IMPROVING SELECTION PRACTICES OF SUBCONTRACTORS ON BUILDING CONSTRUCTION PROJECT IN NIGERIA

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UNIVERSITI TUN HUSSEIN ONN MALAYSIA
IMPROVING SELECTION PRACTICES OF SUBCONTRACTORS
ON BUILDING CONSTRUCTION PROJECT
IN NIGERIA

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DEDICATION

I dedicate this work to my entire family member; Alhaji Muhd Jibril, Salamatu (Gogo), my wife Talatu and children; Abdullahi, Muhammad, Haruna, Aisha and Mustapha.
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ABSTRACT

Subcontracting in Nigeria has extensively been used in the construction industry. It allows main contractor to employ a minimum workforce in construction projects and promotes specialization. The relationship between the main contractor and the subcontractors differ from one project to another. However, improper selection of subcontractors might lead to many problems during work progress. This research focuses on improving subcontractor selection practices by the main contractors on building construction project in Nigeria. The objectives of the research were to identify the factors causing adversarial relationship between the main contractor and the subcontractor, identify significant factors used for subcontractors selection by the main contractor, and recommend ways for improving a better selection practices of subcontractors by the main contractor. The quantitative approach was used to obtain information from contractors (category A) for subcontractors selection practices. The data from the questionnaires were collected and analysed using Statistical Package for Social Science (SPSS) version 22.0. The data gathered was converted into the form of percentages, tables, and charts. The results of the findings shows that incompetency of the subcontractor and non adherence of the subcontractor to the time schedule where among the factors causing adversarial relationship between the main contractor and the subcontractor, while providing adequate information to the subcontractor and speciality in certain type of work were ranked top for the factors used for subcontractors selection by the main contractor. In addition avoiding collection of kickbacks in construction and use of skilled labour force were the most significant ways to improve subcontractors selection practices by the main contractor. Subcontractors selection plays a vital role in the overall success of any construction project in order to get best results in terms of cost, time, and quality for the projects.
**ABSTRAK**

Subkontrak telah digunakan secara meluas di dalam industri pembinaan di Nigeria. Ia membolehkan kontraktor utama untuk meminimumkan tenaga kerja dalam projek-projek pembinaan dan menggalakkan pengkhususan pekerjaan. Hubungan antara kontraktor utama dan subkontraktor adalah berbeza di antara satu projek dengan projek yang lain. Walau bagaimanapun, kesilapan dalam memilih subkontraktor boleh membawa kepada banyak masalah semasa kerja-kerja dijalankan. Kajian ini memberi tumpuan kepada penambahbaikan amalan pemilihan subkontraktor oleh kontraktor utama dalam projek pembinaan di Nigeria. Objektif kajian ini adalah untuk mengenalpasti faktor yang menyebabkan konflik dalam hubungan antara kontraktor utama dan subkontraktor, mengenalpasti faktor-faktor penting yang digunakan dalam pemilihan subkontraktor oleh kontraktor utama, dan mencadangkan kaedah yang lebih baik untuk meningkatkan faktor pemilihan subkontraktor oleh kontraktor utama. Kaedah kuantitatif telah digunakan untuk mendapatkan maklumat daripada kontraktor (kategori A) mengenai amalan dalam pemilihan subkontraktor. Data yang diperolehi daripada soal selidik, dikumpulkan dan dianalisis menggunakan *Statistical Package for Social Science (SPSS)* version 22.0. Data terkumpul kemudiannya diolah ke dalam bentuk peratusan, jadual, dan carta. Hasil dapan kajian menunjukkan bahawa subkontraktor yang tidak berkelayakan dan tidak mematuhi jadual masa adalah antara faktor yang menyebabkan hubungan yang tidak harmoni antara kontraktor utama dengan subkontraktor. Di samping itu, penyediaan maklumat yang mencukupi kepada subkontraktor dan pengkhususan jenis kerja merupakan faktor yang paling asas yang digunakan oleh kontraktor utama dalam memilih subkontraktor. Selain itu, mengelakkan pengumpulan sogokan dalam pembinaan dan penggunaan tenaga kerja mahir adalah cara yang paling berkesan untuk meningkatkan amalan pemilihan subkontraktor oleh kontraktor utama. Pemilihan subkontraktor memainkan peranan yang penting dalam kejayaan keseluruhan mana-mana projek pembinaan untuk mendapatkan hasil yang terbaik dalam segi kos, masa, dan kualiti untuk projek tersebut.
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CHAPTER 1

INTRODUCTION

1.1 Introduction
This chapter discusses on the introduction of the research that serves as the background, problem statement, research questions, aim and objectives, significant of research and scope of the research. Finally, it describes the chapters outline.

1.2 Research background

Construction industry is a complex and important industry that involve raw materials, machinery, finance, technology and most importantly human resources. Construction industry plays a vital role in economic development, and directly has deep influences on other industries. Construction projects involve many parties namely the contractors, consultants, clients, suppliers, subcontractors and so forth. For almost the past two decades, subcontracting has been utilised extensively in the construction industry. Kumaraswamy and Matthews (2000) stated that it is common to subcontract 80% to 90% of the construction work to subcontractors. Arditi and Chotibhongs (2005) indicate that subcontractors continue to play a vital role in executing significant portions of construction work.

Subcontracting is a widespread practice in the construction industry. It has been used to describe a foreman and his crew, whose relationships are based on the relative-focused patriarchal system of the society. Nowadays, construction companies in which a more formal worker-manager relationship is valid take part in the construction business (Marzouk et al., 2013). Subcontractors are specialist agents in the execution of a specific job, supplying manpower, equipment, tools, and
designs. They act as agents of the production system of the contracting company and play a vital role in the construction industry.

Kale and Ardit (2001) indicated that unstable demands and seasonality cause construction companies to split into autonomous units and to rely on subcontractors to undertake some of the work packages. In addition, the International Labour Organization (2003) posited that the growth in the practice of outsourcing labour has allowed large companies to effectively divorce themselves from the physical work of construction and concentrate on service functions. Through subcontracting, the risks of main contractors are also reduced as errors in estimating or additional costs caused by delays or extra labour requirements can be absorbed by the subcontractors involved (Woon and Ofori, 2000). According to Chang and Ive (2002) clients identify the needs necessitating decisions to invest in construction. These needs influence a client’s choice to adopt a particular procurement for his project. In their subcontractor selection practice, general contractors rely heavily on subcontractors' bid proposal to make selection decisions. The lowest bid price is usually the key determinant factor for selecting subcontractors (Arslan et al., 2008). The main objectives of the subcontractor selection process are to reduce project risk, maximize the quality and maintain strong relationships between project parties (Marzouk et al., 2013).

In Nigeria, Ogunsanmi and Bamisile (1997) identified four factors that can influence subcontractors selection such as: size of project, aesthetics, provision of added services such as finance, and high management skill. Subcontractors' selection decisions are of prime importance to main contractors. These decisions are exercised by general contractors multiple times on every single project. However, none of these criteria combines subcontractors' bid price along with the subjective criteria resulting in one holistic subcontractor evaluation. Contractors rely heavily on subcontractors' bid proposal to make selection decisions. As such, this research work contributes suitable practices for subcontractors' assessment selection that addresses the limitation associated with existing practice and results in one holistic view for subcontractor evaluation. The improved assessment selection practice is highly flexible and easily tailored to reflect any general contractor's criteria for subcontractor selection. Therefore this study tends to identify the best practices for subcontractors selection.
1.3 **Problem statement**

The relationship between main contractors and subcontractors differ from one project to another, and often leads to dispute that ultimately affect the project outcome. Some clients regard the issue of cost as the most important criteria to base the subcontractor selection process while some do not. Moreover, improper selection of subcontractors might lead to many problems during work progress. These include bad quality of work, and delay in project duration (Marzouk *et al.*, 2013). Furthermore, in the construction management literature, there have been only a few specific academic studies on the practice of the subcontractor selection.

According to (Jagboro, 2006) in their subcontractor selection practice, main contractors rely heavily on subcontractors' bid proposal to make selection decisions. The lowest bid price is usually the key determinant factor for selecting subcontractors. This sole reliance on subcontractors' bid proposal to make selection decisions and non-compliance with prequalification requirements result in problems in quality of work, delay in project duration, create additional costs in construction projects and lead to serious money losses for construction companies in the long run. This is as a result of bribery and corrupt practices experienced in the Nigerian construction industry (Kasimu & Abubakar, 2012).

Over the years, research interests in addressing subcontractor and main contractor issues across the world have resulted in large number of publications. Previous works in this field include that of Fagbenle and Oluwunmi (2011) who examined the factors influencing construction clients or contractors choice of subcontractors in Nigeria and resolved that five most important factors are; subcontractors’ past experience in terms of size and type of projects completed; subcontractors’ management resource in terms of formal and informal training; other related issues in terms of nature of contract and time of the year (weather), past relationships with the clients or contractors past performance, and project facilitation in terms on labour or plant resources. In another study, Fagbenle and Oluwunmi (2011) worked on identification of contractors’ needs in the selection of construction sub-contractors in Nigeria.

Taye (2009) carried a study of the relationship between contractors and their subcontractors in the Gaza Strip, and concluded that important factors used by main contractors for selection of suitable subcontractors include: "adherence of the
subcontractor to the contract terms, adherence to time schedule, commitment to prices, good reputation, specialty in certain type of work, commitment to quality and the existence of required equipment and machinery”. None of cited work focus specifically on assessment of subcontractor selection and their relationship with respect to project delivery in Nigeria as such the need for the study, because subcontracting has become a standard procedure in contemporary construction. This research geared towards assessing the subcontractor selection criteria on building construction project delivery in Abuja, Nigeria. There is an obvious need to identify these criteria for improved project delivery.

1.4 Research questions

(i) What are the factors causing adversarial relationship between main contractor and subcontractor?
(ii) What are the significant factors used for subcontractors’ selection practices by main contractor?
(iii) How to improve selection practices of subcontractor by main contractor?

1.5 Research aim and objectives

This research is aimed at identifying the improved selection practices for subcontractor with respect to building construction project delivery in Abuja. The following objectives were formulated to achieve the aim of this study:

(i) To identify the factors causing adversarial relationship between the main contractor and subcontractor.
(ii) To identify significant factors used for subcontractors selection by the main contractor.
(iii) To recommend ways for improving a better selection practices of subcontractor by main contractor.
1.6 Research significance

Identifying the best practices for subcontractor’s selection with regard to the project delivery is important to the industry in the following regards.

(i) Construction industry practitioners

Completing project within cost, time and stated quality adds to the contractor’s reputation in a great way. When contractor completed project within a minimum time possible, the margin of his expected profit usually increases because ‘time’, they say is ‘money’. Also, the contractor usually gets the value of his retained amount in full at the end of any defects liability period for a successful completed work that was found to be in good condition. It also prevents the cases of abandon projects. The economy of any nation tends to be more realistic when there is cost and time certainty. If a government is sure of getting a commodity within a particular cost and given time, it can be easily budgeted for and pursue that it with high vigour and certainty. Also the quality obtain of any completed project determines whether the economy can benefit from such a project for a long time or not. By getting a quality work of any completed project, the economy can save the money that would have been otherwise channel for maintenance work.

(ii) Academic research

The findings and recommendation of this research project will add to a pool of academic knowledge and for future research regarding the causes of adversarial relationship between the main contractor and the subcontractors during construction project, and the appropriate method to improve the selection practices of subcontractors in order to provide efficient and effective project delivery.

1.7 Research Scope

The research has covered the assessments of subcontractors’ selection practices in Abuja, the Federal Capital Territory (FCT). Abuja was selected because it has the highest population of professionals within the built environment and has many ongoing projects. Federal Capital Development Authority (FCDA) Abuja (2014). The
target respondents are contractors of category A. The main contractors undertakes
the direct physical construction of the facility, understands the direct physical
construction process in detail (Radosvljevic and Bennett, 2012). Majority of the
contractors in the Federal Capital Territory belongs to category A.

1.8 Research methodology

Research methodology explains the method used in conducting the research. The
steps involves are: Formation of problem statement, developing research objectives,
literature review, data survey using questionnaire, data analyses using SPSS, then
conclusion and recommendation. Figure 1.1 shows the review research method,
activities and output of the research.
1.9 Chapters Outline

This research work structured into five (5) chapters. Details and explanation to every section will be discussed below:

**Chapter 1: Introduction**

This chapter consists of introduction to research topic, the background of research, the research problem, research questions, research aim and objectives, scope, and
significance of research. Finally, the organization of the chapters and summary follows.

**Chapter 2: Literature Review**

This chapter reviews the subcontractor’s selection practices and in addition their relationship with the main contractor. The chapter focuses on different criteria adopted in Nigeria with more emphasis to problems related to project delivery in Nigeria. Identify any research gaps that have not been discussed by previous researchers or need to be discussed further. The chapter also focuses on general suggestions to minimize interface problems, legal contracts and safety issues.

**Chapter 3: Research Methodology**

This chapter discusses the research approach and strategies, and research procedures that would be adopted in conducting the research. This includes research process and design, population and sampling techniques used. The instrument used in data collection and analysis of data were developed.

**Chapter 4: Findings and Discussions**

This chapter presents analysis and Discussions obtained using descriptive means to achieve the results of the objectives. It also discusses the result of survey and findings. It further discusses the main results of the analysis. The analyses answers the research questions and formed the basis of recommendations for further research.

**Chapter 5: Conclusion and Recommendations**

The last chapter is the research summaries the complete research work conducted. The conclusion gives recommendation for possible future research.

**1.10 Summary**

The introduction of the research subject matter was provided in this chapter. The introduction made up of the background of the research work, the problem statement which establishes the basis for the research work. The research questions, the
research aim and objectives, the significant of the research and also the scope of the research were fully explained herein. Next chapter will discuss on literature review.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing literature which addresses on improving assessment selection practices of subcontractors on building construction project including overview of the construction industry, subcontracting in construction industry, categories of subcontractors, advantages and disadvantages of subcontracting, subcontractors selection process, improving assessment practices of subcontracting, theoretical framework and summary.

2.2 Overview of the Construction Industry

Construction industry is a complex and important industry that involve raw materials, machinery, finance, technology and most importantly human resources. Construction industry plays a vital role in economic development, and directly has deep influences on other industries. Construction projects involve many parties namely the contractors, consultants, clients, suppliers, subcontractors and so forth. The main contractors normally sublet the works they procured to the subcontractors among other things to transfer the risks.

The contracting industry is the largest sub-sector of the economy, accounting for about 70% of total value added generated by the United Kingdom construction and almost 70% of the sector’s jobs. Construction products and services, although smaller in size, are also key to the sector’s performance and generate substantial economic benefits. In 2011 some 16,000 United Kingdom-based firms alone,
specializing in architecture and quantity surveying services, accounted for about £4.2 billion in gross value added. In the products sub-sector some 3,000 firms manufacturing metal structures and parts generated almost £4 billion in value added in the same year. Construction also has a much wider significance to the economy. It creates, builds and maintains the workplaces in which businesses operate and flourish, the economic infrastructure which keeps the nation connected, the homes in which people live and the schools and hospitals which provide the crucial services that society needs. A modern, competitive and efficient construction industry is essential to the United Kingdom’s economic prosperity. Its contribution is also vital if the United Kingdom is to meet its Climate Change Act commitments and wider environmental and societal obligations (ABSD, 2011).

However, the construction industry has been affected disproportionately since the recession of 2008. In 2007 the construction industry accounted for 8.9% of the United Kingdom’s GDP but by 2011 the sector contribution had decreased to 6.7%. The decline was experienced by all three sub-sectors. The term construction is generally used to describe the activity of the creation of physical infrastructure, superstructure and related facilities. Construction is also referred to as all types of activities associated with the erection and repair of immobile structures and facilities.

The construction industry plays a major and vital role in transforming the aspirations and needs of people into reality by physically implementing various construction development projects. Construction projects usually cover infrastructure, such as roads, dams and irrigation work. Schools, houses, hospitals, airports, railways, factories and other construction work are some of the examples of the physical foundations as some form of development efforts to improve living standards. Thus, the construction industry is undeniably essential to the growth of a nation and a key sector in the nation's economy. A country cannot grow if there is no development and infrastructure build to spur the economy.

The construction industry is an important factor in the process of development. Its contributions are more than just economic; the products of construction mentioned above contribute extensively towards the creation of wealth and the quality of life of the population (Bresnen and Marshall, 2009).
2.3 Subcontracting in the Construction Industry

One of the most important phases in the construction industry is the bidding process. During the bidding process, selecting the most appropriate subcontractors for the relevant sub-works is highly critical for the overall project performance. In order to select the most appropriate subcontractors for the project and prepare the most realistic and accurate bid proposal, main contractors have to know all financial, technical and general information about their subcontractors. Within this context, main contractors should consider several factors in the selection process. These factors may include the quality of production, efficiency, employment of qualified members, reputation of the company, accessibility to the company, completion of the work on time and so on (Arslan et al., 2008).

Subcontracting has extensively been used in the construction industry. It allows main contractors to employ a minimum workforce in construction projects and promotes specialization (Chung et al., 2006). Many main contractors only act as construction management agents in construction projects and subcontract a large volume of their work to subcontractors (Shash, 2005). The success level of construction projects may depend on the philosophy of selecting “the right person for the right job”. Clearly, the correct choice of subcontractors increases the overall success of a construction project. However, the importance of subcontractor selection is mostly underestimated and neglected in construction (Kumaraswamy and Matthews, 2000). Biddings usually occur between main contractors and subcontractors. Main contractors rely mostly on the bid prices submitted by the subcontractors to estimate the final bid sum for the projects. Thus, subcontractors play an important role in the bidding process. During the bidding process, selecting the most appropriate subcontractors for the sub works is highly critical. Therefore, main contractors must be extremely careful while selecting the most appropriate subcontractor for a certain part of the work or the entire project (Arslan et al., 2008).

On the other hand, Haksever et al. (2006) reported that commercial factors are seen as overriding features in the selection process of subcontractors, such as: experience in similar projects, previous project performance, previous disputes, current workload and lowest bid. PCICB (2003) also recommended that all tenders submitted by subcontractors should be assessed on an equal basis using the criteria stipulated in tender documents, also tender assessment criteria should aim at
promoting healthy competition by placing suitable weights on price, past performance and quality. PCICB (2003) recommended the following criteria to be used in tender evaluation:

(i) Previous experience on jobs of similar nature;
(ii) Adequacy and professional competence of key management and super supervisory staff;
(iii) Availability of capital and labour resources to undertake the subcontract on top of other on-going commitments;
(iv) Quality of technical proposal with particular reference to compliance with tender documents;
(v) Track record of past performance; and
(vi) Price and payment terms.

Previous experience on jobs of similar nature is very important criteria for selection of subcontractor to ascertain the capability of the subcontractor. Adequacy and professional competence of key management and super supervisory staff is a basic requirement for the qualification of tender qualification. Track record of past performance, price and payment terms are regarded as important feature in subcontractor selection practices (Ajanlekoko, 2007).

Chung et al. (2003) identified ten basic factors for selection of subcontractors, which included: (i) financial strength to sustain the required cash flows (ii) adequacy of experienced site supervisory staff (iii) standard of workmanship (iv) timely payment to laborers (v) adherence to program (vi) number of relevant projects completed (vii) sufficiency of craftsmen and laborers, (viii) provision of safety information, instruction and training (ix) updating program as works progress and (x) sufficiency of plant. Arslan et al. (2008) stressed that main contractors should consider several factors in the process of selection of subcontractors. These factors may include the quality of production, efficiency, employment of qualified members, reputation of the company, accessibility to the company, completion of the work on time and further proposed a Web-Based Subcontractor Evaluation System (WEBSES) in which they categorized the selection factors into four main headings as cost, quality, time and adequacy.
2.3.1 Categories of subcontractors

Mbachu (2008) classifies the "several types" of subcontractors in three categories depending on the service type:

(i) Subcontractors of basic activities: constituted mainly by concrete, masonry, and ceramic coatings.

(ii) Subcontractors of technical specialties: execute activities such as electric facilities, hydraulics, and air-conditioning, among others.

(iii) Labour or materials subcontracting specialties: painting, floors, windows, glasses, external coatings, foundations and cleaning.

Furthermore, from a contractual point of view, subcontractors can be categorised as follows (Mbachu 2008):

(i) Domestic subcontractors: those hired by the contractor to perform specific tasks

(ii) Selected subcontractors: subcontractors solicited from a recommended list of potential subcontractor in the tender documents, and

(iii) Nominated subcontractors: nominated by the client or clients or clients agents to undertake specified aspects of the main contract.

According to Mogbo (2010) the typical subcontractor in South Africa falls into one of the categories identified above (i.e. specialist, trade, general or labour-only), and this is a major determinant of the size, management and contracting practices and the level of skills within the subcontractor. Specialist subcontractors typically have a high degree of technical and managerial competence, and many have been in the industry for a long period in their specialized category. Most of these subcontracts are awarded to nominated or selected subcontractors and thus outside of the influence of the contractor. In contrast trade contractors carry out non-specialist work that does not require a significant amount of technical expertise, mainly in the core construction trades such as brickwork and bricklaying. These subcontractors are typically relatively new to the industry, with little business, managerial and financial skills. Where registered, these subcontractors are typically registered in the lower construction industry development board grades of classification, but also include larger, more established construction firms with current spare capacity as (Mbachu, 2008).
These subcontractors are usually domestic and the type of work awarded to them depends on:

(i) The availability of work and the main contractor’s workload;
(ii) Whether the main contractor has the skills and labour available to carry out the work.
(iii) The possibility of lower overheads, higher margins or better cash flows arising from passing on the responsibility of subcontracted works out to another party (Mogbo, 2010).

2.3.2 Selection of Subcontractors

Many selection methods of subcontractors have been proposed in the literature. Arslan et al. (2008) developed a web-based subcontractor evaluation system (WEBSES) to ease the selection of subcontractors. The criteria for evaluating were identified by quantity surveyors of construction firm in USA based on a database of approximately 4000 subcontractor firms.

The main contractors will need to make their own judgment on the relative importance of each element with respect to the elements at a higher level. Argument might occur when the judgment of different decision makers are diverse. As an effort to reduce the incidents of delay, and other possible problems that might be originated from the problems of selecting the wrong sub-contractor, this study aims to expand the sample of study as suggested by Manoharan (2005) in the effort to create a more reliable and applicable subcontractor selection practices.

2.3.3 Advantages of Subcontracting

Subcontracting is an integral component of the construction industry, and its importance has been increasing in the industry over the last two decades in Nigeria and elsewhere around the world. Below are introduced some of the advantages obtained when using the subcontracting:

(i) *Flexibility Improves*: according to Chung et al. (2006) labour subcontracting improves the functional flexibility (the workers’ functions), of volume (number of workers) and financial of the company (smaller fixed costs).
(ii) **Productivity Increases:** according to Brandli (1998) subcontracting leads to control and coordination problems that can result in low quality products and also maintains the quality of the products.

(iii) **Costs Control:** the use of subcontractors with contracts of fixed price facilitates costs control and reduces the responsibility of the manufacturer's supervision.

(iv) **Time management:** Global sourcing has been made possible by the technological advantages in the telecommunications industry together with the Internet. Space and time have shrunk, and it is easy to divide organizational activities across the planet. Also the supply of low-cost workers in certain countries, which have also simultaneously improved their telecommunications infrastructure, and their business, economic as well as political environment, has eased the way of subcontracting.

In some countries, subcontracting means also lower taxes (Oshri *et al*., 2009). The general advantages of subcontracting are: concentrating on the company’s own core competence, lowering overhead costs and gaining access to the partner’s experience, expertise, equipment and contacts. By concentrating on the core competence with an outsourcing strategy the company can create best-in-the-world capabilities. Also by using several providers the outsourcing company can vary the scale and scope of the production, and ultimately manufacture round the clock by exploiting different time zones. In other words, the subcontractor(s) can be taken aboard for flexibility to level the fluctuations of capacity or demand. Furthermore decided on which business functions to purchase from outside service providers or subcontractors is generally seen to be the key for gaining cost reductions or competitive advantage (Oshri *et al*., 2009).

### 2.3.4 Disadvantages of Subcontracting

Subcontractor failure has been listed among the risk allocated to general contractor in construction contracts (Hinze *et al*., 1994). This statement is supported by El-Sayegh (2008) which stated that subcontracting is risky and can lead to:

(i) Low quality;

(ii) Delayed completion and unsafe practice;

(iii) Breach of contract and dispute with the general contractor; and
(iv) Delay in contracts: due to contingency issue.

In addition contractors, insurance issues, partnering and safety issues are among the issues that cause delay by subcontractors which need to be investigated in subcontracting practices.

The subcontractor can also pose a threat if he is not adequately evaluated chosen, instructed and monitored another common subcontracting risk is becoming too dependent on the subcontractor. Companies should avoid outsourcing from limited supply markets. If outsourcing occurs from a small number of subcontractors, or only just from one, the subcontractor(s) capabilities of providing the required volumes with required standards (quality, price, delivery time) must be carefully analysed to diminish the risk caused by subcontractor performance failures.

Sometimes subcontractor dependency can be self-inflicted: if the negotiated contract is not compiled by a cross-functional team, the decisions of e.g. a manager might hinder the options of the purchasing manager. It is also important that all of the parties involved in the outsourcing action understand the total cost structure, value improvement and commit to the relationship (Hackett et al., 2007).

Subcontracting management can be seen as a compilation of some components. These components affect the work style and communication in the work place. Components like strategy, scope definition, risk assessment, cost savings, operational advantages, vendor selection, contracts, governance, information security, performance metrics, technical infrastructure and legal compliance are the ones that most companies focus on. Most well-known soft components are leadership and management competencies, but the other soft components like employee mind set and motivation, global team dynamics and communication, and cultural differences are also important parts of a good outsourcing relationship management. The model is based on the idea that if a company is to succeed, all the elements need to be levelled and equally reinforced (Oshri et al., 2009)

2.4 Subcontracting in the Nigerian construction industry

Construction projects in Nigeria are generally characterized by cost and time overrun, substandard work, disputes and abandonment; emanating from several factors of which the wrong choice of subcontractors is a key factor. Past
performance; subcontractors’ experience; workmanship quality; tender sum; and plant and equipment were the most important criteria for subcontractors prequalification/bid evaluation in Nigeria. The construction industry occupies a focal position in the economy of any nation because it is an important contributor to the process of development. Hillebrandt (2005) affirms that construction expenditure accounts for about 50 percent of the Nigerian government’s expenditure and the effects of changes in the construction industry on the economy occur at all levels and in virtually all aspects of life.

Moreover, construction has a strong linkage with many economic activities, and whatever happens to the industry will directly or indirectly influence other industries and ultimately the wealth of the country. In Nigeria, the construction sector represents the largest employer of labour (directly or indirectly) in the private sector and thus forms a crucial focus of the national economy (Mogbo, 2010). Therefore, considering the significant position of the construction industry in the nation’s economy, there is the need for improved efficiency, productivity, administration and management of construction activities with adequate solutions to the setbacks and problems confronting the industry. Manavageni and Zunzhi (2001) note that the successful completion of a construction project involves the efficient execution of two major processes: design and construction. The design stage involves the appointment of consultants by the client where his needs and intentions are transformed into documents and information. The consultants prepare tender/contract documents and advise the client on the employment of a contractor at a price to execute the project within a particular period in accordance with the design and specifications set for the project.

Jagboro (2006) opines that part of any construction project procurement role involves the client at some stage having to select a contractor. This decision according to him directly affects the success or otherwise of a project. However, the client’s basic requirements is that consultants should select contractors who are likely to be prepared to undertake and complete the work at a competitive price, complete the work on time, construct the work to the required quality standard and also execute the work without a significant risk of extra financial burden on the client. On the other hand, the fragmented nature of the construction industry’s clients with the infinite range of needs is mirrored by an equally multitudinous array of construction companies. This interface of supply and demand normally results in a selection
exercise which enable the client to confidently should entrust in the chosen contractor the responsibility to satisfactorily execute the project. Thus Wong and Holt (2003) submit that a good contractor is expected to complete a project on time, within budgeted cost and to the client’s desired level of quality.

For this reason, Choi and Fong (2000) warn that quality, time and cost should not be under or overweighed, so an effective selection process is crucial for clients wishing to strike a balance for successful project outcome. Unfortunately, this is not always the case in Nigeria. According to Jagboro (2006), wrong tendering practice has being a major contributor to the construction industry’s Inefficiency in Nigeria.

Moreover, Kasimu & Abubakar (2012) stated that there has been a steady increase in the range of methods used for the procurement of construction works in the last two decades. Despite this, there has been no commensurate improvement in the success rate of construction projects. Instead, there have been extensive delays in the planned schedule, cost overruns, poor quality and increased number of claims and disputes; which have become unsatisfactory to the operation of construction contracts worldwide.

The practices and procedures for selecting subcontractors and awarding contracts in the construction industry are based on those used in the public sector and have remained unchanged since 1940s). These according to Ajanlekoko (2007) involve system of bid evaluation dominated by the principle of acceptance of the lowest price Many now believe that the public sector system of bid evaluation concentrating as it does solely on bid price is one of the major causes of project delivery problems. It therefore becomes expedient on the part of stakeholders in the construction industry to strive to improve this situation by seeking further methods to improve the current tendering procedures and contractor selection which utilizes information concerning clients’ objectives and contractor capabilities as well as bid price as objectively and transparently as possible as a means of achieving the best value for money. It is on this premise that this study sets out to evaluate the criteria for contractor selection with a view to developing a model which will assist both clients and consultants in the election of competent contractors for construction project execution in Nigeria.

Ng and Skitmore (2008) submit that contractor selection is a critical aspect in the management of every construction project. Many mistakes and potential claims can be avoided if sufficient thought and planning is put into the pre-tender stage of a
A common mistake is to invite too many contractors at the last possible minute to submit a tender for a project; and all or majority of the invited contractors oblige. This process may provide the lowest possible tender figure. However it does not guarantee the lowest final account and very often completion of the project on time may be in doubt due to failure to resource the project properly. Therefore the selection of contractors by the client or his professional advisers for construction projects is a critical function requiring careful thought and judgment. A wrong choice may not only lead to an acrimonious client-contractor relationship, but also contribute to waste of resources (Odusami, 1998). Furthermore, Hatush and Skitmore (1997) opine that one of the most difficult decisions taken by clients in the construction industry is selecting the contractor. This is because selection of construction contractor is a decision characterized by multiple objectives. The client want to minimize the likely cost of projects but they also want contractors to maintain schedules as well as achieving acceptable standards. On the other hand every construction projects faces adversity and uncertainty; inappropriate contractor therefore increases the chances of delays, cost overrun, substandard works, disputes and bankruptcy.

According to Kramer and White-McCurry (2002), for years the public clients have been faced with many challenges in an attempt to ensure that projects are completed successfully on time, within budget, and meeting quality standards set forth in the contract documents. They further confirm that one method of improving construction performance is to prequalify contractors prior to any competitive bidding or price negotiations. Russell and Skibniewski (1988) define prequalification as a process of determining a candidate’s competence or ability to meet the specific requirements for a task involving a wide range of criteria for which information is often qualitative or subjective. The aims of contractor prequalification are to minimize the possibility of Contractor default and the time involved in bidding by restricting the number of eligible contractors involved (Lam et al., 2001).

The subcontractor selection process comprises five common process elements or sub-systems, for all types of procurement arrangements. These according to Hatush and Skitmore (1997) include project packaging, invitation, pre-qualification, shortlisting, and bid evaluation. Prequalification is a pre-tender process used to investigate and assess the capabilities of contractors to satisfactorily carry out a contract if it is awarded to them. It provides a client with a standing list of potential contractors.
contractors to be invited to tender for similar types of projects or just a project list of contractors to be invited for a specific project. Bid evaluation on the other hand, involves similar processes but occurs at the post-tender stage and involves the consideration of the bid amount in addition to the contractors’ capabilities.

2.5 Main contractor

Contractors typically hold the primary responsibility for achieving most of the project deliverables. Certain activities are delegated to contractors because no organisation or project owner controls all the resources it requires to accomplish all of its objectives (Araujo et al., 2009). The main contractor is a manager, and possibly a tradesman, employed by the client on the advice of the architect, engineer or the architectural technologist or the client him/herself if acting as the manager.

A main contractor is responsible for the overall coordination of a project. Shekhar (2005). The main contractor must first assess the project-specific documents (referred to as bid, proposal or tender documents). In the case of renovations, a site visit is required to get a better understanding of the project. Depending on the project delivery method, the contractor will submit a fixed price proposal or bid, cost plus price or an estimate. The main contractor considers the cost of home office overhead, general conditions, materials and equipment as well as the cost of labor to provide the owner with a price for the project. Contract documents include drawings, project manual (including general, supplementary and or special conditions and specifications), addendum or modifications issued prior to proposal or bidding and prepared by a design professional such as an architect. The main contractor may be the construction manager or construction manager at risk.

The main contractor provides all of the material, labour, equipment (such as engineering vehicles and tools) and services necessary for the construction of the project. The main contractor hires specialized subcontractors to perform all or portions of the construction work. Responsibilities may include applying for building permits, securing the property, providing temporary utilities on site, managing personnel on site, providing site surveying and engineering, disposing or recycling of construction waste, monitoring schedules and cash flows, and maintaining accurate records (Allen et al., 2009).
A main contractor is responsible for providing the construction companies and the individual workers with all material, including labor, equipment and those services necessary for the construction of the project. In order to accomplish these tasks, the contractor will incorporate specialized subcontractors to perform specialized tasks or portions of the construction process. The responsibilities of a general contractor will vary depending on the size and complexity of the construction effort. In a general sense, a contractor is responsible for providing or accomplishing the following tasks: filing for building permits, securing the property, managing the workers on site, providing temporary materials and utilities on site, providing engineering functions and surveying for the site, disposing of wastes left over by the construction process, monitoring the schedules of workers, balancing the costs of the project and maintain accurate records regarding the finances and the construction process as a whole.

An owner of a building or a real estate developer will develop a project based on their needs and wants. Following the development of their idea, the owner will then choose a site or location for the project to be built on. An architect or design professional would then assemble a design team of engineers to design the building and pinpoint specifications needed for construction. During this phase, the general contractor will participate in the design efforts by providing services aligned with price estimations and information revolving around scheduling. The owner, main contractor and architect will then work closely together to meet the deadline and budget of the project. The main contractor will work with subcontractors to ensure that all quality standards have been met, in addition to the budget and timeline.

Main contractors are classified into three (3) categories in the federal capital territory (FCT) Abuja, Nigeria. Category “A” contractors undertake projects of twenty (20) million naira and above, the category “B” contractors carry out projects that range from 5 – 20 million naira. While projects that worths five (5) million and below is been handled by contractors on category “C” (FCDA, 2015).

2.6 Main contractor and subcontractor relationship

Subcontractors produce a large portion of construction work under the supervision of general contractors. Efficient subcontractor operation is expected to be beneficial to
all parties involved in the construction process, including the owner, general contractor, and subcontractors. In a practical sense, subcontractors can be seen as the middleperson for the provision of various construction-related services from the market to the general contractor. Subcontractors have critical influence on site productivity, and they bear responsibility for much of the productivity achieved on the construction site, particularly in areas such as labour relations, supervision, material delivery, prefabrication, standardization, worker training, quality control, equipment maintenance and utilization (Hsieh, 1998). In addition the subcontractor would be responsible to plan its labour and equipment needs while the general contractor would additionally be responsible for providing support services.

The responsibility for motivating the work force and providing a psychological environment conducive to optimum productivity rests with the main contractor. According to Hsieh (1998), most general contractors identify quality, schedule control, and worker training as the key areas for subcontractors’ productivity improvement. Worker training can help to alleviate productivity problems such as the lack of motivation or morale, fabrication errors, lack of workmanship, crew interference, and accidents. Various factors affecting construction productivity have been identified by different researchers in different construction industries. Enshassi et al. (2007) indicated that the main factors negatively affecting labour productivity are: material shortage, lack of labour experience, lack of labour surveillance, misunderstandings between labour and superintendent, and drawings and specification alteration during execution.

Okoroh and Torrance (1999) stated that the lack of housekeeping on-site has been one of the primary causes of delays and ineffective work. The scope of housekeeping should include: waste clean-up; organization of tools and materials; inspection of passageways, stairs, and openings; and maintenance of site utilities such as electrical power, water, gas, toilet, drainage, and lighting. However, Hsieh (1998) found conflicting views between the project superintendents and the subcontractors regarding the responsibility of housekeeping on-site. Arslan (2008) found that the ten most significant problems affecting construction productivity include: Lack of materials, incomplete drawings, incompetent supervisors, lack of tools and equipment, absenteeism, poor communication, instruction time, poor site layout, inspection delay and rework.
Enshashi (2008) outlined several features that contribute to low productivity in the construction sector, which included: (i) presence of large number of unskilled workers and shortage of suitable trained and skilled workers; (ii) poorly developed subcontractors and subcontracting sector role; (iii) lack of site management and construction management skills in projects teams; and (iv) inadequate mechanization and automation in some sectors of this industry. Improving the labour productivity of the construction sector requires the cooperation of many different operators. The vertical subcontracting relationships entered on large general contractors are symbiotic in nature and based on long-term business ties Arditi and Chotibhongs (2005) found that subcontractors’ familiarity with modern construction methods and modern management techniques in addition to efforts to reduce accidents and workers motivation are good ways to improve subcontractor's productivity.

2.7 Assessment practices of subcontracting

In their subcontractor selection practice, the main contractor relies heavily on subcontractors' bid proposal to make selection decisions. The lowest bid price is usually the key determinant factor for selecting subcontractors (Arslan et al., 2008; Tserng and Lin, 2002; Luu and Sher, 2006). This sole reliance on subcontractors’ bid proposal to make selection decisions is critiqued by researchers. Arslan et al. (2008) argued that it may result in problems in quality of work, delay in project duration, create additional costs in construction projects and lead to serious money losses for construction companies in the long run. To avoid the negative consequences of solely basing the selection decision on subcontractors’ bid proposal, researchers call for an evaluation that is based on a set of criteria.

Several researchers have isolated factors that are important for subcontractor evaluation Arslan et al. (2008). Examples on these factors include: performance of relevant previous projects, financial capacity, completion of job within time, prompt payment to labour, quality of production, standard of workmanship, quality of materials used, and compliance with site safety requirements, compliance with contract and collaboration with other subcontractors (Ng et al., 2008).

In summary, practitioners rely heavily on subcontractors' bid proposal to make selection decisions. Researchers, on the other hand, call for an assessment that
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