

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

**ASSESSING THE CRITICAL FACTORS THAT INFLUENCE CONTRACTOR
SELECTION IN GHANA: THE CASE OF PUBLIC PRE-TERTIARY EDUCATIONAL
BUILDINGS**

By

Godfred Schandorf

(BSc. Building Technology)

Thesis submitted to the Department of Construction Technology and Management of the Kwame
Nkrumah University of Science and Technology, Kumasi in Partial Fulfilment of the
requirement for the award of a degree of

MASTER OF SCIENCE

NOVEMBER 2019

ABSTRACT

Construction projects are mostly characterized by high complexity, customization and uncertainty coupled with long duration. Practitioners and academics argue that many of the problems in construction projects are linked to inadequate procurement procedures where the focus is on short-term individual sub-optimization rather than on long-term project team performance. The study aims to identify the relevant factors for contractor selection in Ghana. A literature review was undertaken and it delved into the factors and relevant criteria considered for contractor selection. The factors that influence the procurement evaluation criteria used in contractor selection were also identified. Objectives were set to help achieve the aim of this study. The study adopted a qualitative method of enquiry with a semi-structured interview guide to gather data from construction and procurement professionals who have gained a minimum of ten years of work experience. The data was recorded using an audio recorder and a notebook and transcribed using MS word 2015 version. The findings from the study revealed that, Technical capability to undertake project, Financial class or standing of contractor, Track Record and experience of contractor, complexity of project, legal qualification, plant and equipment holding, past performance record and qualified staff and personnel of contractor are the key factors considered in contractor selection. The study also revealed that the evaluation of the past performance record, financial stability and technical considerations of the contractors helps to assess how the contractor will meet the defined objectives of the projects and similar projects in terms of cost, quality of work, schedule, safety, client satisfaction, relationship with subcontractors, relationship with suppliers as well as relationship with insurance companies. Finally, the study recommended the use of TOPSIS and VIKOR as a multicriteria approach to contractor selection.

Keywords: Contractor, multi-criteria approach, procurement evaluation

TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES.....	vii
ACKNOWLEDGEMENT	viii
DEDICATION	ix
CHAPTER ONE	1
GENERAL INTRODUCTION.....	1
1.1 BACKGROUND TO STUDY.....	1
1.2 PROBLEM STATEMENT	2
1.3 AIM.....	2
1.4 OBJECTIVES	2
1.5 SCOPE	3
1.6 JUSTIFICATION.....	3
1.7 BRIEF METHODOLOGY	4
1.8 STRUCTURE OF THE REPORT	4
CHAPTER TWO	6
LITERATURE REVIEW	6
2.1 INTRODUCTION	6
2.2 PROCUREMENT DEFINED – OVERVIEW.....	6
2.2.1 Traditional Procurement.....	7
2.2.2 Design and Build Procurement.....	7
2.2.3 Management Procurement.....	8
2.3 PROCUREMENT SYSTEMS	9
2.3.1 PROCUREMENT SYSTEMS WITH RESPECT TO CONSTRUCTION.....	9
2.4 PROCUREMENT EVALUATION CRITERIA FOR CONSTRUCTION PROJECTS....	10
2.4.1 Procurement Process Model – the pre-determined weighting system for construction projects.....	12
2.4.2 Procurement in the Construction Sector.....	17

2.4.3 Construction Procurement - An Overview	19
2.5 CONTRACTOR SELECTION PROCESS.....	20
2.5.1 Pre-qualification	20
2.6.2 Final selection.....	21
2.6.3 CONTRACTOR QUALIFICATION FACTORS	21
2.7 NATURE OF CONSTRUCTION CONSULTANCY IN GHANA – THE PROJECT SUCCESS	22
2.8 CHALLENGES AND EFFECTS OF PROCUREMENT ON CONSTRUCTION PROJECTS.....	23
2.9 THE INFLUENCE OF PPROCUREMENT METHODS ON PROJECT PERFORMANCE: A CONCEPTUAL FRAMEWORK.....	24
2.9.1 Construction Procurement Selection	25
2.10 RELEVANCE OF THE PROCUREMENT EVALUATION CRITERIA	27
2.11 CHAPTER SUMMARY	29
CHAPTER THREE.....	30
RESEARCH METHODOLOGY	30
3.1 INTRODUCTION.....	30
3.2 RESEARCH APPROACH.....	30
3.3 DATA COLLECTION AND INSTRUMENTATION.....	31
3.3.1 Population.....	31
3.3.3 Sources of Data.....	33
3.4 ETHICAL CONSIDERATIONS	34
3.5 DATA ANALYSIS	34
3.6 CHAPTER SUMMARY	34
CHAPTER FOUR.....	35
ANALYSIS AND DISCUSSION OF RESULTS	35
4.1 INTRODUCTION.....	35
4.2 BACKGROUND INFORMATION OF THE RESPONDENTS	35
4.2 THEMATIC DISCUSSION OF RESULTS	36
4.2.1 Theme 1: Key Factors.....	37
4.2.1.1 Key Factors Considered in Contractor Evaluation and Selection.....	37

4.3 Theme 2: Relevance of Criteria	38
4.3.1 Past performance record.....	38
4.4 Theme 3: Contractor selection	39
4.4.1 Multi-criteria Approach.....	39
4.4.1.1 Recommended approach for contractor selection	40
CHAPTER FIVE.....	41
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	41
5.1 INTRODUCTION.....	41
5.2 SUMMARY AND CONCLUSION.....	41
5.2.1 Objective 1: Key factors considered in contractor evaluation and selection.....	41
5.2.2 Objective 2: Relevance of the evaluation criteria and method for contractor evaluation and selection	41
5.2.3. Objective 3: Multi-criteria approach to contractor selection.....	41
5.3 RECOMMENDATION	42
5.4 DIRECTIONS FOR FUTURE RESEARCH.....	42
5.5 LIMITATIONS OF THE STUDY	42
REFERENCE.....	43

LIST OF TABLES

Table 2.1 Procurement Strategies and their distinguishing features.....	19
Table 3.1 Selection Criteria for Sample.....	32
Table 4.1 Characteristics of Respondents.....	36
Table 4.2 Showing response from interviewees	37
Table 4.3 Showing the multicriteria approach recommended by interviewees	40

LIST OF FIGURES

Figure 2.1 The Eternal Triangle.....	7
Figure 2.2 Procurement Process Model.....	13
Figure 2.3 Factor effecting selection of a procurement method.....	26
Figure 2.4 Delivering Procurement Objectives through the Procurement Process	28

ACKNOWLEDGEMENT

First and foremost, I thank the almighty God for seeing me through this research work successfully.

I express my sincerest gratitude to my supervisor for the guidance and keen supervision during the entire project.

Finally, to all who through one way or the other contributed immensely to the realization of this project.

DEDICATION

I dedicate this thesis to the Almighty God and to my entire family.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND TO STUDY

Within the context of the construction industry, the process or procedure in which construction projects are delivered is called procurement (Ashworth and Hogg, 2000). An evaluation criterion is a standard way evaluating bids in order to make a choice on a suitable contractor who best meets the requirements and can offer value for money. It is best when this evaluation criteria is created at the incipient stages of the procurement process to foster value for money, transparency, and integrity in the process (The World Bank 2016).

According to Ngai et al (2002), across the globe, the construction industry plays a significant role to the economies of nations. Fully 7% to 10% of the global GDP can be attributed to this industry (Voordijk *et al.*, 2000). However, the process of construction and the products produced do have negative bearing on health, safety and the environment (Bayliss *et al.*, 2004). Given that these processes and products and their effects are pervasive, considerations should be given to this industry to ensure its well-functioning (Eriksson, 2007).

Research efforts especially in previous years focused their attention on the impact alternative procurement had on project objectives. The right systems and approach procurement with a holistic perspective is essential for the effective governance of projects. This makes it relevant to investigate the varying procurement procedures available and their effects on project performance. The purpose of this project is to develop a procurement evaluation criterion for construction projects, specifically public financed pre-tertiary infrastructure projects in Ghana.

1.2 PROBLEM STATEMENT

Most construction projects faced the often issues of being complex with an accompaniment of risks. They are long in duration and often characterized by been custom made to suit clients (CCSRP, 2006). These qualities of construction projects mean that there is a need for effective cooperation and coordination among the various actors. Regardless, researchers and professionals bring the argument that project problems have a strong correlation to poor and ineffective procurement procedures used. The tendering process often delays without feasible cause. Evaluation takes long affecting the contract award to the suitable contractor. On several cases, the duration for evaluating tenders can stretch beyond the valid period for tenders. Consequentially, this reduces the degree with which projects are executed. According to CCSRP (2006), as a result of delays in evaluating tenders, about 25% of budget dispensed for projects do get.

The question here is, how does the evaluation criteria used contribute to the often efficiencies and delays in the procurement processes, if indeed there are? This thesis will explore these unconfirmed correlations.

1.3 AIM

The study aims to identify the relevant factors for contractor selection in Ghana.

1.4 OBJECTIVES

The purpose of this research is to:

- To identify key factors that are considered in contractor evaluation and selection in Ghana.
- To identify the relevant criteria and method for evaluation and selection of contractors in Ghana.

- To identify the multi-criteria selection methods that are preferable by construction professionals.

1.5 SCOPE

This study was conducted in Ghana, which is in West Africa. This study focuses contextually, on identifying the relevant factors for contractor selection in Ghana. Construction professionals such as Quantity Surveyors, Procurement Specialist and Contract Managers who have gained a minimum of 10 years of work experience and have been panel members in the tendering process were the main focus for the thesis.

1.6 JUSTIFICATION

As an evidence of the importance of the right procurement procedure, public officials have been increasing the awareness among the public of the efficient use of public funds and how procurement procedures play a role in that. There have been several scandals and corresponding complaints about the fraudulent use of state funds. Yet, the evaluation process continuously encounters inefficiencies that creates problems for public procurement entities, specifically at the planning phase of the project (New Zealand Qualification Authority, 2004).

Therefore, the findings of this thesis would assist in developing an appropriate guideline for identifying the relevant factors for contractor selection as well as identifying a multi-criteria selection method to select Ghanaian contractors. Adding to this, the conclusions and recommendations to be made in this thesis will aid in improving the proper adoption of the procurement evaluation criteria used for construction projects in Ghana. Moreover, the findings are expected to contribute tremendously to knowledge and in serving as a source of reference for further studies.

1.7 BRIEF METHODOLOGY

Data was collected through both primary and secondary sources. With regards to primary data, this study used interviews as a means to extract data from respondents. The secondary source of data was siphoned through pertinent books, scholarly articles and journals, reports, magazines and the like relevant to the subject at hand as a review of literature on the subject. The literature study involved reviewing other research works on procurement evaluation criteria to aid in the identification of previous work done, contributions made, criticisms, limitations, current findings and its application. The literature review culminated into the development of a well-structured interview guide, which is pivoted around the aims and objectives of the study to gather information from the firms. In settling for sample from the population, the purposive sampling technique was used in selecting construction professionals. The selection criteria used includes; the respondent should have knowledge on the subject matter, he or she must be a member of a professional body. He or she should have gained a minimum of 10 years of work experience and have been a panel member in the tendering process, he or she should be willing to be interviewed. Ten professionals that met this criterion were interviewed based on the interview guide. The data was recorded using an audio recorder and a notebook and transcribed using MS word 2015 version. The research methodology is further discussed in chapter three.

1.8 STRUCTURE OF THE REPORT

This study contains five (5) chapters, which is further divided into subsections and each subsection will throw more light on the previous chapter. Chapter one consists of seven main subsections: with the background to study being the first, followed by problem statement, then the aims and objectives. Research scope comes next, which is followed by justification; then comes the brief

methodology. The research structure concludes chapter one. Chapter two looks at the relevant literature associated with the topic encompassing the opinions, beliefs and established claims of credible authorities and experts in the area of procurement evaluation criteria adopted for construction projects. Chapter three details out the step by step methods to be undertaken in order to obtain a successful research while Chapter four deals with the analysis of collected data. Chapter five concludes the research by analyzing the findings, making recommendations and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews literature pertaining to the subject area of study. The review begins with the overview of procurement followed by procurement systems with respect to construction. Subsequently, the procurement evaluation criteria for construction projects were described. Furthermore, the procurement process model was described as well as the review of the contractor selection process. This chapter concluded with a review of the relevance of the procurement evaluation criteria.

2.2 PROCUREMENT DEFINED – OVERVIEW

In construction, procurement refers to the process of creating, managing and accomplishing construction contracts (Hughes et al., 2015, p. 11). There exists in the United Kingdom three most prevalent procurement methods. They are the Traditional method (conventional method), the Design and Build method, and lastly the management method (Clamp et al., 2012, p. 31). Creating a procurement strategy is an important process. Several factors must be considered: nature and scope of works, distribution of responsibility, coordination of work, extent of risk, and the price basis for awarding contracts (Clamp et al., 2012, p. 31).

In making a choice on the procurement strategy to use, consideration should be given to the needs of the client including his objectives for the project (Pickavance, 2007, p. 96). In the figure below, the triangle illustrates the client's three important priorities. As a result, the client needs to be asked which of these is of most significance to him in order to arrive at the best procurement plan (Pickavance, 2007, p. 97).

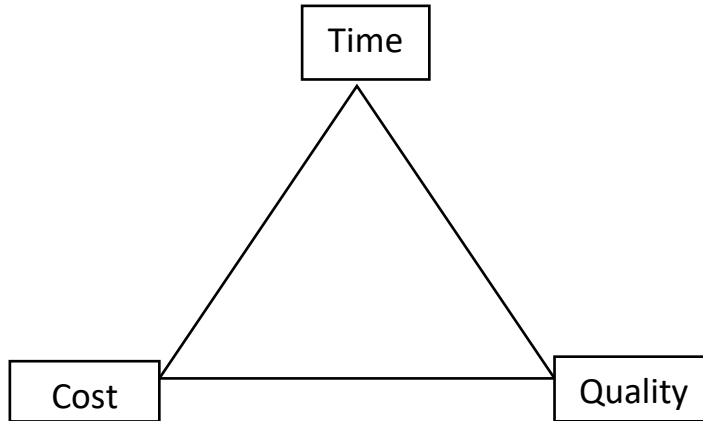


Figure 2.1 The Eternal Triangle
Source: Pickavance, (2007)

2.2.1 Traditional Procurement

With the traditional method is the most common among the three. It involves separating the design element and the construction element (Royal Institution of Chartered Surveyors, 2014). The client employs consultants to handle the design aspects as well administering the contract (Kwakye, 1997). Upon completion of the project designs, tenders are solicited. However, in this procurement strategy, the client has major control, doing do through his appointed consultant (Kwakye, 1997). The traditional method can be slow since design has to be completed before tenders are solicited for (Pickavance, 2007, p. 117). But this method allows for the review and alterations of design where necessary to suit the client's needs. Clients who prefer to know their obligations as well the level of risks they will bear prefer this method (Kwakye, 1997). With this method of procurement, because project duration, cost and design is stabled at the onset, risks are less compared to the other procurement methods (Royal Institution of Chartered Surveyors, 2013, p. 7).

2.2.2 Design and Build Procurement

Here, the contractor is given the responsibility of both design and construction of the project (Royal Institution of Chartered Surveyors, 2014, p. 3). The client does not appoint consultants in this

method unlike the traditional method but pushes responsibility of design and construction to the contractor. This ultimately reduces cost (Pickavance, 2007, p. 123).

Variations under this procurement method can be exorbitant given that the client is no direct control over the contractor's performance (Clamp et al., 2012, p. 46). For a client who desires to have a measure of over, this method is not advisable (Masterman, 2002, p. 52).

With regard of client control, there is a variation of the design and method called the “develop and contract”. Under this variation, the client can appoint his own design team to provide design for the contractor to execute (Royal Institution of Chartered Surveyors 2013, p.11). Usually the contract existing between the client and the design team is transferred to contractor in what is called a novation. Such a transfer also transfers risk (Hughes et al., 2015, p. 56). The design and build method is faster in contrast to the traditional method since design and construction work hand in hand (Clamp et al., 2012, p. 46).

2.2.3 Management Procurement

In the management procurement strategy, the client both employs a design team and a construction manager who is independent to take charge of managing programming and coordinating design and construction (Royal Institution of Chartered Surveyors, 2014, p. 4). This construction manager manages the activities of all contractors involved. He only has a direct contract with the client (Royal Institution of Chartered Surveyors, 2014, p. 4). This allows the client greater degree of control. This method allows to proceed faster since design and construction work in parallel. However, there are risks of uncertainty in cost (Kwakye, 1997). This method is recommended if clients do have some level of experience with construction projects (Royal Institution of Chartered Surveyors, 2014, p. 4). Its best suited project characterized by being complex and large (Clamp et al., 2012, p. 38) .

2.3 PROCUREMENT SYSTEMS

With regards to the extent of integration of design and production process, classification can be made to procurement systems. There can be either traditional systems or integrated systems (Kwakye, 1997).

2.3.1 PROCUREMENT SYSTEMS WITH RESPECT TO CONSTRUCTION

With regards to construction, procurement system refers to the entirety of satisfying the client's objective for a project from its inception to the project's final delivery. It is a system of management used by the client to obtain the design and construction services required for the execution of a proposed project to a required cost, quality and within a specified time. A procurement system allocates the roles and relationships, shapes the values and style of the project, and lastly establishes a management structure and system. Changes to procurement systems could be from a number of causes. Bennet and Brice (1992) gave some of these factors peculiar to the United Kingdom.

- a. Fragmentation of the building industry: Designers and contractors mostly work for different organizations and only collaborate transiently on projects.
- b. Conflict and frequent friction between client, consultants and contractors
- c. The changing role of specialist contractors. Greater responsibility for detailed design and on-site supervision is given to specialist contractors, therefore, most procurement systems now include some form of contractual link between the client and the key specialist contractors.
- d. Due to the increased involvement of specialist knowledge on design, architect's involvement in design and corresponding contract with clients is becoming difficult.
- e. Now project design and construction include a management side as a basic requirement

f. Due to rise in experience and expertise in construction, client are now more directly participating in building projects.

Some factors determining what method of procurement to adopt, according to Kwakye (1997) are as follows:

- a. The scale and complex nature of the project
- b. Performance requirements expected
- c. Price and time competitions
- d. The need for accountability from those in administration
- e. Existing relationships and pre-commitments

Procurement systems are crucial but selecting the right system can be difficult as noted above.

2.4 PROCUREMENT EVALUATION CRITERIA FOR CONSTRUCTION PROJECTS

Public Procurement in Ghana

The World Bank (2003a) and PPA (2013) report indicates that fully 50% to 70% of the national budget is comprised of the public sector procurement. This sector according to these reports also point to the sector contributing to imports and the nation's GDP, 24% and 17% respectively. Implicitly, public procurement therefore has both social and economic impact on the country.

It is the public procurement Act 663 which was established in the year 2003 that structures the procurement process and regulates any irregularities (Osei-Tutu *et al.*, 2011). The Act's main objective is to ensure decorum in the procurement process, to maintain fairness and non-discriminatory conduct in the public procurement process (PPA, 2013). Public procurement has been given a definition by the Act to be the process of acquiring goods, works, and services at a cost that would be considered the best possible. These goods, works, and services should be of the right quality and at the right quantity. It must be acquired and delivered at the right time and place

for the express use of individuals, corporations and government. Such acquisition is done typically through contract (PPA, 2013). Another description of public procurement is the process of utilizing public funds to completely or in part purchase or acquire goods, works, and services by an organization. Much of this process encompasses budget allocation, planning, bidding, evaluating bids, managing contract, contract award, performance measurement, monitoring of performance, reporting of final disposal and auditing. In summary, the Act serves as a framework that circumscribe the process of soliciting tenders, evaluating bids, awarding contracts, using and disposing of goods, works and services (PPA, 2013).

The Act of 2003 regulates the procurement process and ensures the modern forms of procurement are incorporated (Osei-Tutu *et al.*, 2011). Regardless, the important topic of sustainable procurement as a common place in this modern world is not addressed sufficiently by the Act (Mensah and Ameyaw 2011). In a 10-year review of works in Ghana on patterns of sustainable consumption and production, it was discovered sustainability was only a future consideration for public procurement. The prevailing practice of procurement was still founded on economic considerations.

With the traditional procurement practices still being the commonplace, price is the main concern to the disregard of key concerns such the sustainable development (Shafii *et al.* 2006; Mensah and Ameyaw 2011). Given the global shift and focus on sustainability, there is a need for a paradigm shift from being centered on economic considerations to sustainable public procurement systems. This would be a better move that will ensure long lasting benefits (Mensah and Ameyaw, 2011). Across the globe, large organizations are turning to sustainable results in the procurement processes. Sustainability and its principle and practice incorporation, the potential exist for the society and the environment to benefit widely. (Sustainability as addressed by Act 914.)

2.4.1 Procurement Process Model – the pre-determined weighting system for construction projects

The Procurement Process model shows the various steps and stages that a particular procurement activity follows in meeting operational requirements. These stages have detailed action which need to be done before progressing to the next stage. Emmett and Crocker (2008), argue that the traditional procurement model for most sectors depicts like the figure below;

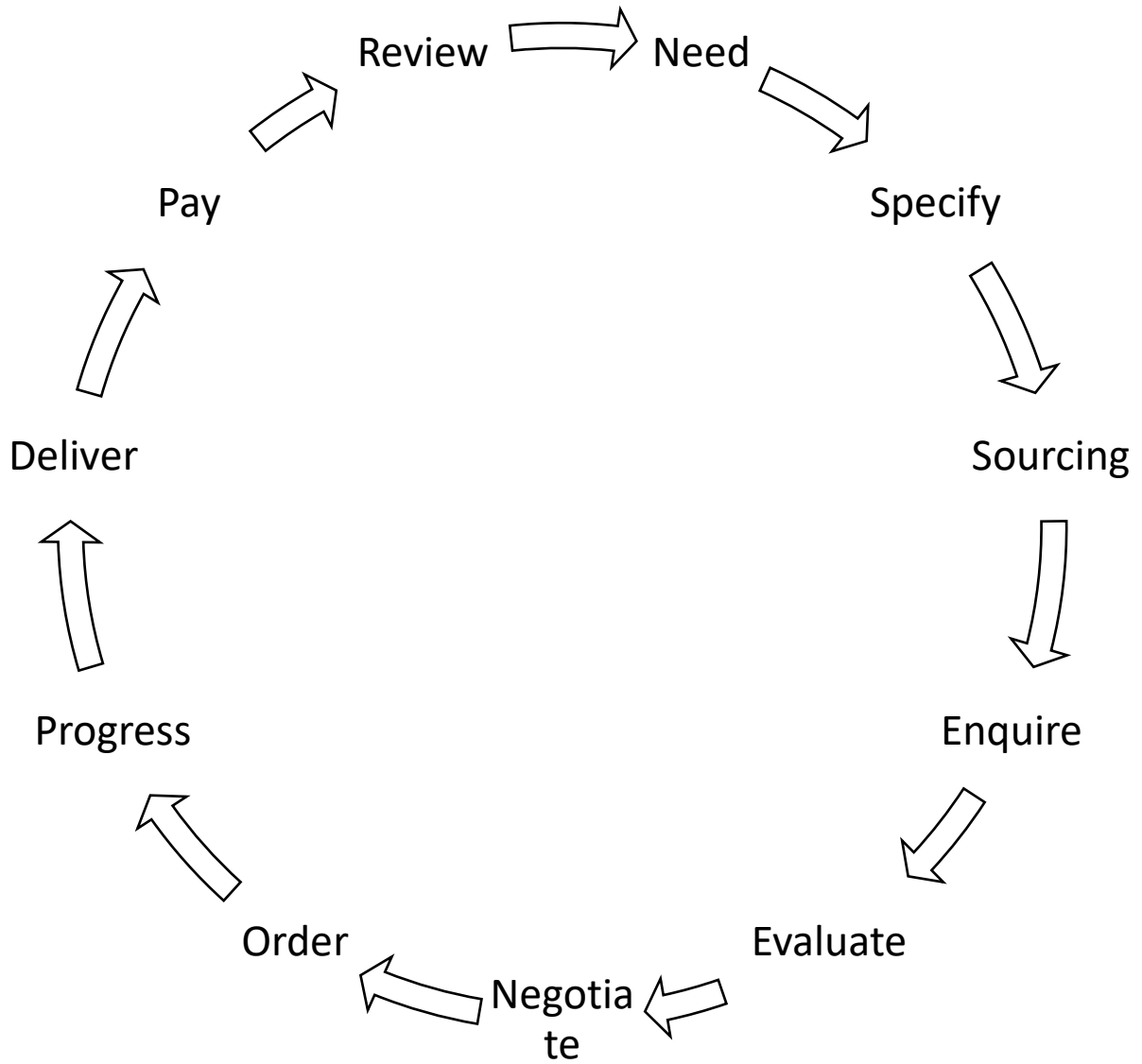


Figure 2.2 Procurement Process Model

Source: Emmert and Crocket 2008

Baily (2005) is however of the view that the above procurement cycle does not recognize the Strategic contribution by modern procurement by showing on the tactical aspect of the function.

Below are the concepts underpinning the procurement process model:

2.4.1.1 Need Identification

The process of procurement first begins with identifying the sustainability and operational needs of the organization. The individual and departmental activities inform on these needs for the organization. This also informs on the budget to be allocated as well as the procurement plan to be used for a specified period (Emmett and Crocker, 2008). Any need to acquire by requisition raised by the stores stock control or by potential users must be identified and notification given. Similarly, the public procurement process is no different. It begins with locating what is required in operations. These are usually specified by the users. (Kotoka ,2012).

2.4.1.2 Determine Specification

After identifying the need, the second stage then is specification. Specifications are the tools the procurement uses to communicate to the users of a product or service the needs of the organization (Sollish and Semanik 2007, Bailey et-al 2005). Specifications do fall under types: functional, technical, performance, brand and design, and sample (Lysons and Gillingham 2003; Lysons and Farrington 2006; Baily et al. 2005 Burt; Dobler and Starling 2006). Either one of these is typically employed in any procurement. Each has its own benefits and disadvantages which informs on the best choice. The Act, 663 of 2003 advises against the use of brands to maintain equal opportunity and competition all in bid to ensure value for money.

2.4.1.3 Sourcing

Sourcing is the next stage. It means basing on the material requirement to identify the location of the market supply. Usually, suppliers are influenced the extent of attractiveness of the market in its expansion or contraction. Suppliers' data base, the internet trade journals, trade exhibition yellow pages of telephone directorate can provide information used to identify this source. Sourcing can be a simultaneous undertaking and need not be considered distinct from the procurement cycle. According to Lysons and Farrington (2002), sourcing comprises of these

activities: request for quotation, together with by documents such as drawings and specification and any relevant document.

2.4.1.4 Enquiry and Evaluation

This stage greatly influences the quality of the product procured. It is a very important stage in the procurement cycle mainly because of this. In this stage, the financial strength as well the technical strength of suppliers are evaluated. Several information are required of suppliers. This information includes details of financial standing, organizational details, facilities and equipment available, and managerial skills (Emmert and Crocker, (2008). All potential sources are analyzed in the information they submit. Additionally, where great quantities of the product or service is to be procured, suppliers should negotiate with (Lysons and Farrington, 2006). The provisions Act 663 of 2003 coincides with.

2.4.1.5 Negotiating

To negotiate is to resolve properly any substance issue to ensure harmony in relationships, reaching agreements and improving performance in efficiency (Dobbler, and Starling, 2006). Negotiation is a mechanism for resolving conflict. Negotiation is not the same in both the private and public sector. They differ during the procurement process especially on when they apply. In the private sector, negotiation becomes necessary after evaluating the source. However, some specific conditions need to be met in the public sector for negotiation to be used. These conditions are met in situations when competitive tendering is not suitable, “cartels” are suspected among the suppliers, during sole sourcing and in cases where the country’s regulations permit the use of negotiations (Lysons and Gillingham ,2006). However, according to the Public Procurement Act 663, public sector institutions are not permitted to negotiate. Regardless, negotiation can be

allowed in under certain conditions. In negotiating, there must be clarity in objectives to be achieved. This will regulate and influence the direction of the negotiating team to arrive at win-win resolution (Dobler and Starling, 2006).

2.4.1.6 Ordering and Progressing

Upon evaluating and negotiating, a contract needs to be signed to formalize the agreements reached. After evaluating and negotiation is signing of contract based on the agreement reached previously in the stages before. The Act 663 necessitates the drawing up of a formal legal contract document including all terms and conditions both parties agreed on. This contract must be signed. The buyers or clients are at liberty to negotiate a call-off agreement valid only for a period of time. (Emmert and Crocker, 2008).

2.4.1.7 Delivery of Goods

One basic objective of the procurement process to foster early competition of contract so that the intended need will be met early. The early delivery of product is possible if work continuous progresses. In delivering of goods, they need to be checked to make sure they comply with the specifications stated. Receipts and payments must be noted. Time allocated to this process will affect the overall (Otterheim and Strands, 2006). In Ghana, contracts are both managed by the supplier and the buyer as stipulated in the public sector procurement. In delivering the goods, these following activities are involved: verifying documents, expediting, arranging inspection, and establishing of goods.

2.4.1.8 Payment and Receiving

Suppliers are paid for goods supplied according to the payment terms stipulated in the contract. Payment can also be made even before the goods are delivered under a pre-payment contract. Usually, the entire contract process is reviewed, particularly in the procurement process. This is

done to assess the strength and effectiveness of the process and to make improvements where needed. How important that product is and how it ties to the business strategy will influence the degree to which reviewing, control, and monitoring is done. In contemporary Ghana, due to inadequate public funds, payment in the public sector procurement has experienced a lot of criticisms and challenges. Regardless, suppliers are paid within a period of 90 days which often leads to poor delivery of goods and a stunted general performance of the supplier.

2.4.2 Procurement in the Construction Sector

Shakantu and Kajimo-Shatantu (2006) assert that in the process of delivering infrastructure, construction procurement plays an important role. It can occur at any stage of the project in which resources external to the client are needed. Construction procurement is fundamentally the procurement process or activity that takes place within the construction industry.

A more technical definition was given by the European Commission (2012). They defined the construction procurement as the process of first identifying, then selecting and finally commissioning the allocation of resources or funds needed for two things:

- i. Works on existing buildings. These works may to refurbish, maintain, and undertake alterations, extensions or even to demolish existing works.
- ii. New works, in ground-up constructing of new buildings, facilities together with any accompanying site works.

There is disparity between construction procurement and traditional procurement of goods and services. The disparity lies in direct acquisition of buildings as compared to the procurement of goods. It is rare with construction procurement. The same can be said of works on existing buildings (alterations or refurbishment). Moreover, the creation of new buildings are rarely non-standard whiles works on existing buildings are nonstandard. One peculiar trait of construction procurement is the services and goods are combined (Gronroos, 2000, in Kadefors et al., 2006).

Another consideration that distinguishes construction procurement from traditional procurement is the complexity level of the process (CIOB, 2010). Hiring of expertise generally is a part of the built asset procurement process. They serve to provide specific solutions. This process needs the collaboration of the client, the design team, and the contractor (Construction Procurement Manual, 2011). The construction procurement process takes into account factors like the weather, logistics, topography, ground conditions, available technologies, labour and service availability. All these do affect the delivery of construction procurement (CIOB, 2010).

Bennet and Brice (1992) observed another uniqueness of construction procurement: the cooperation existing between the construction procurement team and professionals like the architects, surveyors, planners, engineers among others regulate the procurement procedures and make available the required documents for meeting design requirements

The skillsets need for success in procuring a facility is broader and wider than the conventional procurement of goods. These skillsets are usually a function of experience in managing building, the procurement process and in design and construction.

In summary, construction procurement services may be needed by clients under these conditions:

- i. Needing to free up in-house resources by coordinating construction procurement
- ii. Selecting the best and suitable project delivery method through expert advise
- iii. Needing help in locating qualified and skilled contractors
- iv. Enable that an appropriate price is settled on for a construction work
- v. Aiding in the contract award and preparation process
- vi. To acquire full services and the complete constructed asset (Bennet and Brice ,1992).

2.4.3 Construction Procurement - An Overview

Carlidge (2004) pointed out that to undertake the procurement of any construction project, it involves a number of things. For instance, it involves engaging the services of professionals. The entire process implies collaboration among these individuals or parties: the client, contractor(s), the design team, and other consultants, suppliers and others where needed. This process is the basis of procuring, executing and ultimately delivering any construction project in both private sectors and public sectors.

Procurement strategies are many and they vary in nature. Each has its unique benefit and advantage over the other and would be more suited under certain conditions. Thus, the right procurement strategy should be a keen concern for the client. In the table below, the different strategies employed their unique characteristics are highlighted (Carlidge, 2004)

Table 2.1 Procurement Strategies and their distinguishing features

Procurement Method	Main Characteristics
Traditional procurement	In the strategy, it involves two stages where the design is made distinct from the execution of works. A consultant(s) is put charge of design and cost control. The contractor on the other hand is responsible for undertaking the actual project activities unto completion (Baiden, 2006; Davis <i>et al.</i> , 2008).
Design and Construct procurement	In this type, the liability and burden is on the contractor to both design and construct. All expertise for designing and constructing exist with a single unit organization. This allows for an earlier start date and programming the works more effectively. (Greenhalgh and Squires, 2011; Davis <i>et al.</i> , 2008).
Management procurement (management and contracting)	A professional team independent is appointed by the client. The client also employs the services of a management contractor. They will play an advisory role at the pre-construction stage. However, they will take on the full role of executing works during the construction phase. The management contractor manages the works while the professional team undertakes the works by subcontracting them. (Davis <i>et al.</i> , 2008; Baiden, 2006).
Construction Management	Here also, a management contractor is employed to manage the project as well as playing an administrative role for the client. The

client deals with contractor directly but the management contractor is responsible for organization and administration (Davis *et al.*, 2008; Greenhalgh and Squires, 2011).

Design and Manage This procurement strategy requires that the contractor design and manage works, to be responsible for the contractors undertaking the works as well as the design team all for a fee. Actual works execution is done by package contractors. (Davis *et al.*, 2008; Baiden, 2006).

Source: Author's construct (2019)

2.5 CONTRACTOR SELECTION PROCESS

According to Hatush and Skitmore (1997), the contractor selection process in two phases. They are the prequalification phase and the final selection phase.

2.5.1 Pre-qualification

The process of comparing a group of competing contractors' tenders to see which best meet the key criteria of the contractor-organization. The process is done to select the most suitable contractor. Certain standards of measurement are put in place to determine the suitability of the contractors (Nerija and Audrius, 2006).

The screening of contractors requires set criteria which are usually determined by the client (Bennet and Brice, 1992). Clients prefer contractor prequalification because it enables them reduce risks and possible failures. This and to maximize the level of performance of chosen contractors by defining the minimum capacity required for consideration (Palaneeaswaran, 2001). The conventional forms of procurement and tendering only best fits routine projects and is unsuited for innovativeness in other types of projects (Ang et al, 2005).

The attributes most accepted of contractors in the prequalification process according Hatush and Skitmore (1997) are experience, performance ability, financial health, resources, management and technical skills, health and safety, and quality management.

2.6.2 Final selection

Contractor selection is an important process. The wrong choice of contractor will adversely affect the project success. In selecting a contractor, his qualifications are juxtaposed to others and compared to select the best (Nerija and Audrius, 2006). Contractor selection is basically the process of evaluating the qualifications of a contractor to determine if he is the best candidate to undertake the works.

There are several research findings on better ways to enhance the process for best results. However, some of these approaches may be complex and too difficult to adapt practically. A simple yet effective approach is best. As a result, a model that satisfies the key criteria for qualification is required. Project stakeholders must consider adjusting attributes depending on the project demands. The attributes considered must have serious bearing on the project performance to be included. Additionally, the attributes considered must conform to the measurement culture of the stakeholder.

2.6.3 CONTRACTOR QUALIFICATION FACTORS

The decision criteria thus derived were as follows.

- i. **Experience record:** Here, consideration is given to years worked on similar projects and volume of work, total and average work volume on construction projects, familiarity with different types of contract, work experience in similar geographical conditions, work experience in like weather.
- ii. **Past performance record:** Did the contractor meet the project objectives in his previous projects and on similar projects in terms of quality, cost, time, safety, client satisfaction, relationship with sub-contractors and insurance companies.

- iii. **Financial status of the contractor:** Here, consideration is given to the contractors level of credit, financial statement, banking arrangements, operations and liquidity ratio as well as leverage ratio (Mahdi, 1999).

2.7 NATURE OF CONSTRUCTION CONSULTANCY IN GHANA – THE PROJECT SUCCESS

No two projects are the same. Moreover, there may be some critical similarities associated based on the nature of the project in perspective. Notwithstanding the Construction Consultancy aspect of the entire scope of the work, it is every Client's dream that the nature through which the structure is undertaken is vehemently considered. Project success is a foundational concept for regulating and managing any project and also used to plan for future project (Chovichien and Nguyen, 2013). Some of the advantages of project success include capacity in tracking critical results areas, evaluation of project managers, performance bonuses, promotions, and raises (Pinto and Slevin, 1988). Determining project success is complex due to its subjective nature (Parfitt and Sanvido, 1993; Chan, 2002). Due to the lack of a single agreeable working definition for project success, Han et al. (2012) believes that thus has led to failure is defining and evaluating success of projects. Chan and Chan (2001) observed there is no clear definition of project success in the construction industry. Attempts have been made by several researches to propose a working criteria to define and measure project success. None has yet receive global concordance (Chan and Chan, 2001). The abstract nature of the concepts put forth may account for the reasons why. A project-specific approach was recommended by Shenhar et al. (2001). From Yong and Mustaffa (2012), due to rapidity in the transformation of the industry, research findings tend become old and inapplicable to present conditions.

In any project in construction, there cannot be a complete success (Baker et al., 1988). Success is a matter of perception. With project success, even architects draw focus to the aesthetics of the building while engineers stress on the structural integrity (Freeman and Beale, 1992). Among stakeholders, their views do differ on what project success is (De Wit, 1988). Success, according to Oxford Advance Learners' Dictionary (2010), is accomplishing what you desired and have been trying get or do. Parfitt and Sanvido (1993) said each participant sees and defines project success differently. Belout (1998) asserted that one can consider project success by the level of effective of the project. Another way to judge project success is by asking if the project goals and objectives have been met (Chovichien and Nguyen, 2013).

2.8 CHALLENGES AND EFFECTS OF PROCUREMENT ON CONSTRUCTION PROJECTS

The economic growth of many countries across the globe have derived a reason for the growth from construction (Ngai *et al.*, 2002). 7% to 10% of the world's GDP can be attributed to this industry (Winch, 1996, Voordijk *et al.*, 2000). Despite this, the process and products of this industry can be injurious to health and our safety, including adversely affecting the environment (Bayliss *et al.*, 2004). Humanity is largely affected by this industry which makes this industry importance worthy of note (Cheung *et al.*, 2001, Ngai *et al.*, 2002, Eriksson, 2007).

Nonetheless, this industry is widely criticized for its often-inefficient undertakings characterized by time overruns, cost overruns, low quality, low productivity, and poor customer satisfaction (Latham, 1994, Egan, 1998, Ericsson, 2002, Chan *et al.*, 2003). As a result, there has been a call for a change in conduct, procedures and attitudes common to today's construction industry in order to enhance performance (Love *et al.*, 2000, Dubois and Gadde, 2002).

The construction industry is growing in complexity, time pressure, and uncertainty. This has made it critical for cooperation among the various project actors (Anvuur and Kumaraswamy, 2007). Usually, the relationship existing among the project actors are sometimes antagonistic and competitive (Cheung *et al.*, 2003) primarily when carrying out the procurement procedures (Eriksson and Laan, 2007). Procurement procedures thus is a key area to foster cooperation and harmony as it can radically contribute to the success of the project (Cheung *et al.*, 2003, Eriksson, 2007). However, this change can be hampered by some unfavorable behavior of the client (Laedre *et al.*, 2006). Clients tend to be comfortable with procurement procedures they are familiar with instead of accepting procurement procedures specified to achieve the project objectives (Cox and Thompson, 1997; Love *et al.*, 1998; Wardani *et al.*, 2006; Laedre *et al.*, 2006). These form some of the challenges to the procurement process on projects.

2.9 THE INFLUENCE OF PROCUREMENT METHODS ON PROJECT PERFORMANCE: A CONCEPTUAL FRAMEWORK

Construction procurement method was defined by Chan (2007) as a system representative of the structure of the organization. This system is incorporated by the client in project processes and operations. The effectiveness and efficiency of the process affect greatly the success or failures of the project. There are different types of procurement for delivery projects. They include the Traditional method, Design and Build method, Management Contracting, Project Finance and Partnering, and Construction Management. They differ in terms of organizational approach in project delivery, allocation of responsibilities, process and procedure, and activities sequencing (Abdul Rashid *et al.*, 2006; Alhazmi and McCaffer, 2000). The complex nature of procurement selection and management can be challenging to clients and failure on their part leads to poor project performance (Mohsini and Davidson, 1991; Molenaar *et al.*, 2009).

There are three categorical studies done on this. The first juxtaposes the procurement methods and the bids to locate apparent efficiencies in practice (see for e.g. Mohsini, et al., 1995; Wardani, et al, 2006). The next category constitutes research investigations into factors responsible for locating the appropriate procurement method to use (Alhazmi and McCaffer, 2000, Luu et al., 2003 and Hashim et al., 2008). The third category centers on how these factors can developed into models which the client can use to make a suitable choice of a procurement method.

2.9.1 Construction Procurement Selection

There two classified groups of factors that need to be taken into account prior to making a decision on the choice of procurement (Love *et al.*, 1998; Luu, and Chen, 2005; Ratnasabapathy et al. 2006):

- I. External environment: politics, economics, legal , finance, technology, nature disasters
- II. Internal environment: client's characteristics, client requirements and project characteristics.

Figure 2.3 below summarizes the relationship existing among these factors (Ratnasabapathy et al. (2006). The nature of the selection process thus requires a workable systematic procedure from clients (Ali et al., 2011).

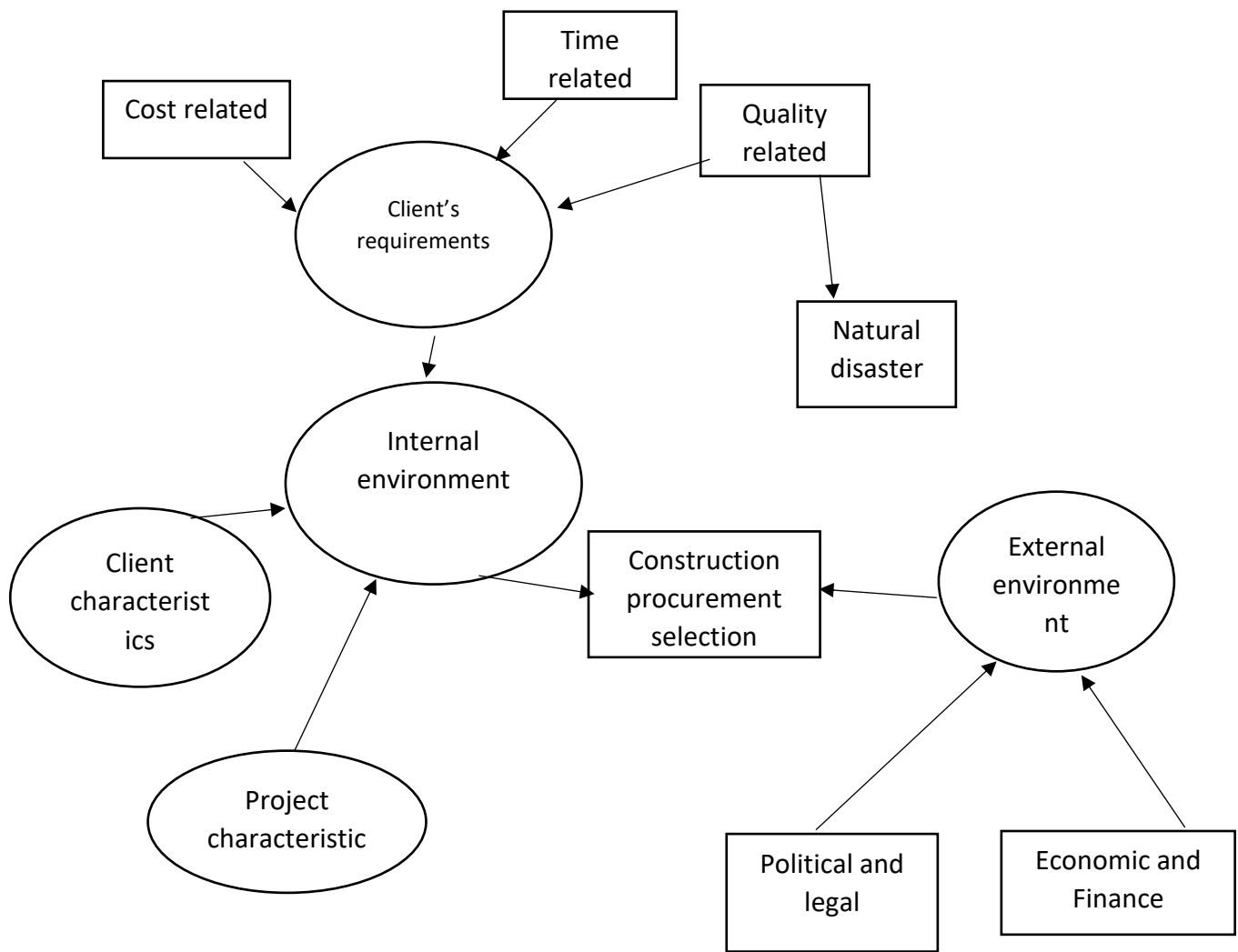


Figure 2.3 Factor effecting selection of a procurement method

Source: Ratnasabapathy et al. 2006

There two key components in the strategic selection of a contractor according to Love et al. (2008).

The first component is the set priorities that the project objectives must achieve. Second is to give thought to other alternatives and then subsequently evaluate them to choose the best. Consideration must be given to the clients requirements and needs. These in turn need to be clear and accurate.

2.10 RELEVANCE OF THE PROCUREMENT EVALUATION CRITERIA

There laid down regulations in the criteria used in evaluation of procurement. This regulation details the various types of evaluation criteria that could be employed in selecting a contractor. This regulation, called the Guidance, must be read together with the Regulations for IPF borrowers and the standard procurement document (World Bank, 2016).

The World Bank (2016) list these following requirement as the regulatory consideration in the establishing evaluation criteria for bids:

- a. The criteria used must suit the market conditions, type and nature of the project, complexity, value, risks, and objectives stated.
- b. As much as possible, the criteria used must have monetary value.
- c. The criteria used and way it shall be applied should be well stated in the standard procurement document.
- d. Only the criteria stated in the standard procurement document is applicable
- e. Only through an addenda can change be to the evaluation criteria once it has been entered into the standard procurement document.
- f. The evaluation criteria must be used on all bids with no exceptions.

The evaluation criteria must be created at the rudimentary stages of the procurement process. It must set for proper evaluation of bids.

Delivering procurement objectives through the Procurement Process

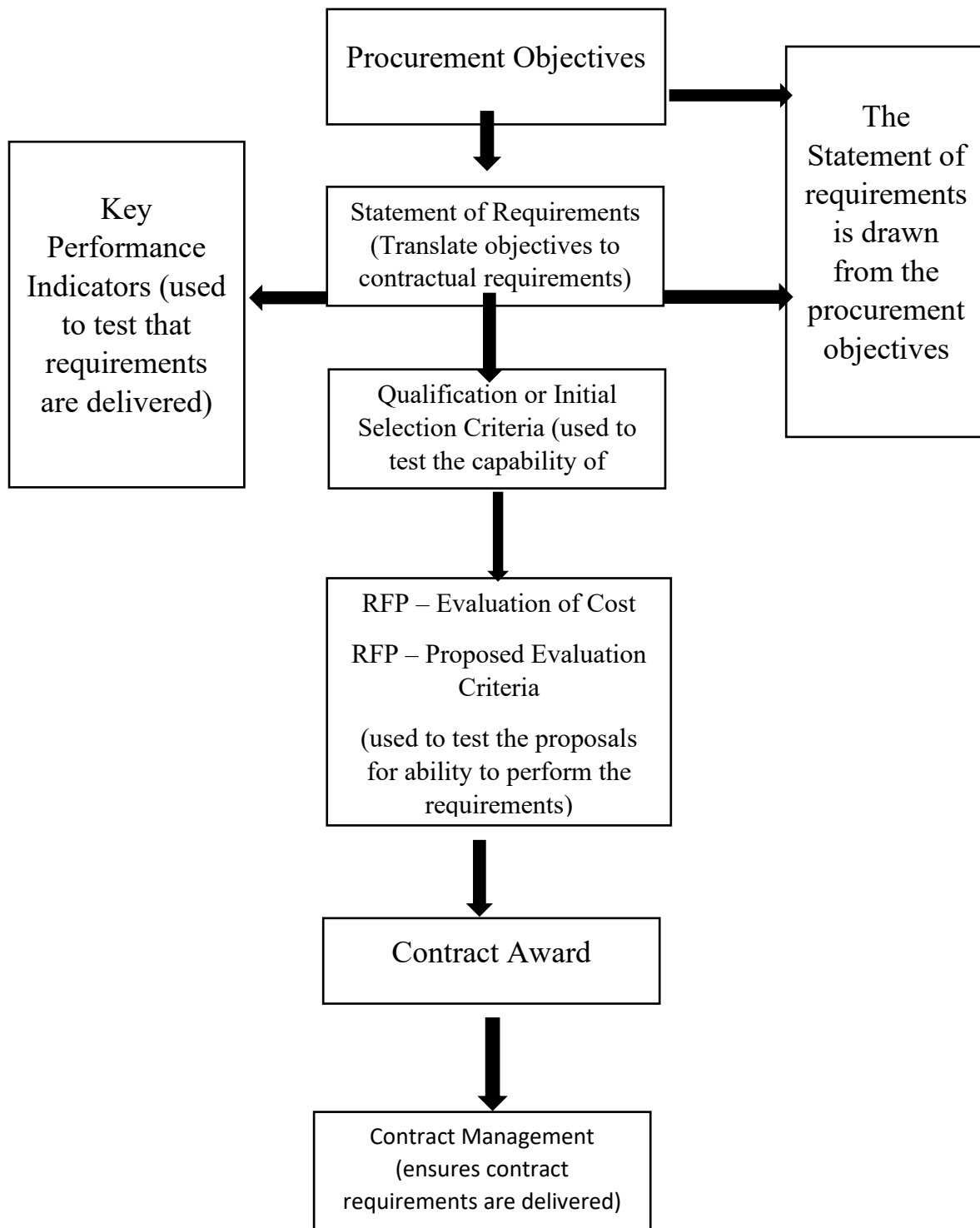


Figure 2.4 Delivering Procurement Objectives through the Procurement Process
 Source: World Bank (2016)

The following factors must be considered in the evaluation criteria use to ensure value for money:

- a. Cost: Depending on the nature of the procurement, a suitable method of evaluating cost should be used such as adjusted bid or adjusted bid with running cost over the asset's lifetime.
- b. Quality: The method used to evaluate quality must sure that requirements are met or exceeded.
- c. Risk: The criteria used here should consider risks in a way that lessens it.
- d. Sustainability: The criteria used must consider the economic, social and environmental implications of the project.
- e. Innovation: The criteria used must be able to assess the presence and degree of innovation in the design and delivery of the goods, works, and services.

2.11 CHAPTER SUMMARY

This chapter of the study begins with an introduction on what the Procurement entails. Broadly, it elaborates on how, and by what means and/or strategies the stated aim and objectives would be met. Nonetheless, the general overview of procurement systems, the method of evaluation and contractor selection criteria, etc., were considered and hypothetically emphasized.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter details out the methodology aspect of the research. The approach to research, its design, methods of data collections, data analysis and its presentation in a way that address these the research aim and objectives are presented in this chapter. The chapter further clarifies the data collection procedure, treated and used to create a multi-criteria approach to selecting contractors. It explains the data analysis method and that used in determining sample size.

.

3.2 RESEARCH APPROACH

This section focuses on the strategies to be adopted by the researcher. The research approach is particularly important in enabling the researcher gather knowledge. The quantitative and qualitative approaches are the two main approaches to collecting and analyzing data according to Pathirage et al. (2005). Baiden (2006) also postulated that research approaches are primarily the qualitative, quantitative and triangulation approaches. Choosing any would be dependent on the purpose of the study, the type and availability of research information (Naoum, 2002, cited in Baiden, 2006).

Creswell (1994) defines quantitative research as “an inquiry into a social or human problem, based on testing a hypothesis or a theory composed of variables, measured with numbers, and analyzed with statistical procedure, in order to determine whether the hypothesis or the theory holds true.”

Denzin and Lincoln (1998) stated that quantitative research centers on measuring and analyzing the relationship existing between variables. It involves the use of statistical data expressed in a

quantitative form and utilizes large-scale survey research. It also makes use of such methods such as questionnaires, experiments and surveys (Kothari, 2004)

Kothari (2004) states that qualitative approach to research, on the other hand, is subject to the researcher's insights and impressions. Qualitative research also deals with the subjective assessment of opinions, behavior and experiences. It makes use of methods such as focus groups, interviews, projective techniques and in-depth interviews unlike quantitative approach. This approach is interactive and the researcher converses with his readers while appreciating the phenomenon under study (Jean, 1992).

This study adopts the qualitative research approach making particular use of interview guides.

3.3 DATA COLLECTION AND INSTRUMENTATION

This aspect of the research methodology addresses the data collection instruments, methods, and procedures as well as the analysis of data.

3.3.1 Population.

According to Sampson (2012), the population comprises all persons of whom measurement was taken. This study was aimed at assessing the critical factors that influence contractor selection in Ghana. As a result, the population consisted of construction and procurement professionals such as Quantity Surveyors, Procurement officers and contracts managers who have ever been panel members in tender evaluation for contractors bidding for pre-tertiary educational buildings.

3.3.2.1 Sampling size and technique

Naoum (1998) explained that a sample is a portion of the population representing the entire population. The sample size should reflect the views and opinions of the rest of the population within which the research is conducted. This research employs the purposive sampling technique. Tongco (2007) asserts that the purposive sampling is a non-probability sampling technique requiring the researcher to take decisions that concerns the individuals to be added to the sample.

He also said that the decisions taken are within a range of measurement. This range encompasses the capacity and willingness of the individual to take part in the research and also the specialist knowledge one may have on the research topic (Tongco, 2007). The study adopted the purposive sampling technique because the researcher intends to select individuals that are well proficient and well informed about the subject matter. Table 3.1 below shows the criteria used to select the samples.

Table 3.1 Selection Criteria for Sample

ITEM	CRITERION	INDICATOR
1	Member of a professional body	The individual should be in good standing
2	Knowledge on contractor selection	The interviewee should be well informed about procurement evaluation
3	Willingness of the interviewee	The interviewee should be willing to be a partaker of the study
4	Should have been a panelist for contractor evaluation and selection	The respondent will be selected on the premise that he/she has been a panelist for tender evaluation
5	Should have gained a minimum of 10 years of work experience	The respondent will be involved in the study if he or she has a minimum of 10 years of work experience
6	Availability of the interviewee	The individual should be ready to be interviewed per the scheduled date and date.

One qualifies to be interviewed when these criteria is met by the respondent:

1)It is required of the respondent to be a member of a professional body and must be in good standing. 2)It is required of the interviewee to be knowledgeable on the concept of contractor selection.3) The respondent should be willing to partake in the interview. This is very important because the respondent would have to be available to be interviewed either through phone or face-to-face.4) The interviewee should have been part of a tender evaluation panel and should have gained a minimum of 10 years of work experience and should be willing to partake in the interview.

This study adopted a purposive sampling technique because the researcher's intention was to select and interview individuals who are well proficient and well informed about the subject matter. Hence, 10 selected construction and procurement professionals who met the criteria stated above were selected.

3.3.3 Sources of Data

Primary data is a type of data that is gathered from the original source (Bernard et al, 1986). Interviews are the principal medium used in accumulating primary data in this research. The primary data was acquired from construction and procurement professionals in Ghana.

3.3.4 Interviews

The interviewees were construction and procurement professionals in the built environment. An official letter was written to the professionals asking them to be participants of the study through interviews. Face to face and phone interviews of approximately 30 to 40 minutes in length were conducted with the professionals. A semi-structured interview guide was used to conduct the interview. Permission was granted by the interviewees for the interviewer to record the interview sessions using a phone recorder. Follow up telephone calls were carried out for further clarifications in instances where answered questions were not satisfactory. There were three sections of the interview; Section A, B and C. Section A was used to gather the background information about the respondents; 1) Their position in their firms 2) number of years of work experience, 3) membership of a professional body 4) email/ contact. Section B and C of the interview guide had questions asked concerning the aim and objectives of the study. 1) whether they could identify key factors that are considered in contractor evaluation and selection 2) whether they could identify the relevant criteria and method for evaluation and selection 3) to identify any

multi-criteria approach to contractor selection. A sample of the interview guide is presented in the appendix of the study.

3.4 ETHICAL CONSIDERATIONS

Usually, in gaining access to respondents to any study, it is important to seek the permission of those in authority in that organization's hierarchy (Creswell and Creswell, 2017). Before interviewing the respondent, the nature of the study was made clear to them. They had the free will to choose to be part of the study or otherwise.

3.5 DATA ANALYSIS

Merriam (2009) pointed to an important consideration when transcribing interviews. Interviews in transcription must be verbatim. This allows for a more thorough data analysis. In locating those aspects of the transcription, the agreed-upon factors considered in evaluating and selecting contractors, the deductive coding was used.

3.6 CHAPTER SUMMARY

The various methodologies accessible for the study and the purpose for adopting this research's methodology are referred to in this chapter. The process of data collection, which was the use of an interview guide, is discussed as the research approach implemented. The means of interviewing the respondents were also captured in this chapter, and also the tools utilized in analyzing the data. In conclusion, the adopted strategy for the study was qualitative. The analysis of both the primary and secondary data was accounted for in this chapter. The collected data is discussed and analyzed in the succeeding chapter.

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

The previous chapters of this study addressed the introduction, the review of relevant literature as well as the research methodology adopted. This Chapter presents details of the analysis and results obtained from the interview in this study. The findings of this study were centered on the objectives of the research. Ten interviewees that met the necessary criteria were interviewed.

4.2 BACKGROUND INFORMATION OF THE RESPONDENTS

Knowing the background information will help generate confidence in the reliability of data collected. The following indicates background information of the respondents:

- Professionals considered and their professional association
- Status of Professionals in their organization
- Experience of respondents in construction procurement
- Working experience of respondents

All the interviewees are members of the Ghana Institute of Surveyors and are all in good standing.

Table 4.1 Characteristics of Respondents

Interviewees	Firm	Position in Firm	Years of experience	Mode of interview
Interviewee 1	Private firm	Managing Director	12 years	Face-to-face
Interviewee 2	Public firm	Regional QS	13 years	Phone call
Interviewee 3	Public firm	Regional QS	13 years	Phone call
Interviewee 4	Private firm	Quantity Surveyor and Procurement Specialist	11 years	Phone call
Interviewee 5	Private firm	Contracts Manager	10 years	Face-to-face
Interviewee 6	Private firm	Quantity Surveyor and Procurement Specialist	11 years	Phone call
Interviewee 7	Public firm	Regional consultant	20 years	Phone Call
Interviewee 8	Public firm	Chief contracts manager	23 years	Face-to-face
Interviewee 9	Public firm	Regional consultant	19 years	Face-to-face
Interviewee 10	Private firm	Quantity surveyor and Procurement specialist	13 years	Face-to-face

4.2 THEMATIC DISCUSSION OF RESULTS

According to Braun and Clarke (2006) thematic analysis is used for identifying, analyzing and reporting patterns within data. The results of the study have been presented and discussed in the various themes as used in the interview guide and as well presented under the individual objectives.

Sub-themes emerged from the data collected.

4.2.1 Theme 1: Key Factors

4.2.1.1 Key Factors Considered in Contractor Evaluation and Selection

The selection of a construction contractor is a critical decision-making process because it influences to a high extent the progress and success of any construction project. The qualification of a contractor is usually evaluated by the client to ensure that he meets the specified legal, financial and technical requirements. Contractor selection refers to the process of aggregating the results of evaluation to identify optimum choice. (Nerija and Audrius,2006)

The interviewees were asked to identify the factors that influence contractor selection in Ghana.

The following factors were presented by the interviewees as shown in table 4.1 below.

Table 1.2 Showing response from interviewees

Factors	Interviewee
Technical capacity to undertake project	1,2,4 and 6
Financial class or standing of contractor	1,4,5,6,7 and 9
Track record and experience of contractor	1,2,3,4,5,7,9 and 10
Geographical location of project	4
Complexity and nature of project	4
Legal qualification	1,2,5 and 8
Plant and Equipment holding	3,5,7 and 10
Past performance record	5,6 and 10
Qualified staff and personnel of contractor	3,5,7 and 10

The result presented above is not different from the decision criteria derived by Mahdi (1999) for contractor selection which includes experience record, past performance record and financial stability of the contractor. According to Hatush and Skitmore (1997), the information used for the assessment of parameters for pre-qualification falls within the following groups; financial information, technical information, managerial information, experience attributes, performance attributes, safety information and environmental concerns.

4.3 Theme 2: Relevance of Criteria

4.3.1 Past performance record

According to Mahdi (1999), the evaluation of the past performance record of the contractors helps in the assessment of the contractor to ascertain how the objectives stated for previous projects were achieved and other similar projects in terms of cost, quality, time, client satisfaction, safety, relationship with subcontractors, suppliers, and insurance companies. The interviewees were asked to justify their choice for the factors considered in contractor selection and evaluation.

“A contractor that has no track record in a specific area cannot demonstrate his or her ability successfully to execute a similar project under consideration. Acceptable past working experience is a key factor in contractor selection” **(Interviewee 4, Interviewee 6)**

“Client feels that good performance on the project is guaranteed if selection is based on the evaluation criteria. Client believes that using the selection factors will yield a win-win situation” **(Interviewee 1)**

4.3.1.1 Technical evaluation

According to Sayers (2004), with regards to technical evaluation, each tenderer is examined in the categories of management structure, staffing, operational procedure, marketing plans, understanding of the work, innovation and flair.

“The availability of the required plant and equipment shows that the contractor can readily undertake the works to the required standard”. **(Interviewee 5)**

“Usually a technically suitable contractor is most likely preferred as this aspect carries more weightings and importance” **(Interviewee 4)**

4.3.1.2 Financial evaluation

Financial evaluation involves cost consideration. The tender is usually evaluated for arithmetical accuracy, acceptability of profit margins, how credible the income forecast is and the adequacy of the contingency sum (Sayers ,2004)

“Financial information is needed to know the acceptability of the profit margin, arithmetical accuracy and the adequacy of banking arrangement”. **(Interviewee 6)**

“This helps the client to know whether the contractor would be able to execute the project technically and financially”. **(Interviewee 3, Interviewee 5, Interviewee 7)**

“The financial status and general liquidity of the contractor is determining his financial standing, since bank statements and liquid assets are examined.” **(Interviewee 4)**

4.4 Theme 3: Contractor selection

4.4.1 Multi-criteria Approach

For the multi-criteria approach, in selecting and evaluating contractors, several criteria are used usually by two or more interested parties. When those making decisions have to make choices between several alternatives, a decision analysis is used in such situations. Multi-criteria approach to evaluating contractors is gaining popularity. However, its usefulness is contingent on the decision-makers’ judgement and the nature of the project (Vilutiene and Zavadskas, 2003).

The interviewees were asked to throw more light on the multi-criteria approach to contractor selection in their own understanding as well as recommend a multi-criteria method for contractor selection in Ghana.

“Using more than one criterion as requirements for contractors to meet before selecting a suitable contractor at the tendering stage. The criteria usually boarder on Contractors’ financial and technical capabilities, legal requirements and sustainability requirements.” **(Interviewee 1)**

“It compares and analyses various conflicting criteria/ parameters all aimed at identifying and arriving at the most economically advantageous decision. Weightings and impacts are of paramount importance here.” (Interviewee 4)

“The multi criteria approach is a system of using more than one criterion in the selection of a contractor. The criteria are normally that of financial, technical and mandatory statutory requirements.” (Interviewee 5, Interview 10)

“It is a multiple-criteria decision support system (MCDSS) for the selection of the most appropriate contractor. The system can accommodate the unique characteristics of a project in addition to the qualifications and capabilities of those contractors assessed. The system first evaluates the list of contractors by matching their qualifications with specific project conditions.” (Interviewee 8)

4.4.1.1 Recommended approach for contractor selection

The interviewees were asked to recommend a multi-criteria approach for selecting contractors in Ghana. The recommendations made have been presented in table 4.2 below.

Table 4.3 Showing the multicriteria approach recommended by interviewees

RECOMMENDED APPROACH	INTERVIEWEE
Merit point selection method that incorporates sustainability requirements	Interviewee 1
TOPSIS method	Interviewee 4 and 8
Point Systems that incorporates Health and safety and sustainability requirements	Interviewee 5 and 10
VIKOR method	Interviewee 8

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, the major findings have been briefly summarized. This chapter also points to the conclusions drawn and recommendations made.

5.2 SUMMARY AND CONCLUSION

5.2.1 Objective 1: Key factors considered in contractor evaluation and selection

The respondents were asked to state the factors considered in contractor evaluation and selection.

They stated that, Technical capability to undertake project, Financial class or standing of contractor, Track Record and experience of contractor, Complexity and nature of project, Legal qualification, plant and Equipment holding, Past performance record and Qualified staff and personnel of contractor are the key factors considered in contractor selection.

5.2.2 Objective 2: Relevance of the evaluation criteria and method for contractor evaluation and selection

The interviewees were asked to justify the reason for the key factors considered in contractor selection and evaluation. They stated that, the evaluation of the past performance record, financial stability and technical considerations of the contractors assists the assessment of the contractor in how he will meet the objectives stated for the projects in cost, quality, time, client satisfaction, safety, relationship with subcontractors, suppliers, and insurance companies.

5.2.3. Objective 3: Multi-criteria approach to contractor selection

This field was included to ascertain whether the respondents are knowledgeable about the multi-criteria approach to contractor selection and also, they were asked to propose some multi-criteria approach for contractor selection in Ghana. They stated that; the multi-criteria approach involves using more than one criterion as requirements for contractors to meet before selecting a suitable contractor at the tendering stage. The criteria usually boards on Contractors' financial and

technical capabilities, legal requirements and sustainability requirements. They recommended TOPSIS and VIKOR methods as well as multiple-criteria decision support system (MCDSS) for the selection of the most appropriate contractor.

5.3 RECOMMENDATION

From the discussion and analysis in the previous chapter, the following recommendations were made for consideration:

The results obtained from the interview implied that not all of the professionals have fore knowledge about multi-criteria selection methods. This method should therefore be made known to these professionals to help improve upon contractor selection method in Ghana.

The study recommends a merit Point System that incorporates Health and safety as well as sustainability requirements. The relevant factors identified from the study were past performance of contractor, financial and technical standing. These factors should never be over looked by construction professionals during the process of contractor selection.

5.4 DIRECTIONS FOR FUTURE RESEARCH

In the course of the research awareness was drawn to a need to further research into the multi-criteria approach to contractor selection.

5.5 LIMITATIONS OF THE STUDY

The primary limitation encountered was particularly with the gathering of data. Most of the professionals to be interviewed had little or no time because of their busy schedule. However, regardless of the difficulties encountered, none of them adversely affected the validity or accuracy of the data obtained.

REFERENCE

- Abdul Rashid, R. Mat Taib, I., Wan Ahmed, W. B., Nasid, M. A., Wan Ali, W. N., and Mohd Zainordin, Z. (2006). *Effects of Proc systems on the performance of const. projs.* . Padang. ,, pp. 1-13.
- Alhazmi, T., and McCaffer, R. (2000). *Project Proc. systems selection model.* . Journal of Const. Eng. and Mgt. Vol.126, No.3, pp. 176-184.
- Ali, Z. A., Zakaria, N., and Che-Ani, A. I. (2011). *The effects of proc systems towards the performance of refurbishment works.* . America.,, pp. 70-75.
- Ang, G., Groosman, M., and Scholten, N. P. M. (2005). *Dutch performance-based approach to building regulations and public procurement.* Business Research and Information. Vol.33, No.2, pp. 107-119.
- Anvuur, A., and Kumaraswamy, M. (2007). *Conceptual model of partnering and alliancing.* Journal of Const., Eng., and Mgt. Vol.133, No.3, pp. 225-234.
- Ashworth, Allan and Hogg, Keith, (2000), Willis's Practice and Procedure for the Quantity Surveyor, in Procurement
- Baiden, B. K. (2006). *Framework for the integration of the project delivery team.* . (Doctoral dissertation, @ B. K. Baiden).
- Baily, P., Farmer, D., & Jessop, D. (2005). *Purchasing principles and management.* Pearson Education.
- Baker, B. N., Murphy, D. C., and Fisher, D. (2008). *Factors affecting project success.* . Project management handbook, 2nd ed.,, pp. 902-919.
- Bayliss, R., Cheung, S., Suen, H., and Wong, S. P. (2004). *Effective partnering tools in construction: a case study on MTRC TKE Contract in Hong Kong.* International Journal of Project Mgt. Vol.22, No.3, pp.253-263.

- Belout, A. (1998). *Effects of Humana Resource Management on Project effectiveness and success: toward a new conceptual framework*. Int. Journal of Project Mgt. Vol.16, No.1, pp.21-26.
- Bennet, J. and Brice, T. (1992). *Procurement systems for building quantity surveying techniques - New directions* . Edited by P.S Brandon. Blackwell Scientific Publications.
- Bernard, H.R., Pelto, P.J., Werner, O., Boster, J., Romney, A.K., Johnson, A., Ember C.R. & Kasakoff, A. (1986) The construction of primary data in cultural anthropology. Current Anthropology, 27. pp. 382-396.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.
- Cartlidge, D. P. (2004). *Procurement of Built Assets*. Londong, Routledge.
- Chan, A. P., and Chan, A. P. (2001). *Key performance indicators for measuring construction success* . Benchmarking: An International Journal. Vol.11, No.2, pp. 203-221.
- Chan, A. P., Chan, D., and Ho, K. (2003). *An empirical study of the benefits of construction partnering in Hong Kong* . Const. Mgt. and Econs. Vol.21, No.5, pp. 523-533.
- Chan, C. T. W (2007). *Fuzzy proc selection model for const. projs* . Const. Mgt and Econs. Vol25, No.6, pp. 611-618.
- Chan, H. L. (2002). *Predictor of Project Performance and the likelohood of Project Success*. Available online via: <http://www.jimsjournal.org>
- Cheung, E., Li, H., Drew, D., and Yeung, N. (2001). *Infrastructure of Partnering for Construction Project*. Journal of Mgt. in Eng. Vol.17, No.4, pp. 229-237.
- Cheung, E., Li, H., Drew, D., and Yeung, N (2003). *Behavioural aspects in construction partnering* . International Journal of Proj. Mgt. Vol21, No.5, pp. 333-343.

- Chia, R. (2002). The Production of Management Knowledge: Philosophical Underpinnings of Research Design. In D. Partington (Ed.), *Essential Skills for Management Research*. London: Stage Publications.
- Chovichien, V., and Nguyen, T. A. (2013). *List of indicators criteria for evaluating construction project success and their weight assignment*. . 4th International Conference on Engineering Projects and Production.
- CIOB (Chartered Institute of Building). (2010). Guide to good practice in the management of time in complex projects. John Wiley & Sons.
- Clamp, H., Cox, S., Lupton, S., and Udom, K. (2012). *Which contract? 5th ed.* London, RIBA Publishing.
- College of Control and Monitoring of Oil Revenues (CCSRP), Annual Reports 2006, Chad.
- Collins, J., & Hussey, R. (2003). *Business Research: A practical guide for undergraduate and postgraduate students* (2nd ed.). New York: Palgrave MacMillan
- Creswell, J. (1994). *Research Design: Qualitative and Quantitative Approach*. Sage.
- Emmett, S., & Crocker, B. (2008). Excellence in Procurement: How to optimise costs and add value. Cambridge academic.
- European Commssion. (2012). *Manual "Procurement Strategy in Construction"*. . Warsaw.
- Construction Procurement Manual. (2011). *Construction Works Procurement - An overview*. A Scotland. gov. publications. available online via: <http://www.scotland.gov.uk/publications/2005/11/28100404/04061> 2-11-14
- Eriksson, P. E. & Pesämaa, O. (2007) 'Modelling Procurement Effects on Cooperation'. *Construction Management and Economics*, 25 (8), 893-901

- Cox, A., and Thompson, I. (1997). *Fit for purpose contractual relations: determining a theoretical framework for construction projects*. European Journal of Purchasing and Supply Mgt. Vol.3, No.3, pp. 127-135.
- Davis, R. P., Love, P., and Baccharini, D. (2008). *Building Procurement Methods*. . In construction innovation.
- Denzin, K. N. and Lincoln, Y. S. (eds.) (2000). *Handbook of quality research*. 2nd ed., Thousand oaks, CA: Sage publications
- De Wit, A. (1998). *Measurement of Project Success*. Int. Journal of Project Management, Vol.6, No.3, pp. 164-170.
- Dobler, B. Starling (2006). *World Class Supply Management, The Key to Supply Chain Management*, 7.
- Dubois, A., and Gadde, L. E. (2002). *The Const. Ind. as a Loosely Coupled System: implications for productivity and innovation*. Const., Mgt. and Econs., Vol.20, No.7, pp. 621-632.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. (2003). *Management Research: An introduction* (2nd ed.). London: Sage Publications
- Egan, J. (1998). *Rethinking Construction*. London, HMSO.
- Ericsson, L. E. (2002). *Skarpning Gubbar*. SOU 2002: 15, Bygghandlingen, Stockholm.
- Erikson, P. E. (2007). *Efficient governance of const. projects through cooperative proc. procedures*. Business Administration and Management. Lulea, Lulea University of Technology.
- Freeman, M., and Beale, P. (1992). *Measuring project success*. project management institute.
- Fitzgerald, B., & D., H. (1998). "Towards Dissolution of the Research Debate from Polarization to Polarity". *Journal of Information Technology*, 13(4), pp 313-326.

- Fong, P. S., and Choi, S. K. (2000). *Final Contractor Selection using the analytical hierarchy process*. Construction Management and Economics. Vol.18, pp. 547-557.
- Galliers, D. R. (1991). "Choosing appropriate research methodology: a revised taxonomy", *Information system research: contemporary approach and emergent traditions*, Amsterdam: North Holland.
- Hassan, S. A. (2012). Health, safety and environmental practices in the construction sector of Pakistan.
- Golmohammadi, D. (2007). *A Decision-Making Model for Evaluation Supplier by Multi-Layer Feed Forward Neural Networks*. Published Ph.D. Dissertation of Engineering and Mineral Resources, West Virginia University.
- Greenhalgh, B., and Squires, G. (2011). *Introduction to Building Procurement*. Routledge, London.
- Han, W. S., Yusof, A. M., Ismail, S., and Aun, N. C. (2012). *Reviewing the notions of construction project success*. International Journal of Business and Management, Vol.7, No.1, pp. 90.
- Hashim, M., Hashim, M., Yuet Li, M. C., Yin, N. C., Hooi, N. S., Heng, S. M., and Young, T. L. (2006). *Factors influencing the selection of proc. systems by clients*. , pp. 1-10.
- Hatush, Z., and Skitmore, M. R. (1997). *Criteria for contractor selection*. Construction Management and Economics., Vol.15, No.1, pp. 19-38.
- Holt, G. D. (1997). *Classifying construction contractors: a case study using cluster analysis*. Building Research and Information. Vol.25, No.6, pp. 374-382.
- Hughes, W., Champion, R., and Murdoch, J. (2015). *Construction contract. 5th ed*. Oxon: Routledge.
- Jean, K. (1992). *Livelihood strategies among farm youth in Rwanda*. Michigan: Michigan University.

- Kadefors, A., Bjorlingsson, E., and Karlsson, A. (2006). *Contractor selection in partnering projects - a review of bid documents*. . In symposium on sustainability and value through construction procurement.,, pp. 286.
- Kothari, C. R. (2004). *Research Methodology: Methods and Technologies*. New Delhi: New Age International (P) Ltd
- Koufteros, X. (2012). *The Effects of strategic supplier selection on buyer competitive performance in matched domains: does supplier integration mediate the relationships?* Journal of Supply Chain Mgt. Vol.48, No.2, pp. 93-115. Available online via: <http://dx.doi.org/10/j.1745-493x.2012.03263.x>
- Kura, B. S. Y. (2012). “Qualitative and quantitative approaches the study: Taming the tensions and appreciating the complementarities, *The qualitative report*, Vol.17, No. 34, pp. 1 -19
- Kwakye, A. A. (1997). *Construction procurement administration in practice*. . Addison Wesley Longman Ltd., London.
- Kotoka, F. A. (2012). Assessing the level of Compliance with the Public Procurement Act 2003 (Act 663) in Public Entities in Ashanti Region of Ghana. *Unpublished Commonwealth Executive Masters in Public Administration thesis, Kwame Nkrumah University of Science and Technology*.
- Laedre, O., Austeng, K., Haugen, T. and Klakegg, O. (2006). *Procurement Routes in Public Building and Construction Projects*. . Journal of Const., Eng. and Mgt. Vol.133, No.7, pp. 689-696.
- Latham, M. (1994). *Constructing the Team*. London, HMSO.
- Levin, D. M. (1988). *The opening vision: Nihilism and postmodern situation*. London: Routledge.

- Love, P., Davis, P., Baccarini, D., Wilson, G., and Lopez, R. (2008). *"Proc. selection in the Public Sector: A tale of two states."* , pp.1-11.
- Love, P., Skitmore, M., and Earl, G. (1998). *Selecting a suitable procurement method for a building project.* Const. Mgt. and Econ., Vol.16, No.2, pp. 221-233.
- Luu, D. T., Ng, S. T., and Chen, S. E. (2003). *A case-based proc. advisory system for const.* . Advances in Eng. Software. Vol.34, No.7, pp. 429-438.
- Luu, D. T., Ng, S. T., and Chen, S. E. (2005). *Formulating Proc. selection criteria through case-based reasoning approach.* . Journal of computing in Civil Eng. Vol.19, No.3, pp. 269-276.
- Mahdi, I. M. (1999). *Thesis: Decision Support System for the selection of the optimum contractor in construction projects.* . Civil Engineering, Southampton University, UK. .
- Masterman, J. (2002). *An introduction to building procurement systems.* London, Routledge.
- Mensah, S., and Ameyaw, C. (2011). *Sustainable procurement: the challenges of practice in the Ghanaian construction Industry.* In: Laryea, S., Agyepong, S. A., Leiringer, R. and Hughes, W. (Eds) *Procs.* . 4th West Africa Built Environment Research (WABER) Conference, Abuja, Nigeria., pp. 871-880.
- Merriam, S. B., & Grenier, R. S. (Eds.). (2019). *Qualitative research in practice: Examples for discussion and analysis.* John Wiley & Sons.
- Mohsini, R. A., and Davidson, C. H. (1991). *Building Procurement - Key to improved performance.* . Building Research and Information. Vol.19, No.2, pp. 106-113.
- Molenaar, K., Sobin, N., Gransberg, D., Tamera McCuen, T. L., Sinem Korkmaz, S., and Horman, M. (2009). *Suitable, High Performance Projects Delivery Methods.* . The Charles Pankow Foundation and The Design-Build Institute of America, America. .

- Naoum, S. G. (2002). *"Dissertation Research and writing for construction students*. Routledge: Butterworth-Heineman.
- Muralidhar, K. S. (1990). *Using the AHP for information system project selection*. Information and Mgt. ,, pp. 87-95.
- New Zealand Qualifications Authority (NZQA), (2004), Civil Engineering – Asset Management, *Compare and Select tender evaluation methods in compliance with competitive pricing procedures*, 18926 version 2. New Zealand.
- Nerija, B., and Audrius, B. (2006). *Analysis of criteria for contractors' qualification evaluation*. Technological and Economic Development of Economic. Vol.12, No.4, pp. 276-282.
- Ngai, S., Drew, D., Lo, H. P. and Skitmore, M. (2002). *A theoretical framework for determining the minimum number of bidders in Construction Bidding Competitions*. . Const. Mgt. and Econs. Vol.20, No.6, pp. 472-482.
- Nydick, R. L. (1992). *Using the AHP to structure the supplier selection procedure*. International Journal of Purchasing and Materials Mgt.
- Osei-Tutu, E., Mensah, S., and Ameyaw, C. (2011). *The level of compliance with the Procurement Act (Act 663) in Ghana*. In *Management and Innovation for a Sustainable Built Environment (MISBE)*. Amsterdam, The Netherlands, CIB, Working Commission W55, W65, W89, W112; ENHR and AESP.
- Otterheim, F., & Strand, Y. (2007). Internal communication of the purchasing process.
- Oxford Advance Learners' Dictionary of Current English. (2010). *8th ed*. Oxford University Press.
- Ang, G., Groosman, M., and Scholten, N. P. M. (2005). *Dutch performance-based approach to building regulations and public procurement*. Business Research and Information. Vol.33, No.2, pp. 107-119.

- Fong, P. S., and Choi, S. K. (2000). *Final Contractor Selection using the analytical hierarchy process*. Construction Management and Economics. Vol.18, pp. 547-557.
- Hatush, Z., and Skitmore, M. R. (1997). *Criteria for contractor selection*. Construction Management and Economics., Vol.15, No.1, pp. 19-38.
- Holt, G. D. (1997). *Classifying construction contractors: a case study using cluster analysis*. Building Research and Information. Vol.25, No.6, pp. 374-382.
- Lysons, K., & Farrington, B. (2006). *Purchasing and supply chain management*. Pearson Education.
- Lysons, K., & Gillingham, M. (2006). *Purchasing and Supply Chain Management*, 7th Pearson Education Limited. *Edinburgh, UK*.
- Mahdi, I. M. (1999). *Thesis: Decision Support System for the selection of the optimum contractor in construction projects*. . Civil Engineering, Southampton University, UK. .
- Nerija, B., and Audurius, B. (2006). *Analysis of criteria for contractors' qualification evaluation*. . Technological and Economic Development of Economic. Vol.12, No.4, pp. 276-282.
- Ng, S. T., and Skitmore, M. R (1999). *Client and Consultant perspectives of pre-qualification criteria*. Building and Environment. Vol.34, No.5, pp. 607-621.
- Palaneeswaran, E. and Kumaraswamy, M. (2001). *Recent advances and proposed improvements in contractor pre-qualification methodologies*. . Building and Environment. Vol.36. No.1, pp. 73-87.
- Parfitt, M. K., Sanvido, V. E. (1993). *Checklist of CSF for building projects*. Journal of Management in Engineering, Vol. 9, No.3, pp. 243-249.

- Partovi, F. Y. (1992). *Determining what to benchmark: an analytic hierarchy process approach*. . International Journal of Operations and Production Mgt. Vol.14, No.6, pp.25-39.
- Pathirage, C. P., Amaratunga, R. D., & Haigh, R. P. (2005). *Knowledge Management Research withing the Built Environment: Research Emthodological Perspectives*.
- Pickavance, K. (2007). *Construction Law and Management*. London: Informa Law.
- Pinto, J. K., and Slevin, D. P. (1988). *"Project success: definitions and measurement techniques."*. Project Management Institute.
- PPA. (2013). *Improving efficiency and transparency in Public Procurement in Procurement digest*. Available online via: [www.http://www.ppaghana.org/documents/PROC_DIGEST_2013_online.pdf?story_id=204](http://www.ppaghana.org/documents/PROC_DIGEST_2013_online.pdf?story_id=204)
- Ratnasabapathy, S., Rameezdeen, R., and Gamage, I. (2006). *Macro level factors affecting the construction procurement selection: a multi criteria model*. ., pp. 581-591.
- Ritchie, J., Lewis, J., & Elain, G. (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers, Designing and Selecting Samples*. London: Sage
- RICS. (2013). *Developing a construction procurement strategy and selecting an appropriate route. 1st ed*. London: RICS.
- Saaty, T. L. (1994). *Decision Making in Economic, Political, Social, and Technological Environments with the AHP*. RWA Publications, Pittsburgh, P. A.
- Sampson, J. (2012). *A Guide to Quantitative and Qualitative Dissertation Research*. Educational Psychology and Learning Systems Faculty Publications (1).
- Sayers, I. L., Long, P. J., & Cripps, P. K. (2004). U.S. Patent No. 6,729,929. Washington, DC: U.S. Patent and Trademark Office.

- Shafii, F., Arman, Ali, Z., and Othman, M. Z. (2006). *Achieving sustainable construction in the developing countries of Southeast Asia*. . Proceedings of the 6th Asia - Pacific Structural Engineering and Construction Conference (APSEC 2006), Kuala Lumpur, Malaysia.
- Shakantu, W. a.-S. (2006). *The role of Procurement in abetting and averting corruption in the construction industry*. . In symposium on sustainability and value through construction procurement.,, pp. 520.
- Shenhar, A. J. (2001). *Project Success: a multi dimensional strategic concept*. Long-range planning. Vol.34, No.6, pp. 699-725.
- Sourani, A., and Sohail, M. (2011). *Barriers to addressing sustainable construction in public procurement strategies* . Proceedings of the Institution of Civil Engineers in Engineering Sustainability. Vol.164, No.4, pp. 229-237.
- Sollish, F., & Semanik, J. (2007). *The procurement and Supply manager's Desk Reference*. John Wiley & Sons.
- Thurirajah, N., Haigh, R., & Amaratunga, R. P. (2006). "Leadership in Construction Partnering Projects: Research Methodological Perspectives". In P. Stephenson, & A. Akintoye (Ed.), *ARCOM Doctoral Workshop*. Gkaskgow: Caledonian University
- Tongco, D.C. (2007). "Purposive sampling as a tool for informant selection", *Ethnobotany Research & Applications*, Vol. 5, No. 1, pp.147-158
- Vilutienė, T., & Zavadskas, E. K. (2003). The application of multi-criteria analysis to decision support for the facility management of a residential district. *Journal of Civil Engineering and Management*, 9(4), 241-252.

- Voordijk, H., de Haan, J., and Joosten, G. J. (2000). *Changing governance of supply chains in the building ind: a multiple case study*. . European Journal of Purchasing and Supply Mgt. Vol.6, No.(3-4), pp. 217-225.
- Wardani, M., Messner, J. and Horman, M. (2006). *Comparing Procurement Methods for Design-Build Projects*. . Journal of Const. Eng. and Mgt. Vol.132, No.3. pp. 230-238.
- Winch, G. (1996). *Contracting systems in the European Const. Ind.: A sectoral approach to the dynamics of business systems*. In Kristensen, R. W. A. P. H (Ed) *The Changing European Firm: Limits to Convergence*. . London, Routledge.
- World Bank. (2003a). *Ghana 2003 Country Procurement Assessment Report, Ghana Country Deapartment*. The World Bank, Washington DC, Available online via: <http://www.worldbank.org/publicsector/anticorrupt/index.com.ctm>
- World Bank. (2016). *The World Bank Annual Report 2016*. . Washington, DC. @ World Bank.

APPENDIX

**KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF ART AND BUILT ENVIRONMENT
FACULTY OF BUILT ENVIRONMENT
DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT**

INTERVIEW GUIDE

This study is being conducted as part of an academic requirement for the award of a M.Sc. in Procurement Management. The aim is to identify the relevant factors for contractor selection in Ghana, focusing on pre-tertiary educational buildings.

The objectives of the study are:

- To identify key factors that are considered in contractor evaluation and selection in Ghana.
- To identify the relevant criteria and method for evaluation and selection of contractors in Ghana.
- To identify the multi-criteria selection methods that are preferable by construction professionals.

The information obtained from this survey shall be kept anonymous and completely confidential. Only findings in aggregate form will be submitted to the relevant authorities.

Your participation in this interview is much needed and would be highly appreciated for the success of the research.

STUDENT:

Godfred Schandorf
Msc. Procurement Management
Kwame Nkrumah University of Science and Technology
Phone number: +233 247125542
Email: gschandorf@gmail.com

SUPERVISOR:

Dr. Michael Addy
College of Art and Built Environment
Kwame Nkrumah University of Science and Technology

PART A: Background Information

Date of Interview.....

Position of the interviewee.....

Years of working experience in your profession

Professional Body.....

Theme 1: Key factors

The table below contains factors that influence contractor selection found in literature. These factors have been categorized under different criteria and may serve as a guide to the interviewee.

FINANCIAL INFORMATION	TECHNICAL EXPERIENCE	EXPERIENCE RECORDS	PAST PERFORMANCE RECORD
Acceptability of the profit margin	Innovation and Flair	Average work volume on similar projects and in construction generally	Past failures
Sufficiency of the contingency sum	Understanding of the work	Management organization	Length of time in business
Analysis of the cost included	Quality of organization and management	Management knowledge	Client or contractor relationship
Credibility of the income forecast	Plant and Equipment	Working in similar weather conditions in similar projects	Quality of work
Credit rating	Marketing Plans	Working in similar Geographical conditions	Client Satisfaction
Financial stability	Operational procedures	Total work volume on similar projects and in construction generally	Relationship with subcontractors
Arithmetical accuracy	Respect for customers	Working with different contract types	Relationship with suppliers
Quality of financial statements	Health and safety/ On site welfare	Number of years working on similar projects and in construction generally	Relationship with insurance companies
Adequacy of banking arrangements	Environmental proposals		Safety

1. What are the factors that influence contractor selection in Ghana?

.....

.....

.....

.....

.....

.....

Theme 2: Relevance of Criteria

2. Kindly give your reasons for the factors listed above.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Theme 3: Contractor Selection

3. Have you heard about the multi criteria approach to contractor selection?

.....

4. If yes, briefly explain the multi criteria approach to contractor selection in your own understanding.

.....
.....
.....
.....
.....
.....

5. Which multi criteria selection method(s) would you recommend for selecting a contractor in Ghana?

.....
.....

RESPONSES FROM SOME INTERVIEWEES

Sample 1

1. What are the factors that influence contractor selection in Ghana?

“Technical capability to undertake project”

“Financial capability to undertake project”

“Previous contractor’s performance known by client”

“Relationship with project client”

“Legal qualification”

2. Kindly give your reasons for the factors mentioned.

“Client feels that good performance on the project is guaranteed if selection is based on the above factors

Client believes that using the above selection factors will yield a win-win situation”

3. Have you heard about the multi criteria approach to contractor selection?

“Yes”

4. If yes, briefly explain the multi criteria approach to contractor selection in your own understanding.

“Using more than one criterion as requirements for contractors to meet before selecting a suitable contractor at the tendering stage. The criteria usually boarder on Contractors’ financial and technical capabilities, legal requirements and sustainability requirements. “

5. Which multi criteria selection method(s) would you recommend for selecting a contractor in Ghana?

“Merit point selection method that incorporates sustainability requirements.”

Sample 2

1. What are the factors that influence contractor selection in Ghana?

“Ideally contractor selection in Ghana is supposed to be based on;

“the experience of the contractor,

the satisfaction of all legal requirements,

the capacity of the contractor to perform

and above all the reasonable cost of the offer of the contractor “

“By the experience of the contractor, the following can be considered; Plant and Equipment, Key Personnel and previous jobs successfully executed”

“By legal requirements, the contractor tendering must be registered with all relevant state institutions and must have updated and valid certificates to prove”

“By capacity the tenderer must prove to have financial stability, credible income, relationship with insurance companies, quality of financial statements “

“The contractor selected must have the least evaluated offer “

“Above all these, in Ghana, contractor selection is based on political affiliations and close relationships to people in power. Without them all the above could be met but contractor won’t be selected””

2. Kindly give your reasons for the factors listed above.

“Personally, I don’t agree to most of the above reasons because it doesn’t allow new companies a chance to execute projects. First entry, but for political influence is virtually impossible. You need to be favored as a new company to be able to land a contract even though the company might have all the requisite personnel and funds to be able to execute the proposed project.”

3. Have you heard about the multi criteria approach to contractor selection?

“No”

4. If yes, briefly explain the multi criteria approach to contractor selection in your own understanding.

“NA”

5. Which multi criteria selection method(s) would you recommend for selecting a contractor in Ghana?

“NA”

Sample 3

1. What are the factors that influence contractor selection in Ghana?

“Financial class/ standing of contractor

Technical capacity of contractor

Track record and general/ specific experience of contractor

Geographical location of project/ contractor

Complexity and nature of project”

2. Kindly give your reasons for the factors listed above.

“Financial Class/ Standing determines the financial status and general liquidity of the contractor in the successful execution of a project. The likes of audit accounts, bank statements, regulatory body financial classifications, liquid assets and liquidity ratios, liabilities etc are generally examined”

“Technical capacity involves the assessment of a contractor’s technical expertise including professional personnel, required plant adequacy etc. Usually a technically suitable contractor is most likely preferred as this aspect carries more weightings and importance, overall.”

“Track record: a contractor that has no track record in a specific area cannot demonstrate his/ her ability to successfully execute a similar project under consideration. Acceptable past working experience is a key factor in contractor selection.”

“Geographical location plays a minor role but critical nonetheless. Many contractors work conveniently in particular geographical locations as this enhances their supply of materials, labour, plant etc to project sites whiles keeping a competitive and economic overhead cost.”

“Complexity and nature: a steel structured facility would ideally be recommended for a contractor that deals in steel structures as a main trade and not that which is primarily engaged in concrete/ masonry structures only.”

3. Have you heard about the multi criteria approach to contractor selection?

“Yes”

4.If yes, briefly explain the multi criteria approach to contractor selection in your own understanding.

“It compares and analyses various conflicting criteria/ parameters all aimed at identifying and arriving at the most economically advantageous decision. Weightings and impacts are of paramount importance here.”

5. Which multi criteria selection method(s) would you recommend for selecting a contractor in Ghana?

“TOPSIS”

Sample 4

1. What are the factors that influence contractor selection in Ghana?

“Financial capacity to undertake the works be it in the form of bank statements or assess to capital. “

“Works of Similar nature, complexity and total volume of these similar that have been executed by the Contractor. Their track record for completion of projects in time and of the required quality is also essential.”

“Plant and Equipment holding of the contractor”

“Qualified Staff and Personnel of the contractor to execute the works”

“Statutory and Pre-qualification requirements. Eg. Valid MWHWR certificates, Certificate of Incorporation and Commencement etc”

2. Kindly give your reasons for the factors mentioned.

“The financial capability of the Contractor is considered as a fundamental success factor for the works to be awarded to the Contractor by the Client. The Client is comforted knowing that the Contractor has a financial standing of the magnitude of the project.”

“Works of similar and complexity shows that the Contractor has enough experience to carry out the works that may be awarded. A track record of completion on time and quality also assures the Client that the Contractor will be able to duly carry out the work to a high quality.”

“Plant and Equipment holding of the Contractor is crucial in execution of the works. The availability of the required plant and equipment shows that the contractor can readily undertake the works to the required standard.”

“Qualified Staff and Personnel of the Contractor to execute the works. The required personnel is key as this highly aids the execution of the works. Due processes and the necessary documentation will be prepared by these qualified to personnel to facilitate the works. “

“Statutory and Pre-qualification requirements. These tender as evidence that the Contractor is legally qualified to carry out the works if awarded. “

3. Have you heard about the multi criteria approach to contractor selection?

“Yes”

4. If yes, briefly explain the multi criteria approach to contractor selection in your own understanding.

“The multi criteria approach is a system of using more than one criterion in the selection of a contractor. The criteria are normally that of financial, technical and mandatory statutory requirements. “

5. Which multi criteria selection method(s) would you recommend for selecting a contractor in Ghana?

” Point Systems that incorporates Health and safety and sustainability requirements”