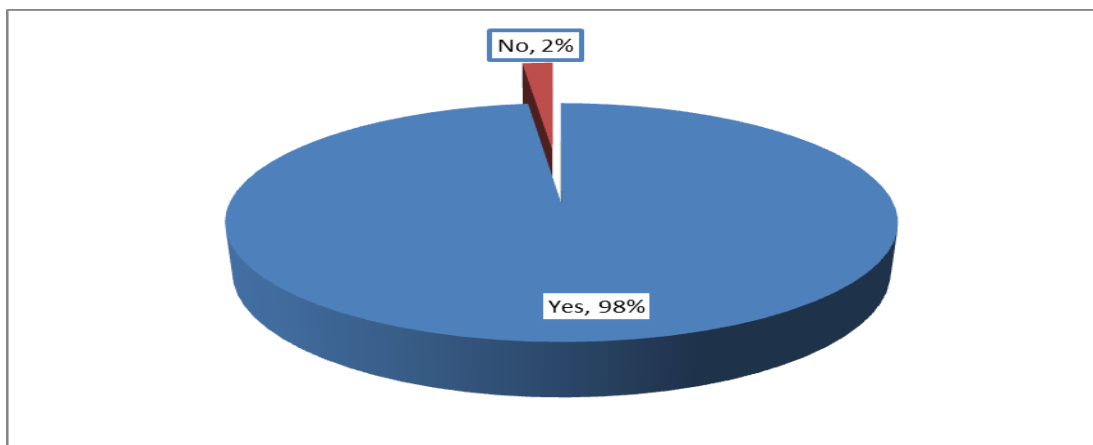


Figure 4.7: Chosen procurement method affects performance of projects in terms of cost, time and quality

Source: Field Study, 2014

Table 4.9: How Procurement Methods affect the Attainment of Client Objectives

Procurement Method	Client Objective	Positive effect		Negative effect		Total
		Frequency	Percent	Frequency	Percent	Frequency
International Competitive Tendering (ICT)	Cost / Budget	34	89%	4	11%	38(100%)
	Time	29	76%	9	24%	38(100%)
	Quality	38	100%	0	0%	38(100%)
	Overall Client Satisfaction	38	100%	0	0%	38(100%)
National Competitive Tendering (NCT)	Cost / Budget	34	76%	11	24%	45(100%)
	Time	34	81%	8	19%	42(100%)
	Quality	43	96%	2	4%	45(100%)
	Overall Client Satisfaction	39	93%	3	7%	42(100%)
Two stage Tendering	Cost / Budget	25	74%	9	26%	34(100%)
	Time	29	85%	5	15%	34(100%)
	Quality	27	79%	7	21%	34(100%)
	Overall Client Satisfaction	30	88%	4	12%	34(100%)
Restricted Tendering	Cost / Budget	30	75%	10	25%	40(100%)
	Time	39	98%	1	2%	40(100%)
	Quality	30	75%	10	25%	40(100%)
	Overall Client Satisfaction	37	93%	3	7%	40(100%)
Single Source	Cost / Budget	30	73%	11	27%	41(100%)
	Time	32	78%	9	22%	41(100%)
	Quality	31	76%	10	24%	41(100%)
	Overall Client Satisfaction	36	88%	5	12%	41(100%)
Request for Quotation	Cost / Budget	25	68%	12	32%	37(100%)
	Time	33	89%	4	11%	37(100%)
	Quality	33	89%	4	11%	37(100%)
	Overall Client Satisfaction	36	97%	1	3%	37(100%)

Source: Field Study, 2014

Table 4.9 showed the achievement of client objectives in terms of cost/budget, quality and time implies that a project is successful. At each procurement method, it was observed that greater percentage indicated that there was a positive effect while few percentages indicated negative effect.

4.9 Factors Affecting the Selection of Procurement Methods

Respondents were asked to scale based on their professional view, how the factors in table 4.10 influence the selection of a procurement method in the construction industry.

Table 4.10: Factors influencing the selection of a procurement method in the construction industry - Descriptive Statistics

	N	Mean	Std. Error	Std. Deviation	Chi-Square	df	Asymp. Sig.
Speed	52	2.08	0.113	0.813	16.769 ^a	3	0.001
Estimated value of the project	54	1.69	0.137	1.006	54.148 ^b	3	0.000
Flexibility in accommodating design changes	53	3.19	0.157	1.144	37.472 ^c	4	0.000
Quality specification	53	2.15	0.193	1.406	29.547 ^c	4	0.000
Complexity of project	54	2.19	0.145	1.065	21.926 ^d	4	0.000
Security reasons	54	3.04	0.200	1.466	4.889 ^d	4	0.299
Tendency for disputes and arbitration	54	3.11	0.194	1.423	1.000 ^d	4	0.910

Source: Field Study, 2014

Factors that significantly influence the selection of a procurement method in construction industry were the estimated value of the project with mean value of 1.69, followed by speed with mean value of 2.08, quality specification with mean value of 2.15 and flexibility in accommodating design changes with mean value of 3.19. They all show significant difference in ranking. The other three factors were scaled as averagely influence the selection of procurement method; Security reasons with mean value of 3.04, Tendency for disputes and arbitration with mean value of 3.11 and Flexibility in accommodating design changes with mean value of 3.19.

This goes to show that there is a linkage between the previous studies that have been carried out showing clearly that the estimated value of a project has a major influence on a method of procurement selection for a project.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Following the discussions of the results and based on the literature reviewed in the previous chapter, this section of the study covers a summary of the major findings, conclusions and recommendations grounded in evidence from this study and they relate to the objectives of the study.

5.2 Summary of Findings

The study revealed that some of the respondents selected for this study had knowledge about only procurement and others had in both procurement and construction.

This section analyzes how each objective was achieved so that the overall aim of the study will also be accomplished. In order to arrive at valid conclusions for the study, it is important that, a detailed evaluation, measurement and comparison of the results obtained from the study are done against the objectives that were set. The aim of the study was to investigate the factors that influence the selection of the methods of procurement for works in Ghana.

In other to achieve the first objective, an extensive review of literature was done to determine the various methods used by public procurement entities in the procurement of works in Ghana. The methods recognized were spelt out in Chapter 2. These methods identified were used in designing a questionnaire to find out how extensively these methods were used in the procurement of works

contracts. The questionnaire allowed respondents to indicate their level of knowledge for the works procurement methods. An evaluation was done on the responses received and it closely showed that all the identified methods from the literature were applicable but their level of knowledge varied. The study revealed that there are six (6) methods of procurement for works and out of them NCT and Restricted tendering seemed to be the most common methods that most of the respondents knew about.

It was also observed that, NCT was frequently used for the works procurements in Ghana whereas the others were rarely used for projects.

A critical review of literature, as presented in chapter two (2), identified the various stakeholders that are involved in a particular project. The key stakeholders who are involved in selecting a particular procurement method for a project were identified. After the stakeholders were identified, they were used in the design of a questionnaire survey, construction professionals and procurement officers within public entities and consultancy firms were used as the respondents. As shown in chapter four (4) and based on the data responses received, all the stakeholders identified were important during the selection of a procurement method one way or the other. The researcher provided a space for respondents to indicate other stakeholders, who will be involved in the procurement method selection for a project; Respondents indicated that at times, the internal auditors form part of the team that selects a procurement method. This therefore implies that, based on the responses received, all the stakeholders mentioned are key in the selection of a procurement method for a project.

Respondents were also required to rate the factors that influence the method of procurement selection on a 5-point Likert scale. The mean responses were collated and analysed using SPSS (version 19.0) and Microsoft excel (2010 edition). The detailed evaluation and analysis of the responses provided are contained in Table 4.10. The mean responses and their ranks are tabulated as well based on the impact of their influence. The study reveals seven (7) most significant factors that can influence the selection of a procurement method for a particular project. These are speed, estimated value of the project, flexibility in accommodating design changes, quality specification, complexity of project, security reasons, and tendency for disputes and arbitration. It was also observed that, the estimated value of the project seemed to have a strong influence on method of procurement to be adopted or selected for a project

5.3 Conclusion

Based on the strength of the findings of the study, the following conclusions were drawn.

NCT and Restricted Tendering are the most dominant methods of public works procurement in Ghana. The methods normally adopted are competitive in nature and tends to help achieve the objectives of the Act 663 which is to ensure value for money, transparency and accountability. The stakeholders involved play a very vital role in the procurement process for a particular project. Lastly, the method adopted for a particular project has a great effect on the performance of a project in terms of cost, quality and time.

5.4 Recommendations

The following recommendations are proposed to public procurement entities, procurement professionals and construction professionals with respect to public procurement methods for works.

The study confirmed that there are different methods of procurement for works used in Ghana but most of them do not consider all the methods available before selecting for a project. It is therefore recommended that all the procurement methods should be considered and carefully studied for their pros and cons to know their effect on the project time during execution. Each procurement method has its estimated lead times for usage of a project, so it has to be analyzed to know exactly how these lead times can affect the project duration. The selection of the appropriate procurement will help achieve client's objectives. All the selection criteria used for the procurement method selection for a project should be critically looked at and analyzed to know how effective it will help the project.

It is highly recommended that, the stakeholders assess and analyze the clients' project performance criteria against the likely project performance outcomes of the various procurement methods before a procurement method is finally selected.

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APPENDIX 1

QUESTIONNAIRE

INTRODUCTION

Dear Sir / Madam,

I am a research student from the Department of Building Technology, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI and I am writing a thesis on the topic: **FACTORS INFLUENCING THE SELECTION OF PROCUREMENT METHODS FOR CONSTRUCTION WORKS IN GHANA.**

This questionnaire is aimed at determining the factors that influence the selection of procurement methods for the construction works in Ghana.

Your opinions are highly essential as they will help to determine the impact of different procurement methods on construction projects in Ghana. Be assured that your responses will not in any way be linked to your identity.

Kindly complete the questionnaires carefully. Also, please feel free to disseminate the questionnaire to your colleagues that are involved in Building Construction Projects.

COMPLETION OF THE QUESTIONNAIRE

For the purposes of this questionnaire, please take note of the following abbreviations and definitions:

Procurement Methods for Works

Procurement with respect to construction is a system that describes the total process of meeting the client's need for a particular project, beginning from the point where this client's need is first expressed and right through to when need is finally achieved.

The methods for procurement of works broadly fall under these categories:

- Competitive methods
- Non competitive methods

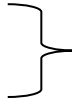
1. International Competitive Tendering (ICT)
2. National Competitive Tendering (NCT)
3. Two-stage Tendering
4. Request for Quotations (RFQ)

Competitive Methods

5. Restricted Tendering

6. Single Source

Non Competitive Methods



Project Success

Achievement of client objectives in terms of cost, quality and time implies that a project is successful. The success criteria parameters are defined in the table below:

Success Criteria	Definition
On Cost	The project is completed at or under the contracted cost (i.e Contract sum)
On Time	The project is completed on or before the contracted date of completion
Quality	The completed project meets or even exceeds all technical performance specifications provided by the Client.

This questionnaire consists of two (2) sections:

Section A must be completed by all respondents

Section B is to be completed by Clients/Heads of Entities and Construction Professionals that have been involved in projects using the various procurement methods for works.

SECTION A: - TO BE COMPLETED BY ALL RESPONDENTS

1.0 DEMOGRAPHIC DATA

1.1 What is your occupation, relative to procurement?

☐ Consultant

☐ Client / Head of Entity

☐ PPA staff

☐ Consultant staff

☐ Other, please specify:_____

1.2 What is your professional background?

- ☐ Architect
- ☐ Quantity Surveyor
- ☐ Civil / Structural Engineer
- ☐ Services Engineer
- ☐ Project Manager
- ☐ Other, please specify: _____

1.3 Years of work experience (years)

- ☐ Less than 2 years
- ☐ 2 - 5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ More than 20

1.3 If practicing as a consultant, have you applied for registration with the Ghana Institution of Architects (GhIA), Ghana Institution of Surveyors (GhIS) and/or Ghana Institution of Engineers (GhIE)?

- ☐ Yes
- ☐ No
- ☐ Not Applicable

2.0 CLIENT OBJECTIVES, PROJECT SUCCESS AND WORKS PROCUREMENT METHODS

2.1 Kindly indicate your level of knowledge of the following works procurement methods on a scale of 1(no knowledge at all) to 5 (excellent knowledge):

International Competitive Tendering (ICT)	
National Competitive Tendering (NCT)	

Two stage Tendering	
Restricted Tendering	
Single Source	
Request for Quotation (RFQ)	

2.2 Do you always consider all the possible procurement methods for works when starting a new construction project?

☐ Yes

☐ No

2.3 Do you believe that there is a relationship between works procurement method selection and the attainment of client objectives (project success)?

☐ Yes

☐ No

2.4 Have you recently (past 5 years) been involved in any Ghanaian construction project whereby any of the above mentioned procurement method was used?

☐ Yes

☐ No

2.5 If Yes, which of the works procurement methods did you use on your project?

☐ International Competitive Tendering (ICT)

☐ National Competitive Tendering (NCT)

☐ Two stage Tendering

☐ Restricted Tendering

☐ Single source

☐ Request for Quotation (RFQ)

2.6 In your opinion, why was that procurement method selected?

☐ To allow competition

☐ Because of the estimated value of the project

- ☐ For security reasons
- ☐ Because it is the best method that satisfies client objectives
- ☐ Other, please specify: _____

If your answer to 2.4 was Yes, please proceed to answer section B. If your answer was No, then you may proceed to the end of the questionnaire.

Thank You for participating in this survey.

SECTION B: (To be completed by respondents with procurement methods experience in the Ghana Construction Industry only).

3.0 TYPES OF WORKS PROCUREMENT METHODS AND STAKEHOLDERS INVOLVED IN THE SELECTION

3.1 Which category of the procurement methods do you normally use on your construction projects?

- ☐ Competitive methods
- ☐ Non competitive Methods

3.2 Which of the above mentioned categories of procurement are you familiar with and/or have you used previously? *(Please indicate Yes with Y and No with N, in both columns)*

Category of Procurement methods	Familiar with	Used Previously
Competitive		
Non Competitive		

3.3 Why did you use that particular method of procurement for your project?

- ☐ Because of the threshold
- ☐ For security reasons
- ☐ Because of the nature of the construction project
- ☐ Ease of its use

☐ Quality level required

☐ Requested by its Source of Funding

☐ Speed and duration required for the project

3.4 Do you always consider all possible procurement methods for works whenever you start a new construction project?

☐ Yes

☐ No

3.5 Who are the key stakeholders in the selection of a particular procurement method for a project?

☐ Entity Tender Committee (ETC)

☐ Procurement Unit

☐ Public Procurement Authority (PPA)

☐ Estate Department of your Entity

☐ Consultant

☐ Other, please specify:

4.0 THE VARIOUS PROCUREMENT METHODS AGAINST PROJECT SUCCESS

4.1 Do you agree that there is a relationship between the procurement methods and the attainment of Client objectives (project success).

☐ Yes

☐ No

4.2 Does the chosen procurement method for a particular project affect its performance in terms of cost, time and quality?

☐ Yes

☐ No

4.3 In your opinion, did the use of a particular procurement method improve or worsen the attainment of Client objectives (please tick the appropriate box i.e. improved or worsened).

Procurement Method	Client Objective	Improved	Worsened
International Competitive Tendering (ICT)	Cost / Budget Time Quality Overall Client Satisfaction		
National Competitive Tendering (NCT)	Cost / Budget Time Quality Overall Client Satisfaction		
Two stage Tendering	Cost / Budget Time Quality Overall Client Satisfaction		
Restricted Tendering	Cost / Budget Time Quality Overall Client Satisfaction		
Single Source	Cost / Budget Time Quality Overall Client Satisfaction		
Request for Quotation	Cost / Budget Time Quality Overall Client Satisfaction		

5.0 FACTORS AFFECTING THE SELECTION OF PROCUREMENT METHODS

5.1 In your professional view, how does the following factors influence the selection of a procurement method in the construction industry. Please rate using the scale below:

1. Strongly influence 2. Influence 3. Averagely Influence 4. Mildly Influence 5.
Doesn't Influence

Factors	Scale
Speed	
Estimated value of the project	
Flexibility in accommodating design changes	
Quality specification	
Complexity of project	
Security reasons	
Tendency for disputes and arbitration	

Thank You.