

**AN ASSESSMENT OF CONTRACTOR'S RISKS EXPOSURE
WITHIN SOME STANDARD FORMS OF BUILDING
CONTRACT IN NIGERIA.**

BY

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DECLARATION

I hereby declare that this work is this thesis titled An Assessment of Contractor's Risks Exposure within some Standard forms of building contract in Nigeria was performed by me in the department of Quantity Surveying under the supervision of Dr Y.G Musa-Haddary and Mr. B.A Kolo. All information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at any institution.

.....

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.....

Date

CERTIFICATION

This thesis titled ‘‘AN ASSESSMENT OF CONTRACTOR’S RISKS EXPOSURE WITHIN SOME STANDARD FORMS OF CONTRACT IN NIGERIA’’ by Obaju Biodun meets the regulations governing the award of the degree of Master of Science (Project Management) of the Ahmadu Bello University, and is approved for its contribution to Knowledge and literary presentation.

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DEDICATION

This research work is dedicated to the Almighty God, for He gives wisdom and out of His mouth comes knowledge and understanding and also to my parents Mr. & Mrs. A.J Obaju.

ACKNOWLEDGEMENT

I am grateful to the Almighty God for His mercies and protection throughout the course of this study, and for making the study a reality.

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ABSTRACT

Construction projects are subjected to several risks due to different activities involved. The activities are performed by several parties under different circumstances. Among the various stakeholders the Contractor has been identified to be the party that carries the highest number of risks. They are mostly exposed to contractual risks which occur as a function of contract provisions and clauses. This research work identified and assessed the risks which Contractors are exposed to within some Standard Forms of Contract in Nigeria. It further determined the likelihood of occurrence of the identified risks, impact on the risks on Contractors and the level of risks. Data were collected through questionnaires distributed to some Contractors around Abuja and analysed using qualitative risk analysis technique. The research identified 35 potential risk factors with 54% of the risks emanating from the Clients, 31% from the Architect, 6% from the Quantity Surveyor, 6% from the Project Managers and 3% from the government agents. It also found out that failures to write instructions regarding variations and documents which are not issued on time are the major potential risk factors with high likelihood of occurrence while the other risk factors have moderate likelihood of occurrence. Thirteen (13) potential risk factors were found to have high impact on Contractors and fifteen (15) are high degree of risk. It concluded that Contractors must understand the nature of risks, their source and the extent of exposure so as to pay attention to dealing with such risks in present and future projects. The study therefore recommended that Contractor should pay attention to risks with high likelihood of occurrence so as to reduce their impact, should protect themselves against risks by contingency, warn parties of potential delays and its implications, negotiate construction schedule with client and allow for buffer time, the contractor should ensure working with carefully prepared and coordinated drawings, establish clear line of communications for receiving and responding to instructions and collaborative effort from all the participants of the project.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The construction industry is a unique and dynamic industry of the economy; in Nigeria it accounts for over 1.4% of its Gross Domestic Product and also it is a large employer of labour (Oluwakiyesi, 2011). But over the years it has been criticized for its expensive and wasteful nature, low productivity, quality problem and project delay. The reasons for all these being are as varied, diverse and complex as the products of this industry itself. The process of developing a project from initial investment appraisal to completion and into use is complex (Flanagan and Norman, 2003). It is a generally recognized fact that those within the construction industry are continually faced with a variety of situations involving many unknown, unexpected, frequently undesirable and often unpredictable factors. These uncertain situations according to Turner (1990) have made many projects to fall short of the desired objectives of cost, time, quality and satisfaction.

Project Management Institute (2000) defines risk as uncertain event or condition that if it occurs has a positive or negative effect on the project objective. Bufaied (1987) also describes risk in relation to construction as a variance in the process of a construction project whose variation results in uncertainty as to the final cost, duration and quality of the project. There are many risks involved in construction projects, which could be attributed to a number of reasons; amongst them are the nature of the construction process, the complexity and time-consuming design and construction activities, the involvement of a multitude of people, from different organisations, with different skills and interests, all

resulting in accumulative associated risks for the project. Hence, a great deal of effort is required to co-ordinate the wide range of activities that are undertaken (Chapman and Ward, 1997; Shen, 1999). As the size and complexity of the projects have increased, the ability to manage risks throughout the construction processes has become a central concern in the attempt to prevent unwanted consequences (Maytoren *et al.*, 2007).

Different project risks have to be allocated to the party to the project on the basis of who has best qualifications for dealing with a specific risk (Sou, 2000). However, in many projects there are attempts by parties trying to avoid risks as far as possible and let somebody else in the value chain deal with the risks. Majority of project risks are usually borne by contractors (Andi, 2006); this is because contractors are usually visible for almost the entire project life- cycle, hence contractors are exposed to risks and are constantly saddled with the responsibility of managing risks and uncertainties inherent in the project life-cycle.

Studies carried out by Akintoye and Mcleod (1997), Olatunji (2007) Onukwuba *et al* (2009) and Tang (2009) identified some risks contractors are commonly exposed to while executing contracts. These risks are grouped into; Contractual, Political, Performance, Financial, Technical and Environmental risks. The consequences of these risks factors are claims, dispute, poor quality work, delay, disruption of work, increase in price of materials, dispute, and stoppage of work etc. The studies further revealed that contractual risks have the greatest effect on projects because the actions of parties to contract in responding to duties and obligations dictate the speed of the project execution and eventual completion. These challenges prompted this study on risks that contractors are exposed to within some standard forms of building contracts in Nigeria.

1.2 STATEMENT OF RESEARCH PROBLEM

Akintoye and Macleod (1997) identified contractual risks as a fundamental risk in project management, recognized as having most adverse consequences on the successful completion of construction project. Contractual risks was also revealed to be the risk mostly encountered by contractors in Nigeria (Olatunji, 2007) and identified to have the consequences of claims, disputes, disruption of work, stoppage of work, lack of co-ordination, delays and inflated costs. Since construction projects are often executed under contractual agreement and impose numerous obligations and duties on parties to the contract; this study intends to identify common contract provisions that form as risks to contractors within some standard forms of building contract in Nigeria.

Furthermore, a study carried out in South Africa by Harinarain *et al* (2008) to identify and quantify contractors' risk sources as imposed by Joint Building Contract Committee (JBCC) Principal Building Agreement Series 2000 found out that the risk sources to the contractors (ranked from highest to the least) are client, subcontractor, quantity surveyor, principal agent, architect, engineer, government authorities and suppliers. However, Chapman & Ward (1997) and Project Management Book of Knowledge (2008) revealed that it is not just enough to identify risks and their sources without prioritizing them by assessing and combining their probability of occurrence and consequences, or impact. Williams (1996) also argue that proper consideration of project risk requires the consideration of both likelihood and impact of risk. Hence there is a need to carryout study with reference to the standard forms of building contract that are being used in Nigeria.

1.3 SIGNIFICANCE OF THE STUDY

Risk has significant impact on construction projects delivery (Ahmad et al., 2007) and the issue of risk has also become quite topical and its study within the construction industry is one that needs to be considered in order to have a clearer and structured approach to handling potential risks. Therefore it has become imperative to critically address risks exposed to contractors in some standard forms of contract in Nigeria in order to ascertain not just their sources but also their intensity or severity.

This study would enable contractors pay attention when dealing with stakeholders and risks associated with them in present and future projects. Furthermore, the study will assist contractors to be aware of contract provisions that intend to increase their risk and also expose weak links in the construction process. The research would add and enrich existing knowledge in the management of risk in the Nigeria's construction industry.

1.4 AIM AND OBJECTIVES OF THE STUDY

The aim of this research is to assess risks that contractors are exposed to within some Standard Forms of Building Contract in Nigeria.

To achieve this aim the following are the objectives;

- i. To identify potential risk factors contractors are exposed to within the Standard form of Building Contracts.
- ii. To classify sources of these risk factors.
- iii. To determine the likelihood of occurrence as well as impact of these risks.

1.5 SCOPE

The study was limited to risks that contractors are exposed to within some Standard forms of Building Contract Agreement in Nigeria specifically the Joint Contract Tribunal (JCT) and Standard Form of Building Contract (SFBC). In order to achieve the objectives, the study focused on contractor's organizations as respondents in the designed questionnaire. Also, the study focused on Project risks with particular emphasis on Contractual risks that occurs as a function of contract provisions/ clauses and the relationships between parties in the contract

1.6 DELIMITATIONS

Although there are many standard forms of contract being used in Nigeria, this study focused on the JCT and the SFBC because they are the most popular ones in use. Though different versions of JCT i.e. JCT 1939, JCT 1963, JCT 1998, JCT 2005 and JCT 2011 are in use in Nigeria but the JCT 2005 was selected for this study because of the availability of resource materials and, its familiarity to the researcher.

The study was conducted on the following assumptions;

- i. There are potential risks inherent in every standard form of contract
- ii. The clauses in the standard forms of contract are used as stated without tempering with any of them to suit specific projects.

CHAPTER 2

LITERATURE REVIEW

2.1 NATURE OF CONSTRUCTION CONTRACTS

Beatson (2002) define Contract as a legally binding agreement made between two or more parties, by which rights are acquired by one or more acts or forbearances on the part of the other or others. A contract is also an agreement formed between two or more parties that is intended to have legal consequences and to be legally enforceable, the essential elements being:

- i. Offer by one party and acceptance by the other
- ii. Intention to create legal relationship
- iii. Capacity of the parties
- iv. Legality of objects
- v. Possibility of performance
- vi. Certainty of terms
- vii. Consideration

A variety of factors make a construction contract different from most other types of contracts; these include the length of the project, its complexity, its size and the fact that the price agreed and the amount of work done may change as it proceeds (Adriaanse, 2007). A contract determines the actions of the parties in their dealings with each other. The parties to a contract are bound to each other for a certain period of time by a unique and exclusive relationship they have created for their mutual benefit, which gives them both obligations which they have agreed to accept so that both may benefit (Shapiro, 2005).

Construction contracts are therefore usually concerned with structuring the relationships between organisations that must work together to combine their specialised skills and expertise to reach an overall goal that no single organisation could achieve in isolation. Since few construction clients possess either the expertise or capacity to undertake building projects on their own, they typically engage professionals (i.e. architects, engineers, management consultants, constructors and building suppliers) to deliver the building assets that they need. For most clients the activity of building is a complementary or residual activity and hence it is no economic case for them to retain these skills in order to carry on their primary business activities (Richards *et al.*, 2005). To engage professionals, construction clients require contracts - not only to ensure full and adequate performance by the professional on whom they depend, but also to provide a degree of certainty that the strategic objectives of the transaction are met in a controlled way.

Singh (2005) describes construction contract as a contract under which one party (commonly called the Contractor) agrees for valuable consideration to undertake or carry out works for another party (commonly called the Employer) involving design (where applicable), fabrication, erection, alteration, repair or demolition of structures and / or installations on a site made available by the latter. Flanagan and Norman (1997) reveal that building contract is a trade-off between the contractors' price for undertaking the work and his willingness to accept controllable and uncontrollable risks. They also saw contract as a medium to establish the rights, duties, obligations and responsibilities of the parties and to allocate risk.

In as much as contract is good in managing risk, contractual agreements in the contract only define the ground rules but the execution of the contract rests on goodwill, intention

and the relationship between parties. It is therefore important to note that the construction contract, whatever form it may take accurately should be a “meeting of the minds” document, stating clearly the roles and responsibilities of the parties without overlaps or voids and aims squarely at achieving a quality project.

Over the years construction contracts have evolved into standard contract forms, not only because of their advantages of familiarity and the prohibitive cost of customisation but also to provide certainty on the nature of the transaction between parties on a project specific basis (Masterman, 1997); in effect, to minimise transaction costs . Fellows (1989) has been very critical of this development arguing that the practice is outmoded and that its practice has contributed significantly to many of the construction industry’s recent and current difficulties highlighted subsequently by Latham (1993, 1994).

2.2 THE STANDARD FORM OF BUILDING CONTRACT

The complexity of the relationship required between stakeholders in the construction industry in the construction process is such that the industry has come to rely on the standard forms of contract to simplify the definition of these relations. The construction industry comprises of different professionals and non-professionals engaged in the process of construction, each of these stakeholders has different roles in the construction process. There is need to check the activities, responsibilities and powers, to prevent dispute and conflict of interest of the stakeholders. This need brought about the birth of a document called Standard Form of Building Contract (Omotayo and Oluwafemi, 2009).

The development of these contract forms reflects the building industry’s perspective. Terms and conditions are the product of an exclusive dialogue between building trade organizations and the built environment professions. The result is a compromise of beliefs

between these parties to form a fair and equitable balance of risk and power in the contract terms. (Cox and Thompson, 1998). Flanagan and Norman (1997) revealed that the Standard forms of contract in use within the construction industry emerged from the construction industry's historical practices and its consequence of concerted efforts by professional institutions to improve contracting practice.

The Standard form of contract makes provision to address the extent of obligations to be undertaken by the contractor and the means by which those obligations may be varied from time to time; the time for completion and interim control of the progress of the works; the machinery for payment of the contractor; supervision of the works on behalf of the employer; insurance against a range of risks; and the remedies available to the parties in respect of default (Singh, 2005).

A number of organisations have prepared recommended standard general conditions and associated forms such as Fédération Internationale des Ingénieurs-Conseils (FIDIC), New Engineering Contract (NEC), Institute of Civil Engineers (ICE), Joint Contract Tribunal (JCT) etc. In Nigeria the JCT and the Standard Form of Building Contract (SFBC) 1990 is commonly used for administering building contract. The standard form of building contract (SFBC 1990) in Nigeria is provided and reviewed by the Nigeria Institute of Architects (NIA) to act as a guideline to different issues and complexities of building contracts and construction in Nigeria. It spells out the extent of power and jurisdiction of each stakeholder involved in construction (Omotayo and Oluwafemi, 2009).

The JCT was established in 1931 to produce standard forms of contracts, guidance notes and other standard document for the use of the construction industry. The first version of JCT to be published was in 1937; many other editions have been revised and published.

They include the JCT 1939, JCT 1963, JCT 1980, JCT 1998, JCT 2005 and most recent the JCT 2011. JCT today is the leading provider of contract documentation, which not only covers standard forms of main and sub-contracts for each of the key procurement methods, but also guidance documents, homeowner contracts, partnering documentation, collateral warranties, and agreements (jctltd.co.uk).

Carter *et al* (2001) in his study revealed that there is an extensive use of the Joint Contracts Tribunal (JCT) forms of contracts in Nigeria and the most common edition being used in Nigeria for traditional procurement is that of 1998. The first edition to be adopted by the Nigerian construction industry is the JCT 1963 and this document has been further internalised to suit the country's construction.

2.3 PARTICIPANTS IN THE BUILDING CONSTRUCTION

The number and identity of the persons involved in the building project can vary considerably depending on the nature and complexity of the project. A project team or organisation may include the client / financier, consultants (architect, engineer, quantity surveyor etc.), general contractor, subcontractors and material suppliers.

In most cases, the only parties to a construction contract are the Employer and the Contractor. However, in actual practice, in all likelihood, a construction project frequently involves a large number of contributors or participants who are contractually inter-linked by a matrix of contractual arrangements and have their own contracts with the Employer (Finsen, 1999). By considering other participants in the construction process will enable one to critically look into the potential risk that might emanate from them which might adversely affect contractors.

The JCT and the SFBC therefore recognised the following as participants in the building construction;

- i. The Employer
- ii. Contractor
- iii. Architect/Contract administrator
- iv. Quantity Surveyor
- v. Engineer
- vi. Specialist consultant
- vii. Clerk of works
- viii. Subcontractor
- ix. Suppliers.

It's critical to identify, particularly in large projects, the parties involved in that project, the terms of the respective appointment, the scope of each individual's involvement and their roles within the project.

The terms of employment of each member of the team are very important. Each individual requires a clear understanding of the Employer's obligations and the inter-relationship of those obligations with those of the parties (Flanagan and Norman, 1993).

The Standard forms of contract made a provision for the Employer to be represented during the progress of the works by a Contract Administrator; such person may be given authority to act as the Employer's agent in supervising the works and transmitting information and instructions to the contractor. The Employer's agent may also be empowered by the construction contract itself to exercise certification and other decision-making powers which are binding upon both the Employer and the contractor (JCT'05 Clauses 3.1, 3.2, 3.3 and 3.10).

2.4 OBLIGATIONS OF THE PARTIES IN THE BUILDING CONTRACT

In construction contracts there are two major parties to the contract, namely the Employer or the Client and the contractor. As they come together in contract, obligations are

imposed on each other; these include both express terms and implied terms (Murdoch and Hughes, 2000).

Expressed terms or obligations are either written into the contract documents (usually a series of clauses) or are made verbally while implied terms are terms that were not mentioned by the parties when making the contract but which were in their minds at that time (i.e. they were part of the intention of the parties).

2.4.1 CONTRACTORS OBLIGATIONS

Most formal building or engineering contracts contain an initial express obligation of the contractor to carry out and complete the works in accordance with the contract. This is, in fact a dual obligation that is, both to carry out and to complete the works (Wallace, 1995).

The contractor's basic obligation, so far as the standard of work is concerned, is to comply with the terms of the contract. This includes both express terms (such as the requirement of contract that work shall be of the standards described in the bills) and implied terms (such as the principle that all materials shall be of 'satisfactory quality') (Murdoch and Hughes, 2000). The contractor must comply with statutory obligations, including in particular the planning permission (which will be reflected in the building documents) and the Building Regulations which set out minimum building standards (Coleman, 2009).

Ficken (2006) acknowledged that the contractor is required to perform construction fully in accordance with the contract documents, usually consisting of at least plans, specifications and the building code within required time. Similarly according to Chan (2002), contractor's obligation in a traditional contract to carry out and complete the

works would require him to provide the workmanship and materials as required by the specifications given by the architect and engineers.

Wallace (1995) reveals that the contractor is obliged to do the following as required of him in the contract;

- i. To carryout work with care and skill or, as sometimes expressed, in a workmanlike manner.
- ii. To use materials of good quality and free from defects.
- iii. That both the workmanship and materials will be reasonably fit for the purpose for which they are required.

The duties, rights, liabilities and obligations of the Contractor are further stated in the JCT SBC/Q 05 Article 1 & 7, Clauses 2.1, 2.20, 2.29 and 2.31 and also in clauses 1 & 2 of the SFBC 1990.

2.4.2 EMPLOYERS' OBLIGATIONS

The Employer agrees to accept certain responsibilities when entering the contract. The most basic of these oblige it to pay the Contractor for the work that has been completed and to compensate the contractor for any additional loss or expense. The employer appoints the contract administrator who will generally be an architect. Some of the Employer's obligations under the contract are carried out by the Architect on behalf of the Employer and must be carried out with due care and skill. This means the Architect's negligence could render the Employer liable.

In the case of *Merton LBC v Stanley Hugh Leach Ltd* as cited in Murdoch and Hughes (2000) acknowledged the obligations on the part of the employer to be implied into all building contracts are expressed as follows:

- i. *The employer will not hinder or prevent the contractor from carrying out all its obligations in accordance with the terms of the contract, and from executing the works in a regular and orderly manner.*
- ii. *The employer will take all steps reasonably necessary to enable the contractor to discharge all its obligations and to execute the works in a regular and orderly manner.*

In addition to the implied terms, numerous express conditions are placed on the client by the contract in JCT SBC 05, these duties, rights and liabilities comprise;

- i. The duty to describe the scope of the work in the contract (Sixth Recital).
- ii. The duty to pay the contract sum (Article 2).
- iii. The duty to give the Contractor possession of site, or relevant parts of the site (Clause 2.4).
- iv. The duty not to divulge any rates or prices in the bills, except for the purposes of the contract (Clause 2.84)
- v. The right to refer a dispute to adjudication (Article 7)
- vi. The right to retain a portion of the contract sum until the rectification period has ended (Clause 4.18)
- vii. The liability arising from the omission of relevant information from the contract documents (Clause 2.29.6).
- viii. The liability arising from inadequate description of their requirements (Clause 2.13.2).
- ix. The liability arising from failure to pay the Contractor following earlier withholding on money from interim valuations (Clause 4.14).

Some obligations of the employer through the Architect are also contained in Clauses 2, 3& 5 of the SFBC 1990.

2.5 RISKS IN CONSTRUCTION PROJECTS

Risk is a challenging concept to define, understand and ultimately to manage. This is primarily because risk often means different things to different people. Historically, risk is defined as the possibility that the actual input variable and the outcomes may vary from those originally estimated (Correia *et al.*, 1989; Remenyi *et al.*, 1993). This implies that the extent of the possible difference between the actualities and expected value reflects the magnitude of the risk. Although the word 'risk' is usually used in the context of a potential hazard or the possibility of an unfortunate outcome resulting from a given action (Correia *et al.*, 1989), intrinsically risk may be either positive or negative.

Risk in construction has been the object of attention because of time and cost over-runs associated with construction projects. Although, Porter (1981), Healey (1982) and Perry and Hayes (1985) have expressed risk as an exposure to economic loss or gain arising from involvement in the construction process; Mason (1973) and Moavenzadeh (1976) have regarded this as an exposure to loss only. But Bufaied (1987) in his work describes risk in relation to construction as a variable in the process of a construction project whose variation results in uncertainty as to the final cost, duration and quality of the project.

The development of a construction project is fraught with enormous risks; this is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, statutory or regulatory protocols and other intrinsic and extrinsic constraints.

Risks in the construction project have been perceived differently in literature; Choffray and Johnson (1977) and Ritchie and Marshall (1993) have identified factors influencing the formation of risk perception including educational background, practical experience, an individual's cognitive characteristics, the availability of information, peer group influence, etc.

In the studies carried out by Akintoye and McLeod (1997) to the perception of risk by contractors and project managers in UK revealed that contractors perceived risk as Factors which can adversely affect the successful completion of a project in terms of budget and schedule which in themselves are not always identifiable. The likelihood of physical, contractual or economic conditions becoming more difficult than those allowed for in the price, loss of money, loss of reputation, and a chance of an accident occurring to persons on property, The degree of certainty that the financial objectives for each particular project will be achieved and the extent to which risk factors can be quantified at bid stage and monitored closely, Tender or on-site performance mistakes leading to quality under performance, cost over-run and an impact on all of these from a variety of unforeseen circumstances etc. while Project managers perceive risk as the activities/occurrences which traditionally are likely (or to some degree will happen) to happen, and to have an adverse effect upon programme and/or cost, uncertainty with regard to events and their effects which affects the project outcome in terms of cost, time, quality and any other relevant performance criteria and something to be avoided or transferred.

Zuofa *et al.*, (2012) discovered that Contractors perceive risk as those factors that jeopardise their abilities to meet predefined project scope, cost and time and risks are depicted as any event that has a negative effect on their operations, they also identified tight project schedules, inaccurate estimating, poor project management, resource incompetence, inadequate safety measures and unsafe operations, subcontractor's inexperience and excessive bureaucracy as risk factors while performing contracts in the Niger Delta area in Nigeria.

Furthermore in a study carried out in Palestine by Enshassi *et al.*, (2008), Contractors perceived financial failure and working at hot (dangerous) areas to be the most important construction risks followed by border closure while the least important risk, from the contractors' perspective is the risk of new governmental acts followed by the risk of rushed bidding process in building projects in Palestine.

It is generally recognized that those within the construction industry are continually faced with a variety of situations involving many unknown, unexpected, frequently undesirable and often unpredictable factors (Fong, 1987). Ashley (1977) and Kangari and Riggs (1989) have all agreed that these situations are not limited to the construction industry; it is recognized that risk is built into any commercial organization's profit structure and is a basic feature of a free enterprise system.

In managing construction project risks, determining the types of project risks and classifying it into several groups in which it belongs is a fundamental step as it could enable the assessment process to be carried out later on in determining the level of each risks and the severity effects of it in a project undertakings. Early risk identification ensures that team effort is concentrated in critical areas, focusing the project team's attention on actions and resources where there is a major risk exposure, or where the greatest time and cost savings can be made through streamlined project management.

Managing construction project risks from the beginning will contribute to early risks response where problems are reduced as they are identified, it is therefore different from the traditional approach in project management whereby risks are responded only when problem occurs. This is not good as it will incur a lot of time and cost as well as effort.

It is identified that risk management is the responsibility of every stakeholder involved in a project. The underlying concept of risk management is to manage risks effectively, this in essence will provide the client with a project executed within the time frame contracted, within the budget allocated and complemented with the assured or specified quality. In simpler terms it is a managerial process aimed at controlling the level of risks and mitigating their effects (Uher and Toakley, 1999).

The general consensus in current literature in the field of risk management incorporates four core steps in the process of risk management (Thomas and Bone, 2002; Al-Bahar and Crandell, 1999; Raftery, 1999). These are:

- i. Risk identification
- ii. Risk analysis
- iii. Risk response
- iv. Risk monitoring

2.5.1 RISK CLASSIFICATION

2.5.1.1 Construction Related Risks

Construction risk, which is inherent in the process, arises from such diverse issues as unforeseen conditions, weather, business climate, and resource availability. Construction risks are a major element that can significantly affect, the final cost of any project. Specifically, how these risks are allocated has a direct bearing on the final total cost (Zaghloul *et al*, 2002). Mitigation measures are the most recommended management method. The mitigation measures focus on improved planning and implementation of project control systems. Contingency is an alternative management method in quality problems, poor productivity (time contingency), changes, and delays. These problems are

predictable, which suggests that they can be anticipated, but their magnitude and cost are very difficult to forecast (Smith *et al*, 1999).

2.5.1.2 Contractual and Legal Risks

Contractual risks emanate from contracts, and risk is increased with decreased contract clarity as well as imperfect communication and untimely contract administration (Zaghloul *et al*, 2002). Contractual risks arise from the documentation and administration of the construction contracts (Smith *et al*, 1999).

Not all contracts allocate risk equitably or such that the power and authority to manage the risk is allocated along with the risk itself (Zaghloul *et al*, 2002). Generally, the contractor is responsible for the majority of the contractual and legal risks. Sometimes, other mitigation measures are the most common management method (Smith *et al*, 1999). Many legal and regulatory liability risks are covered by the various insurance policies purchased by the contracting parties (Usta, 2005).

2.5.1.3 Financial and Economic Risks

Project related financial risks are carried by the contractor, with the greatest exception being the overall project funding by the owner. Contractor default is a form of financial risk that the owner can reduce by prequalification, but performance and payment bonds are more directly aimed at shifting the risk to the surety. The contractor obviously has a major risk in the event of contract default. They can minimize the extent of this risk by

Carefully selecting projects and avoiding ventures where they have little expertise. Contractor financial risks often arise from poorly prepared estimates (Smith *et al*, 1999).

2.5.1.4 Physical Risks

Force Majeure Risk, as a part of physical risk, describes the circumstances beyond a project developer's or government's control such as natural disasters, war, hostilities, embargo, import, or export restrictions (Wang *et al*, 1999). These are the catastrophic events that might occur during the construction of a project. Contracts usually address these risks and minimize their effects with insurance or clauses. However, without a contract clause addressing natural risks, the contractor will confront the complete risk and contingency will be the only methodology for him to manage these risks (Khalafallah, 2002).

2.5.1.5 Performance Related Risks

Performance related risks includes productivity of labour, productivity of equipment, suitability of materials, defective work, conducts hindering the performance of the work, labour disputes and accidents (Panthi, 2007).

2.5.1.6 Political and Social Risks

Political risk describes the risk of government actions that may endanger a project. Actions can occur at the central, provincial, or local levels of government. More specifically, primary political risks include change in law, corruption, expropriation, and reliability and creditworthiness (Wang *et al*, 1999). Political risks are external to the project and unpredictable in frequency and magnitude. The management of political risks

is primarily the owner's responsibility, and the management method recommended is usually a contingency (Usta, 2005).

Of the above mentioned classifications, contractual risks have been recognised from literature to have the most adverse consequences on the successful completion of construction. Akintoye and McLeod (1997) revealed that “more premiums are applied on contractual risk than other forms of risk”, because Contractual risks are associated with flaws in documents, inappropriate documents, or improper contractual relationship. The consequences of this risk are claims and dispute, disruption of work, stoppages of work, lack of co-ordination, delays and inflated costs (Bufaied, 1987). Contractual risks are also found to be the most encountered by contractors from the study of Olatunji (2007). He found out that “Contracts are mostly breached in respect of parties not fulfilling the terms of the contract as stated in the Standard forms of building contract”, thereby resulting in project duration extension or otherwise.

The following in Table 2.1 are potential risks factors drawn from the clauses in the standard forms of building contracts that relate to the parties to the contract in respect of their obligations and duties that could act as contractual risks. (Appendix III)

Table 2.1 Potential Risk Factors and their clauses.

Risk Factor No.	Potential Risk Factors	JCT 2005 Clause	SFBC 1990 Clause
RF 1	Delay in obtaining access to site	2.4,2.5,2.6,2.29.5	21.1
RF 2	Scope of work not properly defined	2.15,2.16	3.4
RF 3	Inadequate or insufficient site information	2.12	3.1,3.2,3.4
RF 4	Unfair or unrealizable program of work	2.17	1.3
RF 5	Misinterpretation of contract conditions	2.12	12
RF 6	Delay in setting out of the works	2.10	5

RF 7	Defective/incorrect design	2.14,2.15,2.20,2.19	12
RF 8	Changes in the design	2.12	6
RF 9	Discrepancies in drawings and specifications	2.16, 2.15,2.20	3.31
RF 10	Drawings and documents are not issued in time	2.9,2.12	3.2
RF 11	Increase to the scope of work	2.7,2.17	6.4
RF 12	Scope of work differs from contract	2.7,3.18	12
RF 13	Adjustment to the completion time of project	2.28,2.29	23
RF 14	Inaccessibility to necessary contract documents	2.8,2.9	3.1,3.3,3.4
RF 15	Discrepancies in the Bill of Quantities	2.13	12
RF 16	Contract documents used other than the purpose of the contract	2.4.12	3.7
RF 17	Interference in the progress of work	2.33	16.1
RF 18	Imposing of subcontractors	3.15	27.1
RF 19	Imposing of suppliers	3.9	28.1
RF 20	Assigning part of the work without consent	2.33,7.1	16.1,17.1
RF 21	Third party nomination without consent	3.3	27.1
RF 22	Delay in resolving disputes.	9.2	35.1

Table 2.1 Continues

RF 23	Delaying in issuing and responding to instruction	2.17,2.27	2.3.1,2.3.2,1.2
RF 24	Verbal instructions not backed by writing	3.12,3.13	2.3
RF 25	Delay in making interim payment	4.11,4.13	30.1
RF 26	Delay in issuing interim certificate	2.30,4.9	30.1.1
RF 27	Failure to honour claims	5.5	
RF 28	Delay in making interim valuations	4.11	30.11
RF 29	Delay in issuing final certificate	4.15,1.10	15.1,30.5
RF 30	Delay in making final payment	4.15	30.6
RF 31	Addition of unreasonable taxes and charges to contract sum	4.6	4.2
RF 32	Failure to write instruction regarding	5.2.1	11.3

RF 33	variation Failure to reimburse for direct loss and expenses	4.23	11.8,24
RF 34	Determination of contract	8.2	26.1
RF 35	Retention money not returned	4.10,4.18,4.20	16.1.6

Source: JCT 2005 & SFBC 1990

2.6.2 SOURCES OF RISKS IN CONSTRUCTION PROJECT

Bennett (1985) also identifies four principal roles and responsibilities in the project development process: the client system, design, management and construction. These constitute the internal/controllable sources of project risks. The external/uncontrollable sources include the statutory/regulatory protocols, economic and globalisation dynamic, unforeseen circumstances and socio-cultural issues (Nkado and Mbachu, 2002). Perry and Hayes (1985) and Mustafa and Al-Bahar (1991) have identified some risks sources central to the construction activities. These are physical, environmental, design, logistics, financial, legal, political, construction and operation risks. As these risk sources influence projects performance in terms of time, cost and quality, it is not uncommon for these to be assessed individually and a premium placed on each of them.

Baloi and Price (2003) drawing on the works of Ashley and Bonner (1987), Jahren and Ashe (1990), and Akinci and Fisher (1998) categorise risk factors affecting cost performance into organisation specific, global and acts of God. The organisation specific risks are internal risks related to the organisation's resources and management including labour skills and availability, material delivery and quality, equipment reliability and availability, and managerial efficiency. Global risks are those that transcend the boundaries of the contracting organisation yet having large impact on it. These include

estimator related, design related, level of competition, fraudulent practices, construction related, economic related and political related. The acts of God represent risks with rare chance of occurrence but could have huge negative impacts on projects if they occur. These include events such as heavy floods, landslide and earthquake.

Li (2003) and Li *et al.* (2004) place risks in the private finance initiative (PFI) projects into macro, meso and micro levels. Macro level risks are associated with political and legal conditions, economic, social and weather conditions. The risks at the meso level are internal to the project and represent the implementation problems arising from project demand or usage, location, design and construction, and technology. On the other hand, micro level risks exist in stakeholder relationships in the procurement process. Such risks include organisation and co-ordination problems, inadequate experience, communication and lack of commitment.

Mbachu and Vinasithamby (2005) in their study broadly categorised the sources of risk into internal and external sources; the internal sources or risks falls under the control of clients, consultants and contractors, they include those risk elements emanating from their acts or omissions in the project development process. While External risk sources are risks that are not within the control of clients and the project team, it could be segregated into economic and globalisation dynamics, unforeseen circumstances/ force majeure, government/statutory/political controls, health and safety risk elements (which fall outside the control of the project team), and socio-cultural issues. In the studies carried out by Harinarain *et al* (2007), they identifies Clients, Sub-contractors, Quantity Surveyors, Principal agents, Architects, Engineer, Government authorities and suppliers are sources of risks to contractors.

From all the studies done to look into the sources of risks in construction, there is therefore the presence of human factors that might one way or the other influence the occurrence of risks apart from force majeure which are unexpected events beyond human control or influence.

2.6.3 RISK ASSESSMENT

PMBOK (2008) provides an overview of project risk management processes as: plan risk management; identify risks; perform qualitative risk analysis; perform quantitative risk analysis; plan risk responses; monitor and control risks. In this process, risk identification and analysis are fundamental and important procedures because if a risk is not identified, there is no way it being assessed; and if a risk is not assessed and prioritized, the major risks cannot be given proper attention.

The purpose of risk assessment is to understand and quantify the likelihood of occurrence and the potential impacts on the project outcome. Various analytical techniques are available, but the key features are:

- i. Qualitative assessment– this is carried out to describe and understand each risk and gain an early indication of the more significant risks. A descriptive written statement of relevant information about a risk should consider:
 - a) the stages of the project when it could occur
 - b) the elements of the project that could be affected
 - c) the factors that could cause it to occur
 - d) any relationship or interdependency on other risks
 - e) the likelihood of it occurring
 - f) how it could affect the project

An assessment is made of the probability of each risk occurring and its potential impact in terms of cost, time and performance. Each risk is given a numerical probability, which

could be measured in a number of ways such as on the following scale: 0 = impossible for risk to occur, 0.5 = even chance of risk occurring, 1 = risk will occur.

- ii. Quantitative assessment—this is carried out to quantify the impact in the event of a risk
 - a) Cost: additional cost, above the base estimate for the project outturn
 - b) Time: additional time, beyond the base estimate of the completion date for the project.
 - c) Performance: the extent to which the project would fail to meet the user requirements for standards and performance
 - d) Any health and safety, sustainability or design quality implications
 - e) Political or reputational risk
 - f) Other risks occurring because of this risk (that is, knock-on risk effect).

A number of studies have been done on the assessment of risk using various techniques and methods but when choosing an appropriate risk analysis technique, one of the important factors which should be considered is the purpose of the analysis. PMBOK (2008) states that ‘qualitative risk analysis is the process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact’.

Two criteria to judge whether the level of risk is high or low have been proposed (Al-Baharand Crandall, 1990; Edwards, 1995; Zhi 1995; Chapman and ward, 1997; Kumaraswamy, 1997). The first is the probability of occurrence; the second is degree of risk impact, which is the degree of seriousness and the scale of the impact on other activities if the undesirable event occurs. Therefore, the degree of risk should be seen both from the probability of occurrence and the degree of risk impact because each will affect the degree of risk.

During *risk assessment*, identified risks are evaluated and ranked. The goal is to prioritise risks for management. The research literature offers a large number of models that use

both qualitative and quantitative methods for assessment of project risks; risk matrix which assesses the priority of risks by combining the likelihood of occurrence and consequences of risks was widely used (Kampmann *et al.*, 1998; Clark and Borst, 2002; Hao and Huang, 2008; Seo and Choi, 2008).

The risks assessed by this method may come from a variety of categories and can be very extensive, but the risk checklist does not offer a sufficiently structured examination of sources from which to discover key sources in a cost effective manner (Chapman and Ward, 2003). Further, as pointed out by Williams (1996), the idea of multiplying probability and effects (impact) is to give what are mathematically known as ‘expected values’, and the drawback of this method is the lack of consideration of the nature of risk which may require different and separate action plans to reduce the probability and effect (impact). Williams (1996) argued that both probability and impact must be considered at all times. To this end, analytical hierarchy process (AHP) was chosen.

Tah and Carr (2000) develop a formal model for qualitative risk assessment based on fuzzy estimates of risk components. Baccarini and Archer (2001) describe a methodology for risk ranking of projects, which allows an effective and efficient allocation of the resources for the management of project risks. The JRAP (Judgemental risk analysis process) model proposed by Öztas and Ökmen (2005) is a pessimistic risk analysis methodology, which is effective in uncertain conditions within construction projects.

Zeng *et al.*; (2007) propose a risk assessment methodology based on fuzzy reasoning techniques and aimed at dealing with risks in complex projects. A fuzzy system is also used by Motawa *et al.* (2006) to evaluate the risk of change in construction projects. Poh

and Tah (2006) have developed an integrated model that takes into account both duration and cost risks and can be used for modelling risk impacts that affect the project.

Whatever technique is being used in Risk assessment it must attempt to answer the following fundamental questions:

- i. What can happen and why (by risk identification)?
- ii. What are the consequences?
- iii. What is the probability of their future occurrence?
- iv. Are there any factors that mitigate the consequence of the risk or that reduce the probability of the risk?

IEC (2001) gave some factors that may influence selection of risk assessment techniques, they include;

- i. complexity of the problem and the methods needed to analyse it,
- ii. the nature and degree of uncertainty of the risk assessment based on the amount of information available and what is required to satisfy objectives,
- iii. the extent of resources required in terms of time and level of expertise, data needs or cost,
- iv. whether the method can provide a quantitative output.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

A research design is the programme that guides the investigator in the process of collecting, analysing and interpreting observations (Nachmias and Nachmias 1993). This research focuses on contractors risk exposure within some standard forms of contract in Nigeria; it is designed broadly into two parts; The first part of this research work comprises of literature survey which was carried out to provide the background information on risks in construction projects and the Standard forms of contract. From the literature review, the issues for this study was identified and highlighted. The second part comprises of data obtained through the design and administration of questionnaires, the questionnaire was produced to deduce the objectives of the study.

The questionnaire consisted of four parts namely and given in appendix 1;

- i. General information of respondents
- ii. Potential risk factors and their sources
- iii. Likelihood of occurrence of risk factors on project and
- iv. Impact of risk factors on Contactors.

3.2 RESEARCH INSTRUMENT

There are a number of tools and techniques in identifying and assessing risk i.e. brainstorming, expert opinion, structured interviews, questionnaires, checklists, historical data, previous experience, evaluation of other projects (IEC, 2001). This study employed

the use of structured questionnaires; this was done to give the respondent the opportunity to express their opinions concerning the problem under study, and to enable them to rate, from the list of potential risk factors, their likelihood of occurrence and impact using Likert scale.

3.3 DATA COLLECTION

Data collection can simply be seen as implying to commit to one form of record or the other, the extracted facts which must be true in reality within the context of the subject matter being investigated (Asekame, 2010). Data collected for this research were primarily obtained from questionnaires; the questionnaire contained questions that allowed the respondents to identify the sources of potential risks factors and also to determine the severity levels of risks exposed to the contractors within the standard forms of contract.

3.4 DATA ANALYSIS

The data collected from the research were subjected to both qualitative and quantitative analysis. Qualitative risk analysis is the process of prioritizing risks for further action of assessing both the likelihood of occurrence and the impact of the risks (PMBOK, 2008). The qualitative risk analysis was used in this research to describe and understand each risk factor, so as to know the more significant risks. Quantitative analysis was further employed to compute the relative importance index of ranking of each risk factor.

A two- dimensional scale was employed as shown in tables 3.1 and 3.2; respondents were requested to score or rate on a Likert type scale of 1 – 5, the likelihood of occurrence and Impact of the risk factors on Contractors.

Table 3.1: Likelihood of Risk Events

Score	DESCRIPTOR	EXPLANATION
1	Rare	Not expected to happen
2	Unlikely	Small likelihood but could well happen
3	Possible	50 – 50 chance
4	Likely	More than 50 – 50 chance
5	Most likely	Almost certain that it will happen

(Source: Abdulrahiman, 2006)

Table 3.2: Impact of risk

Project objectives score	Very low 1	Low 2	Moderate 3	High 4	Very high 5
Cost	Insignificant cost increase	< 5% cost increase	5 - 10% cost increase	10 – 20% cost increase	>20% cost increase
Time/schedule	Insignificant schedule slippage	Schedule slippage < 5%	Overall project slip 5 -10%	Overall project slippage 10 - 20%	Overall schedule slips >20%
Scope	Scope decrease barely noticeable	Minor area of scope affected	Major area of scope affected	Scope reduction unacceptable to the client	Project end item is effectively useless
Quality	Quality degradation barely noticeable	Only very demanding applications are affected	Quality reduction requires client approve	Quality reduction unacceptable to the client	Project end item effectively unusable

(Source: Alkhali, 2010)

Using the responses obtained from the questionnaires, Relative Importance index (RII) for each risk factor was calculated for the likelihood of occurrence and the consequence and ranked.

The formula of the Relative importance index adopted from (El-Sayegh, 2008) is presented in Equation 3.1

$$\text{Relative Importance Index, RII} = \frac{\sum_{i=1}^5 w_i x_i}{\sum_{i=1}^5 x_i} \text{----- (Eqn. 3.1)}$$

Where:

w_i = weight assigned to i th response

$w_i=1, 2, 3, 4$ and 5

for $i=1, 2, 3, 4$ and 5 respectively

x_i = frequency of the response

i = response category index = 1, 2, 3, 4 and 5 for Rare / very low, Unlikely / low, Possible / Moderate, Likely / high and Most likely / very high respectively.

The results were then used to assign the scores of likelihood of occurrence and impact into Risk matrix analysis. The grading of the results assigned in the matrix analysis is shown in table 3.3 below;

Table 3.3 Grading for the Risk Analysis Table

Grading	Likelihood of Occurrence	Impact
1.0 – <1.5	Rare	very low
1.5 – <2.5	Unlikely	Low
2.5 – <3.5	Possible	Moderate
3.5 – <4.5	Likely	High
4.5 – 5.0	Most likely	Very high

(Source: Alkali, 2010)

Risk Analysis Matrix (Alistair, 1998) is a semi-quantitative method using a subjective assessment table of very low, low, moderate, high and very high indicators to show the level of each type of risk factor discussed. Risk analysis matrix was used to provide an indicative level of risks to reflect the degree of risks in each category.

Table 3.4: Risk Analysis Matrix Table

LIKELIHOOD OF OCCURRENCE	IMPACT				
	Very low	Low	Moderate	High	Very high
	1	2	3	4	5
Most likely 5	M	H	H	E	E
Likely 4	M	M	H	H	E
Possible 3	L	M	M	H	E
Unlikely 2	L	M	M	M	H
Rare 1	L	L	M	M	M

(Source: Alistair, 1998)

Degree of Risk:

- (E) - Extreme Risk – detailed action / plan required
- (H) - High Risk – needs senior management attention
- (M) - Moderate Risk – specify management responsibility
- (L) - Low Risk – manage by routine procedures

CHAPTER 4

RESULTS AND DISCUSSION

4.1 PRESENTATION OF RESULTS

A total of 55 questionnaires were distributed to randomly selected contractor's organizations in Abuja and its environs. Of these 55 questionnaires, 36 questionnaires were returned duly completed and thus used as the basis of the analysis of the research. The analysis and discussion are divided under several headings based on the objectives of the study.

4.1.1 GENERAL INFORMATION OF RESPONDENT

The general information part of the questionnaire sought to know the respondents' professions, qualifications, working experience and the knowledge of standard form of contract often in use. The findings are presented in table 4.1 to 4.5

4.1.1.1 Profession of Respondents

On the profession of the respondents, 36 respondents were sampled. Out of it 33% (12) were architect, 28% (10) were engineers, 19% (7) were builders, 17% (6) and 3% (1) were quantity surveyors and project managers respectively as presented on table 4.1

Table 4.1. Profession of respondents.

Profession	Number of Respondent	Percentage (%)
Architect	12	33
Builder	7	19
Engineer	10	28
Quantity Surveyor	6	17
Project Manager	1	3
Total	36	100

Source: Field Survey, June (2012).

4.1.1.2 Qualifications of Respondents

Concerning the educational attainment of the respondents as presented in table 4.2; 31% (11) were M.Sc holder, 11% (4) were PGD holder, 44% (16) were B.Sc holder and 14% (5) were HND holder.

Table 4.2: Qualifications of Respondents

Qualification	Number of respondents	Percentage (%)
M.Sc	11	31
PGD	4	11
B.Sc	16	44
HND	5	14
Total	36	100

Source: Field Survey, June (2012).

4.1.1.3 Working Experience

Regarding the years of working experience as presented on table 4.3; 22.2% (8) were between 1-5 years, 30.6% (11) were between 6-10 years, 27.8% (10) were between 11-15 years and 19.4% (7) were 15 and above years of working experience.

Table 4.3. Respondents working experience

Work Experience (yrs)	Number of Respondent	Percentage %	Cumulative
1 – 5	8	22.2	22.2
6 – 10	11	30.6	52.8
11 – 15	10	27.8	80.6

15 – Above	7	19.4	100
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Source: Field Survey, June (2012).

The result of the findings shows that cumulatively 77.8% of the respondents have more than 5years working experience in construction.

4.1.1.4 Standard Forms of Contract used

The questionnaire sought to discover the Standard Forms of Contract used by the respondents. The findings are shown in table 4.4 below

Table 4.4. Standard forms of Contract used.

Standard form of contract	Number of respondent	Percentage (%)
JCT SBC	15	42
SFBC 1990	21	58
Total	36	100

Source: Field Survey, June (2012).

The findings revealed that 58% (21) of the respondents used the Nigeria Standard form of Building Contract (SFBC1990) in their project while 42% (15) used the British Joint Contract Tribunal Standard Building Contract (JCT SBC).

4.1.1.5 JCT Editions

The questionnaire sought to discover the edition or version of the JCT used by the respondents. The findings are shown in table 4.5 below

Table 4.5 JCT Editions used

JCT Edition	Number of Respondent	Percentage (%)
1963	8	53
1998	4	37
2005	3	20

Source: Field Survey, June (2012).

53% (8) of the respondents indicated that they use the 1963 JCT while 37% (4) and 20% (3) of the respondents uses 1998 and 2005 JCT respectively. The findings also revealed that the Standard Form of Building Contract 1990 (SFBC) is mostly used because of its internalized form of contract and most of its clauses are copied from the JCT 1963.

4.1.2 POTENTIAL RISK FACTORS

The first step in risk management is the identification of potential risks that may affect the project (PMI, 2000). In assessing risks contractors are exposed to within some standard forms of contract, 35 potential risk factors were drawn out from the JCT 2005 and the SFBC 1990 as shown in table 2.1. These potential risk factors are drawn from the clauses that relate to the parties to the contract other than the contractor in respect of their obligations and duties that could act as potential risk to the contractors (Appendix III)

4.1.3 SOURCES OF POTENTIAL RISK FACTORS

Contract is said to be a means by which risk is transferred in construction by establishing rights, duties and obligation of the parties in the clauses of the standard form of contract. Risks sometimes emanate from parties other than the contractor himself in the course of construction. The questionnaire sought to identify the parties that are likely to be responsible for the identified potential risk factors (Appendix II). As shown in table 4.6, the respondents indicated that the client is responsible for 19 risk factors representing 54% while the Architect, Quantity surveyor, Project manager and the government

agencies were responsible for 11 (31%), 2 (6%), 2 (6%), 1 (3%) potential risk factors respectively.

Table 4.6 Sources of risk

S/N	Source	Potential Risk Factor
1.	Client	<ol style="list-style-type: none"> 1. Delay in obtaining access to site. 2. Scope of work not properly defined. 3. Misinterpretation of contract conditions. 4. Drawings and documents are not issued in time. 5. Inaccessibility to necessary contract documents. 6. Changes in the design. 7. Adjustment to the completion time of project. 8. Third party nomination without consent 9. Increase to the scope of work 10. Contract documents used other than the purpose of the contract. 11. Delay in issuing interim certificate. 12. Failure to honour claims. 13. Delay in making interim valuations. 14. Delay in issuing final certificate. 15. Failure to write instruction regarding variation. 16. Failure to reimburse for direct loss and expenses. 17. Determination of contract. 18. Retention money not returned. 19. Interference in the progress of work

2.	Architect	<ol style="list-style-type: none"> 1. Inadequate or insufficient site information. 2. Unfair or unrealizable program of work. 3. Delay in setting out of the works. 4. Defective/incorrect design. 5. Imposing of subcontractors. 6. Discrepancies in drawings and specifications. 7. Scope of work differs from contract. 8. Delay in resolving disputes. 9. Delaying in issuing and responding to instruction. 10. Verbal instructions not backed by writing. 11. Delay in making interim payments.
3.	Quantity Surveyor	<ol style="list-style-type: none"> 1. Discrepancies in the Bill of Quantities. 2. Delay in making final payment.
4.	Project manager	<ol style="list-style-type: none"> 1. Imposing of suppliers. 2. Assigning part of the work without consent.
5.	Govt. agent	<ol style="list-style-type: none"> 1. Addition of unreasonable taxes and charges to contract sum.

Source: Field Survey, June (2012).

4.1.3.1 Risks Originating from Client

The study shows that the Client serves as an immense risk source the contractors are exposed to as shown in Table 4.6. The Client makes the decision to build, owns the financial resources and specifies the design requirements of the project. In most cases the Client rushes to commence the project without all the necessary planning and design input. This can result to changes in design as the construction progresses. The number and level of risks increases as the scope of work becomes ill defined.

As the initiator of the project there is little wondering the clients too originate the majority of risks to the contractor.

4.1.3.2 Risks Originating from Architect

The respondents reveal that the Architect represents another risk source because he acts as a representative of the Client. The Architect's obligation under the contract required him to act for the Client by undertaking certain actions within prescribed time, it is required of the Architect to supply necessary information, documents or instructions, required to solve ambiguities, inconsistencies or discrepancies and to confirm an oral instruction in writing as soon as possible. When all these obligations are not met, it may affect the smooth running of the work and completion of work may be delayed which makes the contractor to be entitled to an extension of time perhaps associated costs in some occasions.

4.1.3.3 Risks Originating from Quantity Surveyor

Because some clauses in the standard forms assign some duties exclusively to the Quantity Surveyor, these obligations impose some level of risks to the Contractor. Though not many of these risks have high degree of severity but their actions may adversely affect the interim and final payment of the contractor. Discrepancies in the Bill of Quantities also can be a risk factor emanating from the Quantity surveyor because inaccurate bill of quantities can cause unnecessary acrimony and further expense on correction of damages. If there is a mistake in number it would affect both quality and quantities of the work and consequently might lead to delay, dispute and claims situations.

4.1.3.4 Risks Originating from Project Manager

The study also identified the Project managers as a source of risks being an agent of the Client, because they may impose subcontractor to the contractor which may not go well with such contractor, the contractor might not be able to work well with the imposed

subcontractor and they might not have common interest as regards the project. Therefore, laxity in the part of such subcontractor can affect the progress of the work.

4.1.3.5 Risk Originating from Government Agent

Government agents as identified by the respondents form another source of risks contractors are exposed to through the imposition of numerous taxes and charges to the contract sum which in turn affects the contractors mark-up.

4.1.4 LIKELIHOOD OF OCCURRENCE OF THE RISK FACTORS

The study sought to know the likelihood of occurrence of the identified risk factors in the project. Based on the respondents' responses, the relative importance index (RII) was calculated for each risk factor based on the likelihood of occurrence of the risk factors. These risk factors were then ranked according to their RII as presented in table 4.7.

According to the ranking from the RII, respondents identified failure to write instruction regarding variations has high likelihood of occurring and was ranked 1st with a RII = 3.97, followed by Drawing and documents not issued in time as 2nd with RII = 3.53 and high likelihood of occurrence while Adjustment to the completion time, unfair or unrealizable programme of work and Defective/incorrect design ranks 3rd, 4th and 5th with RII of 3.44, 3.42 and 3.38 respectively and also moderate likelihood of occurrence.

Delay in issuing and responding to instruction ranked 6th (RII = 3.36), misinterpretation of contract conditions ranked 7th (RII = 3.33), delay in issuing interim certificate ranked 8th (RII = 3.31), delay in making interim valuation ranked 9th (RII = 3.25) and delay in making interim payment ranked 10th (RII = 3.25).

Table 4.7: Likelihood of occurrence of the risk factors

S/No	Potential Risk Factors	Likelihood RII	Level Of Occurrence	Ranking
1	Failure to write instruction regarding variation	3.97	High	1
2	Drawings and documents are not issued on time	3.53	High	2
3	Adjustment to the completion time of project	3.44	Moderate	3
4	Unfair or unrealizable program of work	3.42	Moderate	4
5	Defective/incorrect design	3.38	Moderate	5
6	Delay in issuing and responding to instruction	3.36	Moderate	6
7	Misinterpretation of contract conditions	3.33	Moderate	7
8	Delay in issuing interim certificate	3.31	Moderate	8
9	Delay in making interim valuations	3.25	Moderate	9
10	Delay in making interim payment	3.25	Moderate	10
11	Failure to honour claims	3.22	Moderate	11
12	Failure to reimburse for direct loss and expenses	3.22	Moderate	12
13	Imposing of suppliers	3.22	Moderate	13
14	Changes in the design	3.19	Moderate	14
15	Verbal instructions not backed by writing	3.19	Moderate	15
16	Determination of contract	3.19	Moderate	16
17	Delay in making final payment	3.19	Moderate	17
18	Delay in resolving disputes.	3.19	Moderate	18
19	Delay in setting out of the works	3.17	Moderate	19
20	Inadequate or insufficient site information	3.17	Moderate	20
21	Assigning part of the work without consent	3.08	Moderate	21
22	Discrepancies in drawings and specifications	3.06	Moderate	22
23	Scope of work not properly defined	3.00	Moderate	23
24	Addition of unreasonable taxes and charges to contract sum	3.00	Moderate	24
25	Interference in the progress of work	2.94	Moderate	25

Table 4.7 Continues

26	Imposing of subcontractors	2.94	Moderate	26
27	Retention money not returned	2.94	Moderate	27
28	Inaccessibility to necessary contract documents	2.92	Moderate	28
29	Increase in the scope of work	2.89	Moderate	29
30	Delay in issuing final certificate	2.88	Moderate	30
31	Scope of work differ from contract	2.86	Moderate	31
32	Discrepancies in the Bill of Quantities	2.83	Moderate	32
33	Delay in obtaining access to site	2.72	Moderate	33
34	Third party nomination without consent	2.67	Moderate	34
35	Contract documents used other than the purpose of the contract	2.50	Moderate	35

Source: Field Survey, June (2012).

4.1.4.1 Failure to Write Instructions Regarding Variations

The study revealed that there is a high preponderance of the Architects not writing instructions as regard variation as and when the need arises in the project. JCT 2005

Clause 5.21 and SFBC 1990 Clause 11.3 requires the Architect to put in writing any variation i.e. addition, omission or substitution of any work to the Contractor. Variations frequently lead to delays, particularly if additional work is involved. Variations during the project may affect the project progress and quality (CII, 1994a; Assaf *et al.*, 1995). Inappropriate delay in issuing instructions regarding variations raises the level of risk in any project.

4.1.4.2 Drawings and Documents not Issued on Time

In most cases because of the rush by most Clients to commence work there is a possibility that drawings and documents needed to commence work are not given to the contractors on time after the contract has been awarded and site possessed in most of their projects. Clause 2.9, 2.12 and Clause 3.2 of the JCT 2005 and SFBC 1990 respectively requires the Architect to provide the contractor with 2 copies of documents necessary for use in carrying out the work. If the Contractor does not receive the documents and drawings in due time then this raises the level of risk the contractor faces.

A great deal of effort is therefore required by the contractor to reduce these high occurring risks to moderate and low occurring ones.

4.1.5 IMPACT OF RISKS ON PROJECT

Based on the response on the impact of potential risk factors on Contractors, the results of findings as shown in table 4.8 revealed that Delay in interim payment has high impact on the project and was ranked 1st (RII = 4.17) followed by Unfair or unrealizable program of work ranked 2nd (RII = 3.89), Delay in issuing and responding to instruction ranked 3rd (RII = 3.89), Defective/incorrect design ranked 4th (RII = 3.67), Inaccessibility to

necessary contract documents ranked 5th (RII= 3.61), Misinterpretation in contract conditions 6th (RII = 3.61), Inadequate or insufficient site information ranked 7th (RII = 3.61), Failure to honour claims ranked 8th (RII = 3.61), Adjustment to the completion time of project ranked 9th (RII = 3.58), Verbal instructions not backed by writing ranked 10th (RII = 3.58), Discrepancies in drawings and specifications ranked 11th (RII= 3.56), Delay in issuing interim certificate ranked 12th (RII=3.56) and Changes in the design was ranked 12th (RII= 3.55). The other risk factors were identified to have moderate impact on the project.

Table 4.8: Impact of Risk factors

S/No	Potential Risk Factors	Impact RII	Impact level	Ranking
1	Delay in making interim payment	4.17	High	1
2	Unfair or unrealizable program of work	3.89	High	2
3	Delay in issuing and responding to instruction	3.89	High	3
4	Defective/incorrect design	3.67	High	4
5	Inaccessibility to necessary contract documents	3.61	High	5
6	Misinterpretation of contract conditions	3.61	High	6
7	Inadequate or insufficient site information	3.61	High	7
8	Failure to reimburse for direct loss and expenses	3.61	High	8
9	Adjustment to the completion time of project	3.58	High	9
10	Verbal instructions not backed by writing	3.58	High	10
11	Discrepancies in drawings and specifications	3.56	High	11
12	Delay in issuing interim certificate	3.56	High	12
13	Changes in the design	3.55	High	13
14	Scope of work not properly defined	3.50	Moderate	14
15	Interference in the progress of work	3.50	Moderate	15
16	Assigning part of the work without consent	3.50	Moderate	16
17	Delay in resolving disputes.	3.47	Moderate	17
18	Delay in issuing final certificate	3.42	Moderate	18
19	Failure to honour claims	3.39	Moderate	19
20	Delay in setting out of the works	3.39	Moderate	20

21	Scope of work differ from contract	3.36	Moderate	21
22	Contract documents used other than the purpose of the contract	3.36	Moderate	22
23	Drawings & documents are not issued in time	3.33	Moderate	23
24	Delay in final payment	3.33	Moderate	24
25	Discrepancies in the Bill of Quantities	3.25	Moderate	25
26	Imposing of subcontractors	3.25	Moderate	26
27	Imposing of suppliers	3.22	Moderate	27
28	Determination of contract	3.17	Moderate	28
29	Increase in the scope of work	3.17	Moderate	29
30	Delay in obtaining access to site	3.11	Moderate	30
31	Retention money not returned	3.11	Moderate	31
32	Delay in making interim valuations	3.03	Moderate	32
33	Failure to write instruction regarding variation	2.97	Moderate	33
34	Third party nomination without consent	2.97	Moderate	34
35	Addition of unreasonable taxes and charges to contract sum	2.36	Low	35

Source: Field Survey, June (2012).

Risk by nature has strong influence on the Contractors depending on the level of impact. As shown in table 4.8 above 13 potential risk factors are identified to have high impact, 21 with moderate impact and 1 with low impact level.

4.1.5.1 Delay in Making Interim Payment.

It is the obligation of the Client to pay the Contractor by instalments or on account at specified stages or intervals. The purpose of interim payment is to augment the Contractor financially to enable him carry out the works diligently. It is to maintain the Contractor's cash-flow and thus minimizing any deficit which may affect the smooth running of the project. But the study reveals that the failure of the Contractor not getting regular and timely payment could result in project delay, reduced profitability and in the extreme case, the company may go into liquidation. It will also have a knocking effect on the whole of construction business chain because the Contractor will not be able to pay his banks, his sub-Contractors, suppliers, hirers and workers on time thus causing everyone to suffer.

Consequently, there have been cases of Contractors taking very adverse course of actions when they are not paid or when the payments are unduly delayed. These include work stoppage, reduction in scope and contract determination. In the worst scenario the Contractor may simply leave the site and abandon the project.

4.1.5.2 Failure to Reimburse for Direct Loss and Expenses

JCT 2005 Clause 4.23 and SFBC 1990 Clause 11.8 made provisions for reimbursement for any direct loss and expenses that might be incurred by the Contractor in the course of the project upon a written application to the Architect. It is expected of the Architect to instruct the Quantity surveyor to ascertain such claims and the amount entitled so that payment can be made to the contractor. The consequence of not reimbursing the contractor might cause financial hardship to him since payment from the client is the main source of revenue for the contractor which can lead to the contractor stopping the work.

4.1.5.3 Verbal Instructions not Backed by Writing

All instructions issued by the Architect in the course of the project are expected to be written as provided in the Standard Forms of contract (JCT 2005 Clause 3.12.1); verbal instructions will be of no immediate effect unless confirmed by writing. The respondents indicated that when verbal instructions are issued without written confirmation and the Contractor goes ahead to comply with such instruction it can lead to dispute in future and also there could be project time slippage in the course of waiting for a written backup of instruction when not gotten in reasonable time.

4.1.5.4 Delay in Issuing Interim Certificate

The interim certificate is considered as virtually cash. Therefore it must be honoured by the Employer and thus ensuring that the Contractor will have adequate fund to successfully construct and complete the project on time.

Delay in issuing interim certificate is tantamount to denying the contractor financial wherewithal to execute the project.

4.1.5.5 Adjustment to the Completion Time of Project

Usually the longer the duration of the contract the more resources will be put into the project, a change of schedule during the project construction phase may result in major resource reallocation (Fisk, 1997; O'Brien, 1998). Time has an equivalent money value. The consequences of this adjustment in schedule mean that the contractor will either provide additional resources, or keep some resources idle. In both cases additional cost is incurred, thus increasing the risk of losing money.

4.1.5.6 Inadequate or Insufficient Site Information

Contractors have identified that lack of required data may affect the strategic planning for successful project completion, leading to frequent disruptions during the construction process. It can also result in misinterpretation of the actual requirements of a project.

4.1.5.7 Inaccessibility to Necessary Contract Documents

The standard forms of contract require that all necessary documents must be provided or given to the Contractor immediately after the execution of the contract and that such documents must be accessible at anytime of the project to the contractor (JCT 2005 Clause 2.8.1 & Clause 2.8.2). But most Contractors have identified that they are deprived of these privileges and the implication is that the projects are adversely affected. Arain *et al* (2004) reveals that many a times public and private sectors clients have large funds and want to complete projects in a very short time, complete plans and specifications may not be available when the contractor starts work, thereby making contractors helpless and the progress of work unsatisfactory.

4.1.5.8 Unfair or Unrealizable Program of Work.

The study revealed that Clients often impose tight construction schedule that might be difficult and impractical to achieve. Owners tend to rush projects for obvious time and money reasons, the contractor might find this unattainable and in trying to achieve these tight schedule compromise the quality of work and sometimes spend more in terms of labour and machineries to meet the Client's target.

4.1.5.9 Delay in Issuing and Responding to Instruction

Instructions communicate the intentions of the parties in the course of the project. A contractor may need to make numerous requests for information to resolve ambiguities and inconsistencies. Prompt response to these notifications might be crucial for the contractor to carry out a particular activity. The Architect is required as an obligation to respond to request from the Contractor within reasonable time.

The implication of any delay usually leads to the slowing down of work and some activities would not start as at when due either because the instructed activity was on the critical path (i.e. work cannot start unless the other is completed) or because the delay moves it onto the critical path.

4.1.5.10 Defective/incorrect Design

Defective/ incorrect design can affect a project adversely depending on the timing of the occurrence of the errors. It was identified that errors and omissions in design are an important cause of project delays as some part of the work might be demolished and done again which can lead to loss of productivity, delay in the project schedule, waste of materials and additional cost being incurred by the contractor.

4.1.5.11 Misinterpretation of Contract Conditions

It was revealed that the contract conditions are often misinterpreted by parties to the contract, the client may assume that the contract is supposed to carry out some activities in implied terms which are not indicated in the contract. Conflict between contract documents may also arise and can result in misinterpretation of the actual requirement of a project. To convey complete project scope for participants, the contract documents must be clear and concise. Insufficient details in contract documents may cause major variations and affect the project adversely leading to delay in project completion.

4.1.5.12 Discrepancies in Drawings and Specifications

Design and specifications discrepancies affect the project functionality and quality. In many cases some items shown on the drawings are described differently in the specifications, data covered in both the drawings and the specifications are not in

agreement and also there are repetitions of the same information or data in two or more places causing conflict between contract documents. Eventually, this can affect a project adversely leading to claims, rework and disputes.

4.1.5.13 Changes in Design

It is not uncommon that the Clients would want to alter some part of the design either to add to it or eliminate some part of the design in the course of the project. Excessive changes by Clients can be very dangerous and might jeopardize project objectives and can lead to claims for loss or expenses by the Contractors because the changes are not within the scope of work and are not anticipated when the contract was agreed.

4.1.6 DEGREE OF RISK

In determining the degree or severity of risk in this study, the likelihood of occurrence and the impact of the potential risk factors were first combined using the Risk Matrix Analysis presented in Table (3.4). The result of findings is presented in table 4.9

Table 4.9 Degree of risk.

S/No	Potential Risk Factor	Likelihood RII	Level of occurrence	Impact RII	Level of impact	Degree of Risk
1	Delay in obtaining access to site	2.72	Moderate	3.11	Moderate	Moderate
2	Scope of work not properly defined	3.00	Moderate	3.50	Moderate	Moderate
3	Inadequate or insufficient site information	3.17	Moderate	3.61	High	High
4	Unfair or unrealizable program of work	3.42	Moderate	3.89	High	High
5	Misinterpretation of contract conditions	3.33	Moderate	3.61	High	High
6	Delay in setting out of the works	3.17	Moderate	3.39	Moderate	Moderate
7	Defective/incorrect design	3.38	Moderate	3.67	High	High
8	Changes in the design	3.19	Moderate	3.55	High	High
9	Discrepancies in drawings and specifications	3.06	Moderate	3.56	High	High
10	Drawings and documents are not issued in time	3.53	High	3.33	Moderate	High
11	Increase in the scope of work	2.89	Moderate	3.17	Moderate	Moderate
12	Scope of work differ from contract	2.86	Moderate	3.36	Moderate	Moderate
13	Adjustment to the completion time of project	3.44	Moderate	3.58	High	High
14	Inaccessibility to necessary contract documents	2.92	Moderate	3.61	High	High
15	Discrepancies in the Bill of Quantities	2.83	Moderate	3.25	Moderate	Moderate
16	Contract documents used other than the purpose of the contract	2.50	Moderate	3.36	Moderate	Moderate
17	Interference in the progress of work	2.94	Moderate	3.50	Moderate	Moderate
18	Imposing of subcontractors	2.94	Moderate	3.25	Moderate	Moderate

Table 4.9 Continues

19	Imposing of suppliers	3.22	Moderate	3.22	Moderate	Moderate
20	Assigning part of the work without consent	3.08	Moderate	3.50	Moderate	Moderate

21	Third party nomination without consent	2.67	Moderate	2.97	Moderate	Moderate
22	Delay in resolving disputes.	3.19	Moderate	3.47	Moderate	Moderate
23	Delay in issuing and responding to instruction	3.36	Moderate	3.89	High	High
24	Verbal instructions not backed by writing	3.19	Moderate	3.58	High	High
25	Delay in interim payment	3.25	Moderate	4.17	High	High
26	Delay in issuing interim certificate	3.31	Moderate	3.56	High	High
27	Failure to reimburse for direct loss and expenses	3.22	Moderate	3.61	High	High
28	Delay in making interim valuations	3.25	Moderate	3.03	Moderate	Moderate
29	Delay in issuing final certificate	2.88	Moderate	3.42	Moderate	Moderate
30	Delay in final payment	3.19	Moderate	3.33	Moderate	Moderate
31	Addition of unreasonable taxes and charges to contract sum	3.00	Moderate	2.36	Low	Moderate
32	Failure to write instruction regarding variation	3.97	High	2.97	Moderate	High
33	Failure to honour claims	3.22	Moderate	3.39	Moderate	Moderate
34	Determination of contract	3.19	Moderate	3.17	Moderate	Moderate
35	Retention money not returned	2.94	Moderate	3.11	Moderate	Moderate

Source: Field Survey, June (2012).

As shown in the table 4.9, it was discovered that 15 potential risk factors have high degree of risk on the project. This is due to moderate likelihood of occurrence of the risk but high impact and also their high likelihood of occurrence and moderate impact. 20 potential risk factors have moderate level of risk due to their moderate likelihood of occurrence and moderate impact on the project.

Failure to write instruction regarding variation was identified to have high degree of risk because of its high likelihood of occurrence and moderate impact. As stipulated in the JCT 2005 clause 5.21 and SFBC 1990 Clause 11.3 Architect are meant to put in writing every

variation, which is not often done resulting to stoppage of work, change in contract prices and schedules. It is therefore important to limit the likelihood of occurrence of this risk to the lowest level.

Another risk with high likelihood of occurrence but moderate impact is drawings and documents are not issued on time. This high degree risk will affect the completion time of the project because without them contractor cannot commence or execute the project. Other identified high degree risks includes; inadequate or insufficient site information, unfair or unrealizable programme of work, misrepresentation in contract conditions, defective/incorrect design, changes in the design, discrepancies in drawings and specifications, adjustment to the completion time of project, inaccessibility to necessary contract documents, failure to reimburse for direct loss and expenses, verbal instructions not backed by writing, delay in interim payment, delay in issuing interim certificate and delay in issuing and responding to instruction.

In summary the implications of the above discussed potential risks factors on the Contractors are reduce profits, dispute, claims, inability to complete project in time some as to move to other projects to increase their profit base and in many cases abandoned projects. Therefore it is necessary for Contractors to concentrate his efforts on reducing these high degree risks to moderate risks that have negligible impact, moderate risks to low level risk and also monitor low risks to ensure they do not increase in level.

CHAPTER 5

SUMMARY AND CONCLUSIONS

5.1 SUMMARY OF FINDINGS

- a) Majority of the risks exposed to the contractor emanates from the client with 54% followed by the Architect with 31%, Quantity surveyor 6%, Project manager 6% and government agencies 3% out of the 35 identified potential risk factors from the standard forms of building contract as indicated in table 4.7. The result of study using the standard forms of contract in Nigeria shows that there is a slight similarity in the study carried out in South Africa, to investigate the contractors risk sources associated with the Principal building agreement by Harianrain et al (2007),
- b) Failures to write instruction regarding variations and documents not issued on time are the major risk factors with the high likelihood of occurring while the other 33 risk factors have moderate likelihood of occurring.
- c) Thirteen (13) Potential risk factors were found to have high impact on Contractors.
- d) Fifteen (15) potential risk factors were high degree risk.

5.2 CONCLUSION

The need to address the risks contractors are exposed to has become imperative because of their adverse consequences on the successful completion of projects. The findings have revealed that the Standard forms of contract exposes the Contractor to 35 risk factors emanating from principally 5 sources (Client, Architect, Quantity

surveyor, project manager and government agents). Only 2 of these risk factors have high likelihood of occurrence while the other 33 are moderate. Thirteen of these risks are high impact risks and fifteen are high degree risks.

It is therefore important for contractors to pay great attention to these risks for the success of present and future projects.

5.3 RECOMMENDATIONS

The following recommendations are proffered on the account of the research findings:

- i. Major attention should be focused on risks with high likelihood of occurrence and their sources so as to reduce their impact
- ii. Contractors should protect themselves against all unpredictable events by making sure contingency are added to accommodate all types of risk envisaged.
- iii. To mitigate the impact of delays, the contractor must give early warning to the party that is likely to cause any delay and its implications.
- iv. On the issue of tight schedule, contractors should negotiate the construction schedule with the client, if possible or at least allow time contingency and buffer in their schedule.
- v. Contractor should ensure they work with sets of carefully prepared and coordinated front end documents and drawings to avoid discrepancies and ambiguities.
- vi. Establishment of clear lines of communications that will ensure prompt receipt and response to instructions.

- vii. Above all excellent collaboration of project participants and adequate technical skill of project managers would ensure good contractor performance on any construction project.
- viii. This study considered risks that contractors are exposed to within the JCT and the SFBC. Other study could be carried out to identify and assess risks that contractors are exposed to in other Standard forms of contract such as the NEC, FIDIC and the ICE.
- ix. Studies could also be carried on to support the outcome of this study by measuring the impact of these risks on performance using performance indicators and also their implications in financial terms.

5.4 MAJOR CONTRIBUTIONS TO KNOWLEDGE

- i. The study has been able to identify 35 potential risk factors from the JCT 2005 and the SFBC 1990.
- ii. Major source of these risks have been identified (Client, Architect, Quantity surveyor, Project Manager and Government agents)
- iii. The likelihood and impact of the identified potential risk have been determined and also their degree.

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APPENDIX I
QUESTIONNAIRE

**AN ASSESSMENT OF CONTRACTORS RISK EXPOSURE WITHIN SOME
STANDARD FORMS OF BUILDING CONTRACT USED IN NIGERIA**

Department of Quantity Surveying,
Faculty of Environmental Design,
Ahmadu Bello University,
Zaria, Kaduna State. Nigeria

25thMay, 2012.

Dear Respondent,

This questionnaire is a part of a M.Sc. (Project Management) degree research work in Ahmadu Bello University Zaria, Nigeria; it is designed to obtain relevant information on the above research topic.

Evidence from around the world has shown that construction projects are subject to several risks due to the different activities in the construction process, because these activities are performed by several parties under different circumstances. Among the various stakeholders the contractor has been identified to be the party that carry the highest number of risks, many which do emanate from parties other than him/herself.

This study seeks to assess contractors' risk emanating from other stakeholders as assigned in the Nigerian standard form of contract. The assessment would include identifying and quantifying the sources of these risks, their likelihood of occurrence and level of impact.

Please complete and return the attached questionnaire. All information will be treated confidentially and will not be used for any other purpose than what is herein stated.

Thanks you in anticipation.

Yours faithfully,

Obaju, Biodun Nathaniel.

Appendix I Continues

SECTION A

GENERAL INFORMATION

1. Profession: Architect () Builder () Engineer () Quantity surveyor () Project manager ()
2. Working experience: 1-5 () 6-10 () 11-15 () Above 15 ().
3. Qualification: PhD () M.Sc. () B.Sc. () HND () ND () others ().
4. What standard form of contract is being used to administer the contract? JCT () FIDIC () NEC () ICE () SBC ().
5. If it is the JCT what Edition or version is being used? JCT 1939 () JCT 1963 () JCT 1980 () JCT 1998 () JCT 2005 () JCT 2011 ().

SECTION B

1. RISK FACTORS AND THEIR SOURCES

Listed below are potential risk factors imposed on contract conditions in most of the standard forms operating in Nigeria. Please tick appropriately the parties/source that may be responsible for these factors.

RISK FACTORS	RISK SOURCES							
	Client	P. M	Arch	Q/S	Cons tnts Engr	Sub- contr actor	supplie rs	Govt. authori ty
1 Third party nomination without consent								
2 Delay in resolving disputes.								
3 Delaying in issuing and responding to instruction								
4 Verbal instructions not backed by writing								
5 Delay in interim payment								
6 Delay in issuing interim certificate								

-
- 7 Failure to honour claims
 - 8 Delay in making interim valuations
 - 9 Delay in issuing final certificate
 - 10 Delay in final payment
 - 11 Addition of unreasonable taxes and charges to contract sum
 - 12 Failure to write instruction regarding variation
 - 13 Failure to reimburse for direct loss and expenses
 - 14 Determination of contract
 - 15 Retention money not returned
 - 16 Delay in obtaining access to site
 - 17 Scope of work not properly defined
 - 18 Inadequate or insufficient site information
 - 19 Unfair or unrealisable program of work
 - 20 Misinterpretation of contract conditions
 - 21 Delay in setting out of the works
 - 22 Defective/incorrect design
 - 23 Changes in the design
 - 24 Discrepancies in drawings and specifications
 - 25 Drawings and documents are not issued in time
 - 26 Increase in the scope of work
 - 27 Scope of work differ from contract
 - 28 Adjustment to the completion time of project
 - 29 Inaccessibility to necessary contract documents
-

-
- 30 Discrepancies in the Bill of Quantities
 - 31 Contract documents used other than the purpose of the contract
 - 32 Interference in the progress of work
 - 33 Imposing of subcontractors
 - 34 Imposing of suppliers
 - 35 Assigning part of the work without consent
-

2. RISK FACTORS AND THEIR LIKELIHOOD OF OCCURRENCE.

Listed below are potential risk factors imposed on contract conditions in most of the standard forms operating in Nigeria. Please tick appropriately the likelihood of occurrence of the risks.

Key: Rare (Not expected to happen), Unlikely (Small likelihood but could well happen), Possible (Less than 50 – 50 chance), Likely (More than 50 – 50 chance), Almost certain (Almost certain that it will happen).

		LIKELIHOOD OF OCCURRENCE				
RISK FACTORS		Almost certain	likely	Possible	Unlikely	Rare
1	Third party nomination without consent					
2	Delay in resolving disputes.					
3	Delaying in issuing and responding to instruction					
4	Verbal instructions not backed by writing					
5	Delay in interim payment					
6	Delay in issuing interim certificate					
7	Failure to honour claims					
8	Delay in making interim valuations					
9	Delay in issuing final certificate					
10	Delay in final payment					
11	Addition of unreasonable taxes and					

-
- charges to contract sum
- 12 Failure to write instruction regarding variation
 - 13 Failure to reimburse for direct loss and expenses
 - 14 Determination of contract
 - 15 Retention money not returned
 - 16 Delay in obtaining access to site
 - 17 Scope of work not properly defined
 - 18 Inadequate or insufficient site information
 - 19 Unfair or unrealisable program of work
 - 20 Misinterpretation of contract conditions
 - 21 Delay in setting out of the works
 - 22 Defective/incorrect design
 - 23 Changes in the design
 - 24 Discrepancies in drawings and specifications
 - 25 Drawings and documents are not issued in time
 - 26 Increase in the scope of work
 - 27 Scope of work differ from contract
 - 28 Adjustment to the completion time of project
 - 29 Inaccessibility to necessary contract documents
 - 30 Discrepancies in the Bill of Quantities
 - 31 Contract documents used other than the purpose of the contract
 - 32 Interference in the progress of work
 - 33 Imposing of subcontractors
 - 34 Imposing of suppliers
-

35 Assigning part of the work without
consent

Appendix I Continues.

3. IMPACT ON THE RISK FACTORS ON CONTRACTORS

Please rate the impact on the risk factors on Contractor.

Key: Very low impact (negligible effects), Low impact (Small / slight effects), Moderate impact (reasonable effects), High impact (Serious threat), Very high impact (The impact is totally unacceptable).

		IMPACT LEVEL				
RISK FACTORS	Very high	High	Moderate	Low	Very Low	
1	Third party nomination without consent					
2	Delay in resolving disputes.					
3	Delaying in issuing and responding to instruction					
4	Verbal instructions not backed by writing					
5	Delay in interim payment					
6	Delay in issuing interim certificate					
7	Failure to honour claims					
8	Delay in making interim valuations					
9	Delay in issuing final certificate					
10	Delay in final payment					
11	Addition of unreasonable taxes and charges to contract sum					
12	Failure to write instruction regarding variation					
13	Failure to reimburse for direct loss and expenses					
14	Determination of contract					
15	Retention money not returned					

-
- 16 Delay in obtaining access to site
 - 17 Scope of work not properly defined
 - 18 Inadequate or insufficient site information
 - 19 Unfair or unrealisable program of work
 - 20 Misinterpretation of contract conditions
 - 21 Delay in setting out of the works
 - 22 Defective/incorrect design
 - 23 Changes in the design
 - 24 Discrepancies in drawings and specifications
 - 25 Drawings and documents are not issued in time
 - 26 Increase in the scope of work
 - 27 Scope of work differ from contract
 - 28 Adjustment to the completion time of project
 - 29 Inaccessibility to necessary contract documents
 - 30 Discrepancies in the Bill of Quantities
 - 31 Contract documents used other than the purpose of the contract
 - 32 Interference in the progress of work
 - 33 Imposing of subcontractors
 - 34 Imposing of suppliers
 - 35 Assigning part of the work without consent
-

APPENDIX II

SOURCES OF POTENTIAL RISK

RF	client		P.Mgr		Arch		Q.S		Cons. Engrs		Sub.const		Suppl.		Govt.		Party responsible
	R P	%	R P	%	R P	%	R P	%	R P	%	R P	%	R P	%	R P	%	
RF 1	23	46.9	6	12.2	6	12.2	3	6.12	3	6.12	3	6.12	0	0	5	10.2	Client
RF 2	17	28.3	10	16.7	9	15	1	1.7	9	15	5	8.33	3	5	6	10	Client
RF 3	3	4.34	9	13.0	21	30.4	6	8.7	10	14.5	7	10.1	2	2.9	2	2.9	Arch
RF 4	13	24.5	10	18.9	21	39.6	3	5.7	9	17	2	3.8	2	3.8	2	3.8	Arch
RF 5	19	35.2	5	9.3	4	7.4	16	29.6	6	11.1	2	3.8	0	0	1	1.9	Client
RF 6	6	12.2	3	6.1	19	38.8	13	26.5	6	12.2	1	2.0	0	0	1	2.0	Arch
RF 7	1	2.6	5	13.2	21	55.3	5	13.2	1	2.6	1	2.6	1	2.6	3	7.9	Arch
RF 8	25	51.0	3	6.1	6	12.2	6	12.2	8	15.3	0	0	0	0	1	2.0	Client
RF 9	7	13.2	8	15.1	18	34	15	28.3	3	5.7	1	1.9	0	0	1	1.9	Arch
RF 10	21	46.7	8	17.8	6	13.3	3	6.7	2	4.4	2	4.4	0	0	3	6.7	Client
RF 11	10	22.2	8	17.8	0	0	1	2.2	2	4.4	4	8.9	2	4.4	18	40	client
RF 12	1	2.8	1	2.8	20	55.6	7	19.4	6	16.7	0	0	0	0	1	2.8	Arch
RF 13	21	44.7	6	12.8	6	12.8	10	21.3	1	2.1	1	2.1	0	0	2	4.3	Client
RF 14	25	51.0	5	10.5	8	16.3	2	4.1	2	4.1	3	6.1	1	2.0	3	6.1	Client
RF 15	8	18.2	6	13.6	2	4.5	21	47.7	2	4.5	3	6.8	1	2.8	1	2.8	QS
RF 16	21	46.7	8	17.8	3	6.7	1	2.2	1	2.2	2	4.4	1	2.2	8	17.8	Client
RF 17	17	30.1	11	19.4	13	23.2	6	10.7	7	12.5	1	1.9	0	0	1	1.9	Client
RF 18	12	20.7	12	20.7	15	25.9	3	5.2	9	15.5	2	3.4	0	0	5	8.6	Arch
RF 19	13	24.1	15	27.8	11	20.4	2	3.7	7	13	5	9.3	0	0	1	18.5	P.M
RF 20	15	23.1	18	27.7	9	13.8	8	12.3	4	6.2	8	12.3	5	7.7	1	1.5	P.M
RF 21	18	30.5	8	13.6	12	20.3	2	3.4	7	11.9	8	13.6	0	0	4	6.8	Client
RF 22	3	6.8	1	2.8	21	47.8	1	2.8	18	40.9	0	0	0	0	0	0	Arch
RF 23	12	21.1	5	8.8	25	43.9	1	1.8	12	21.1	1	1.8	1	1.8	0	0	Arch
RF 24	6	11.8	4	7.8	23	45.1	2	3.9	15	29.4	0	0	0	0	1	2.0	Arch
RF 25	9	13.2	8	11.8	24	35.1	8	11.8	15	22.1	2	2.9	0	0	2	2.9	Arch
RF 26	20	44.4	9	20	5	11.1	0	0	7	15.6	2	4.4	0	0	2	4.4	Client
RF 27	21	40.4	4	7.7	10	19.2	7	13.7	8	15.4	0	0	0	0	2	3.8	Client
RF 28	18	30	10	16.7	10	16.7	2	3.3	8	13.3	8	13.3	1	1.7	3	5	Client
RF 29	22	28.9	13	20.3	12	16.7	4	6.3	10	15.6	3	4.7	2	3.1	0	0	Client
RF 30	6	12	6	12	6	12	25	50	6	12	1	2	0	0	0	0	Q.S
RF 31	18	46.2	5	12.8	1	2.6	2	5.1	4	10.3	3	7.7	1	2.6	5	12.8	Client
RF 32	23	48.9	6	12.8	4	8.1	0	0	3	6.4	4	8.1	0	0	7	14.9	Client
RF 33	22	34.9	11	17.5	5	7.9	4	6.3	13	20.6	5	7.9	0	0	3	4.8	Client
RF 34	23	37.8	10	16.4	7	11.5	4	6.6	10	16.4	2	3.3	0	0	5	8.2	Client
RF 35	21	46.7	10	22.2	5	11.1	2	4.4	2	4.4	2	4.4	0	0	3	6.7	Client