APPRAISAL OF INTERIM VALUATION PROCESS FOR BUILDING CONTRACTS IN NIGERIA

BY

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DECLARATION

I declare that the work in dissertation entitled "**Appraisal of Interim Valuation Processes for Building Contracts in Nigeria",** has been carried out by me in the Department of Quantity Surveying, Ahmadu Bello University Zaria. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this project report was previously presented for another degree or diploma at this or any other institution.

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Signature **Date**

CERTIFICATION

This dissertation entitled "**Appraisal of Interim Valuation Processes for Building Contracts in Nigeria", by YakubuShafa ABDULLAHI,** meets the regulations governing the award of the Master Degree of Science in Quantity Surveying (M.Sc. Quantity Surveying) in the Department of Quantity Surveying, Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to my late father, Mother, Wife, my Late Children,Siblings, my Guardian Alh Abubakar Abdul Shafa, my Friend Muhamad Umar Datti and the family of Alh Suleiman Ali (College of Aviation Zaria) for their rare show of patience in my upbringing and in supporting me morally, financially and otherwise throughout my academic pursuit.

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ABSTRACT

One of the measures of project performance is cost which is managed by the payment system which the interim valuation process is at the centre of its success. Quite a number of payment related issues in the construction industry particularly for building projects have been linked to processes engaged in the preparation of interim valuations. While several calls have been made to address these issues, the interim valuation processes have not been considered. Hence the problems/issues remain unsolved. This research aims at appraising the interim valuation processes engaged in building projects with a view to establish gaps between what obtains in practice compare to theory and to suggest ways of mitigating them. The study sought and explores knowledge that are of the 'what is' and 'by how much' nature described as objective facts, hence the quantitative approach was adopted for the study. The unit of analysis was the activities engaged by quantity surveyors during the processes of preparing interim valuations for building project. Based on this, quantity surveyors who are engaged in the construction projects formed the source of data for the research, and formed the study population. Given the availability of the list of quantity surveyors from which a sample can be drawn, random sampling was undertaken for a sample size of 250 quantity surveyors providing interim valuation information on a recent project they were engaged in. Data was collected using self-administered close-ended questionnaires which sought for information on the requirements of, information for managing, and performance of, the interim valuation. Using, the Likert scale as basis to measure the variables investigated and given the nature of knowledge sought as contained in the objectives, frequent distribution and percentage formed the basis of analysing the data collected. The major findings include: in terms of the requirements, general requirements were better achieved compared to those related to employers and members of the construction team, though the information required to achieve these requirements were in some instances not available and where they were available they were insufficient of the effective achievement of the interim valuation requirements. The study also found that while quantity surveyors perceive the interim valuation process as generally performing satisfactorily, the performances of consultants and the administration of contracts in building construction were less satisfactory, mainly due to reasons that are not necessarily faults of the quantity surveyor. The study recommends that members of project teams should be had aware of how their actions or inactions can affect the interim valuation process which will in turn affect payment and project performance.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Over the years the effective and efficient administration of interim valuation clause in the conditions of contract is one of the most important tasks observed by contract administrator and consultant quantity surveyor during the contract period. Interim valuations aremediums that facilitate cash flowwhich is vital in any construction supply chain (Cunningham, 2018). The implementation of conditions of contract as enshrined in Joint Contract Tribunal (JCT) or Standard Bidding Document (SBD)is of great importance in contract administration as it regulates the vast majority of construction contract in Nigeria. Valuations are carried out in all construction contracts to provide advice to the certifier on construction projects for the issuance of interim certificates. The certificate issued by the certifier to the contractor is then presented by the contractor to the employer who then honours the certificate by paying the worth to the contractor (*Surveyor's Construction Handbook*, 2001).

Interim Valuation is the most widely adopted practice to improve contractor's cash flow during contracts (Odeyinka & Kaka, 2005).Interim valuation on cash flow is undoubtedly a medium that drives enterprise in the construction industry. Any interference in its preparation may therefore lead to severe consequences (Kenyatta, Alkizim & Mbiti, 2015).Sunday (2017) posits that interim valuation are carried out by Quantity Surveyors to ensure that money is paid to contractor at a stage commensurate with the work done and the materials delivered to site. Major sources of income to all contractors who undertook construction projects are interim valuations and related claims (Ndekugri, 1986).

Omotayo and Kulanga (2017) affirmed that monthly financial statements and cash flow calculations were identified as the major process used to control the cost of construction projects. Construction industry is known with complex nature of works which necessitates well defined conditions of contract that must be flexible to allow for changes when needed (Okafor, 2007). Over the years, interim valuation has been recognised as the vehicle that address the payment related issues through the guide of conditions of contract, although these procedures are usually abused(Okpala and Aniekwu, 1988), hence, this study set out to investigate its vibrancy, efficacy or otherwise. The process of valuation demands good communication between the contract administrator, quantity surveyor and the contractor's team. On a busy project, it will often be a challenge to ensure that valuations are accurately valued at the time they areundertaken (Willan, Sergeant & Wieliczko, 2014).Okpala and Aniekwu (1988); Odeh and Battaineh (2002); Assaf and Al-Hejji (2006); Fugar and Agyakwah-Baah (2010);Kulemeka, Kululanga and Morton (2015) contend that non adherence to lay down principles for computing financing and payments for completed works are reasons for high cost of construction projects. Mechanism needs to be put in place to remove hiccups in the process of valuation to curtail the aforesaid, till then an efficient and vibrant system will be achieved.

Omotayo (2014) as well as Omotayo and Kululanga (2015) identify interim valuation and certificates as factors for controlling cost during post-contract of construction project development. The two actions are carried out during post contract administration to ensure checks and balances in the construction industry. In the context of valuations, the meaning of value is sometimes the subject of dispute, valuation and payment are formal contractual processes and, therefore, they must be processed strictly in accordance with the contract conditions (*RICS*, 2015). Value of work executed shall be determined by the quantity surveyor

and payments shall be adjusted for deductions for advance payments and retention. The employer shall pay the contractor the amounts certified by the Engineer within twenty-eight (28) days of the date of each certificate (*SBD*, 2014).The meaning of value in the context of interim valuations can be contested. As enshrined in JCT Standard Building Contract with Quantities 2011, it refers to the total values of work properly executed by the contractor'. Usually, the contractor's position is that they are entitled to payment for work done at the rates referenced in the bill of quantities, plus some preliminaries. Generally, in common wealth countries construction contracts require interim payments to be paid to the contractor. It is a primary commitment to relieve the contractor of the burden of financing the whole of the works until completion; construction works may take many months or years to complete.

Within each contract it has been a tradition to contain clauses of condition of contract that set out the method of valuing the works, the criteria under which interim payments will be made, the timing of these payments and the administrative rules under which quantity surveyors, and contract administrators, employers and contractors must operate(Ross & Williams, 2013). In most instances projects operate a payment system based on monthly payments to the contractor. "The value of monthly payments is estimated by physically measuring validated by the Quantity Surveyor, certified by the contract administrator and paid within a stated time by the employer. The certificates issued by the certifier to the contractor are then presented by the contractor to the employer who pays the contractor on an interim or installment basis. In many contracts, while the completion and calculation of the valuation is important, the method and procedure of the interim payment that the contractor receives is equally as important" (*SCH*, 2001). On this basis this research is been conducted with a view to appraise the planning procedure of interim valuation.

1.2 Statement of the Problem

In contract administration, interim valuation has been identified as an instrument for addressing contractual payment related issues by providing the contractor with cash flow supply chain and client's value for money thus both enjoying a level playing ground for smooth contractual relationship within the ambit ofitsethics (Nayan, Muataffa & Judi, 2017).Abdul-Rahman (2009); Halim,*et al*. (2010); Hasmori,*et al*. (2012); Mohamad,*et al*. (2012)Babu and Sudhakar (2015); Kulemeka, Kululanga and Morton (2015) posits that over deduction of the sum payment, inaccuracy of valuation for work done, wrongly calculated claim and non-adherence to the conditions of contract during valuations hinders successful completion of construction projects.

However, despite the vast attention on payments related problems in construction related research and the evidence connecting these problems to issues relating to the interim valuation process, exploration of the interim valuation process and procedures in line with conditions of contract, has received very little consideration. Issues relating to the requirements of the interim valuation processes remain largely unknown. As long as the issues remain unknown, payment related issues stemming from interim valuation processes in construction can only get worse. This study fills this gap.

1.3 Aim and Objectives

1.3.1 Aim

The aim of the study is to assess the interim valuation processes within the Nigerian construction industry (NCI) with a view to establish gaps between what is obtained in practice compare to theory and suggest ways of mitigating them.

1.3.2 Objectives of the Study

- To identify the requirements for preparing interim valuation in the Nigerian construction industry (NCI)
- To examine Employer's specific requirements of interim valuation preparation in the industry
- To assess activities necessary for preparing interim valuation and team processes in the industry.
- To evaluate interim valuations prepared by the quantity surveyors in terms of their components and performance.

1.4 Justification for the Study

It is expected that this study will be of benefit to the contractors, consultants and clients of the Nigerian construction industry and other organizations as well as the government, policy makers, academia, and other researchers in the field of Construction Management in gaining an understanding of the inherent problems associated with the interim valuation process which is a key to successful construction project execution. As part of national planning strategy, this study 'will assist the government to identify those areas, where it can be of assistance to corporate bodies in Nigeria with respect to human capital development. Consultants on human resources management will also find this study useful as a good reference material to improve on the efficiency of the interim valuation process. Above all, this study would assist in expanding the scope of existing literature on valuation in construction contract in Nigerian construction industry from domestic point of view. The study is expected to provide working guides that would improvise for all the

stakeholders for smooth contractual relationship to curtail dispute related problems in contracts in the industry.

1.5 Scope and Limitations of the Study

There are six stages in interim valuation process they include Planning, Pre-valuation, Valuation, Valuation Documents, Issue valuation and Post-valuation (RICS, 2015),but this study only considered the planning stage. The study evaluates the effectiveness of processes for interim valuation preparation in Nigerian construction industry.For the purpose of this study, public and private contractual projects were considered. Only practicing Quantity Surveyors were targeted.

The study concentrated on appraising processof interim valuations in line with (JCT)conditions of contract in the Nigerian construction industry. These components were extracted from 1st edition of RICS professional guidance on interim valuation and payment 2015. The usefulness of the interim valuation processes and practices reported in this study are limited to the accuracy of the data provided by respondents. The results of the study may not be generalized beyond the boundaries of the population of the study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 CONSTRUCTION PROJECTS DEVELOPMENT

In construction industry most construction projects require interim valuation to be carried out for contractor to be paid on an interim(SCH, 2001). This process has beena means of relieve to the contractor the burden of sponsoring the entire project to completion (RICS, 2015). Traditionally construction works may take several months or years to complete. Over the years' interim valuation and payment are known to be formal contractual processes and, therefore they must be carried out strictly in accordance with lay down contract conditions (RICS, 2015). In everyformal contract there will be clauses that set out procedure and method of valuing the works, the standards under which interim payments will be made, the timing of these payments and the administrative rules under which all professional and other stakeholders like; quantity surveyors, contract administrators, clients and contractors must operate (RICS, 2015).The concept of an interim valuation involves a revaluation of the whole work, not the value of work done from the last certificate issued. In preparing valuations quantity surveyors must be careful to treat it in similar manner as 'mini final accounts' as the contents of interim valuation are generally the sameor similar matters and items which appear in a final account (RICS, 2015). Quantity Surveyors alongside contract administrators should note that interim valuations may be subjected to the same scrutiny as final accounts as they may be the subject or object of adjudication as may be stated in the provisions in contracts and per se are required to be compiled with care.

Interim valuations must be a true reflection ofworks executed or realistic assessment(SCH, 2001). A low valuation creates unreasonable financial problems for a contractor whereas a high valuation creates a risk to the employer of paying sums for which he or she obtains no benefit (RICS, 2015). The quantity surveyor's professional input is to assess value as distinct from cost, particularly with reference to prices of certain items, for example temporary works. The quantity surveyor employed in carrying out the valuation must be aware of the overall position of any valuation within a project that is the provisions in the conditions of contract; to assess what remains of the anticipated final contract value after each valuation and ensure that within the terms of the contract this will be adequate to complete the works. This action is particularly valid towards the end of the contract(SCH, 2001).

2.2 Theoretical Considerations of Interim Valuation

As reported by guidance note for interim valuations and payment 1st Edition 2015 of Royal Institute of Chartered Surveyors of United Kingdom (RICS), provided checklist that supports interim valuation preparation. The guidance note encapsulates six fundamental stages to preparing interim valuation, the stages include: Planning, Pre-valuation, Valuation, Valuation documents, Issue valuation, andPost valuation. Planning being the first stage of the fundamentals was explored for the purpose of this research. The planning stage has six processes; these processes are responsibilities to which a quantity surveyor must undertake to serve as guide in interim valuation preparation. The processes are: (i) Understanding requirements; (ii) Employer's specific requirements; (iii) Review of pricing documents; (iv) Liaise with contractor; (v) Liaise with consultants, and (vi) Liaise with clerk of works. Below are descriptions of these processes.

2.2.1 Understanding requirements:

The quantity surveyor needs to carryout amendments to standard form of contract that have direct or indirect bearing on valuations and payments, these would provide smooth flow of running the process. Quantity surveyors has liaised with the employer to agree on how interim payments are to be made either periodic payments, stage payments, milestones, activity schedule or other method.

Prescribed period is a time lag between the due dates to the final date for payment although this period is provided in standard conditions of contract thus the parties can change it. There are numerous dates are termed as key dates they include:

- ✓ Last date for contractor to submit interim application for payment
- ✓ Valuation date
- ✓ Due date
- ✓ Last date for issue of payment notices or interim certificate, as appropriate
- ✓ Last date for issue of pay less notice and
- ✓ Final date for payment

Determine key dates for all contract period e. g for construction period, rectification period and final payment. Customarily the periods for interim payment after practical completion are often different to those during the construction period.

The parties need to agree prior to commencement of the executing of the contract to schedule payment dates and appended thereto. Where on the due date for each period has been stated, make sure that the schedule of payment dates incorporates the due dates stated in contract conditions.The parties are required to design payment dates form appropriate to conditions of contract.

Employer's specific requirements: these specifics need to be agreed by both the employer and contractor in a particular project. The specifics are guided by when required in conditions of contract. The employer is to be advised to seek legal advice at the event of not having a prescribed vesting certificate.

2.2.2 Reviewing pricing document

The quantity surveyor must make sure that contractor's preliminaries are sufficiently broken down to allow for proper assessment. Where the preliminaries have been developed using BESMM, the contractor's break down should be structured in the same way for example, director's adjustment, or work package adjustments made in the summary of the bill of quantities. Contract sum analysis from the tender or elsewhere in the pricing document or in the cover letter. The quantity surveyor after consultation with the employer should prescribe the structure and presentation for interim valuation process and make it easier to verify the contractor's interim application leaving the contractor to decide on the structure. The quantity surveyor must make sure that items that do not attract retention are separated to avoid the erroneous deduction of retention he or she must make sure that items that do not attract overhead and profit for the purpose of interim valuations e.g., materials off-site are separated to avoid the erroneous edition of the overheads and profit.

2.2.3 Liaise with the contractor

The certifier is the contract administrator. The employer may also be the certifier, but this not usual, unless agreed otherwise, the percentage addition charged by the contractor for overheads and profit in respect of variations/ changes is to be the same or lower that included in the calculation of the contract sum.

2.2.4 Liaising with the clerk of works/site inspector or the supervisor

Impress on clerk of works/site inspector (JCT) or any person whom the responsibility has been given to record contractor's resources: time, materials and plant etc that diligence and accuracy in checking on resources used is crucial and that, therefore, he or she must keep a reliable daily record inform him or her that you will be visiting the site to make spot checks unannounced. Acquaint clerk of works/site inspector or supervisor with the valuation dates programmed. Request that you are notified of the items of work likely to become hidden so that you can ensure that records are made, ready for measurement.

2.2.5 Components of interim valuation

Quantity surveyors are required to include all the components as contained in the standard requirement to avoid unnecessary or ambiguity during interim valuation preparation. The components are items of value to either the contractor or the employer depending on the context. The componentsare very vital as the provide clue to what is expected of the quantity surveyor to value as claim to either of contractor or employer.

2.2.6 Satisfaction Measure

The satisfaction measure is an instrument that is used to test the performance of a process to ascertain it viability. The satisfaction measure to quantity surveyor, measures the satisfaction of working relationship with the parties or stakeholders these include: employer, consultant and clerk of work it also extends to the documents required to be used in the interim valuation processes.

2.3Concept of Interim Valuation

Customarily interim valuation precedes the issue of an interim certificate in all formal construction contracts being it public or private, which in turn allow an interim payment to be made. It is a detailed breakdown, generally prepared by contractors' quantity surveyor, which relativelyconstitutes an application for part payment by the contractor for work undertaken since the last valuation. Once prepared it is checked and signed off by client's contract administrator architect or any other client's representative who often delegates the task to a client's quantity surveyor. This ethics involves visiting the site and checking that work has been carried out and in accordance with the required laid down standard, the assessment is either by measurement or by visual inspection (The Surveyors' Construction Handbook, 2001). The interim valuation is for work completed entirely, not for the work completed in that period. This means that the certified interim payment is calculated by subtracting the previous valuation from the current valuation, less any deductions. The resulting total and retention figure are then included in the interim certificate issued to the client for payment by the contract administrator.

Some requirements have been advanced for preparing interim valuation which may have bearing on the contract, employer and administration. Requirements specific to contract includes: checking to seeif the architect requires regular valuations for interim certificates and refer to the

contract for the frequency; noting whether there are any ad hoc amendments made to the standard form of contract that have a bearing on interim certificates; and preparing job progress chart and cash flow forecast ready for checking against the values of work completed at successive valuations. Requirements specific to the employer would include: checking that the programme of valuations and certificates matches the employer's programme of payments; confirming the programme of valuations and certificates with the architect; and checking whether the employer requires valuations to be built up under various headings.

Lastly, some of the administration related requirements include: obtaining breakdown of preliminaries from the contractor (if not previously supplied); note any adjustments to the contract pricemade in the summary of the bills of quantities or elsewhere; if not already detailed, establish which preliminaries are one-off expenditure items and which are related to time or to value of work done; similarly, with the items in the summary of the bills of quantities; where there are to be fluctuations, refer to 4.4.9.3 of this section; and calculations made in the course of the interim valuation should be set out in a clear form and retained for future reference. Any details which are applicable to the final account should be collected together as a running record.

2.4Principles and Techniques of Interim Valuation

The provision made in JCT SBC/Q 2011, is that Interim Valuations shall be made by the Quantity Surveyor whenever the client's representative in person of Architect/Contract Administrator considers them necessary for the purpose of ascertaining the amount to be stated as due in an Interim Certificate. Furthermore, under the ICC – Measurement Version, the methodology is different because it is the Contractor who shall submit to the Engineer … a statement showing the estimated contract value … carried out up to the end of that month. It is

the opinion of the Engineer that decides the amount to be certified for payment. The principle of valuation largely centres around three aspects, i.e. accumulation, deduction of previous payment and type of valuation. In term of accumulation, generally data in interim valuation are gathered from value of measured or assessed materials to arrive at total cumulative value (Ross and Williams, 2013). In terms of deduction of previous payments, to arrive at current valuation since it is cumulative there is need to subtract the value of previous payment to arrive at current value that needs to be certified. The three types of valuation are external, internal and sub-contract valuation.

Four main techniques explored in carrying out interim valuation include inspection, measurement, ogive curve and Gantt chart. Inspection would require that the entire work executed based on specification need to be inspected by the stakeholders to ascertain the scope of the work before valuation exercise takes place. In most cases this method is quicker but full of inaccuracies (Ross and Williams, 2013).Measurement requires that the entire work is measured to ascertain the value of work executed. This process or technique is more accurate and readily acceptable by parties to the contract. It possessed qualities like: On site or from revised drawings, accurate and agreement assured and timely and difficult to isolate variations. Ogive curve (reference to a model of planned expenditure),this method involves: simple and adjustments to forecasts can be made and inaccurate and slow progress may lead to over payment. The Gantt chart is a technique that make it easy to agree and relate to stage payment and inaccurate and can be abused by loading.

2.5 The Valuation Rules

Various rules do exist regulating the preparation of the interim valuation, this section make reference to JCT (2005) to provide some insights into the rules related to interim valuation. JCT (2005) makes specific provisions for rules related to measurable work, daywork, contractor's designed portion, change in condition of other works and additional provisions. Below are some excerpts from the JCT (2005) that relates to the research problem established in this research?

2.5.1 Measurable Work

5.6. -1 To the extent that a Valuation relates to the execution of additional or substituted work which can properly be valued by measurement or to the execution of work for which an Approximate Quantity is included in the Contract Bills and subject to clause 5.8 in the case of CDP Works, such work shall be measured and shall be valued in accordance with the following rules (JCT, 2005):

.1 where the additional or substituted work is of similar character to, is executed under similar conditions as, and does not significantly change the quantity of, work set out in the Contract Bills, the rates and prices for the work so set out shall determine the valuation;

.2 where the additional or substituted work is of similar character to work set out in the Contract Bills but is not executed under similar conditions thereto and/or significantly changes its quantity, the rates and prices for the work so set out shall be the basis for determining the valuation and the Valuation shall include a fair allowance for such difference in conditions and/or quantity;

.3 where the additional or substituted work is not of similar character to work set out in the Contract Bills; the work shall be valued at fair rates and prices;

.4 where the Approximate Quantity is a reasonably accurate forecast of the quantity of work required the rate or price for the Approximate Quantity shall determine the valuation; and

.5 where the Approximate Quantity is not a reasonably accurate forecast of the quantity of work required, the rate or price for that Approximate Quantity shall be the basis for determining the valuation and the Valuation shall include a fair allowance for such difference in quantity.

Provided that clauses 5.6.1.4and 5.6.1.5shall apply only to the extent that the work has not been altered or modified other than in quantity.

.2 To the extent that a Valuation relates to the omission of work set out in the Contract Bills and subject to clause 5.8 in the case of CDP Works, the rates and prices for such work therein set out shall determine the valuation of the work omitted.

.3 In any valuation of work under clauses 5.6.1and 5.6.2:

.1 measurement shall be in accordance with the same principles as those governing the preparation of the Contract Bills, as referred to in clause 2.13;

.2 allowance shall be made for any percentage or lump sum adjustments in the Contract Bills; and

.3 allowances, where appropriate, shall be made for any addition to or reduction of preliminary items of the type referred to in the Standard Method of Measurement, provided that no such allowance shall be made in respect of compliance with an

Architect/Contract Administrator's instruction for the expenditure of a Provisional Sum for defined work.

2.5.2 Daywork

5.7 To the extent that a Valuation relates to the execution of additional or substituted work which cannot properly be valued by measurement the Valuation shall comprise:

.1 the prime cost of such work (calculated in accordance with the 'Definition of Prime Cost of Daywork carried out under a Building Contract' issued by The Royal Institution of Chartered Surveyors and the Construction Confederation as current at the Base Date) together with percentage additions to each section of the prime cost at the rates set out by the Contractor in the Contract Bills; or

.2 where the work is within the province of any specialist trade and The Royal Institution and the appropriate body representing the employers in that trade have agreed and issued a definition of prime cost of daywork [49], the prime cost of such work calculated in accordance with that definition current at the Base Date, together with percentage additions on the prime cost at the rates set out by the Contractor in the Contract Bills.

Provided that in any case vouchers specifying the time daily spent upon the work, the workmen's names, the plant and the materials employed shall be delivered for verification to the Architect/Contract Administrator or his authorised representative not later than the end of the week following that in which the work has been executed.

2.5.3 Contractor's Designed Portion –Valuation

5.8 Valuations relating to the Contractor's Designed Portion shall be made under this clause 5.8.

.1 Allowances shall be made in such Valuations for the addition or omission of the relevant design work.

.2 The valuation of additional or substituted work shall be consistent with the values of work of a similar character set out in the CDP Analysis, making due allowance for any change in the conditions under which work is carried out and/or any significant change in the quantity of the work so set out. Where there is no work of a similar character set out in the CDP Analysis a fair valuation shall be made.

.3 The valuation of the omission of work set out in the CDP Analysis shall be in accordance with the values therein for such work.

.4 Clauses 5.6.3.2, 5.6.3.3, 5.7and 5.9 shall apply so far as is relevant.

2.5.4 Change of conditions for other work

5.9 If as a result of:

.1 compliance with any instruction requiring a Variation;

.2 compliance with any instruction as to the expenditure of a Provisional Sum for undefined work;

.3 compliance with any instruction as to the expenditure of a Provisional Sum for defined work, to the extent that the instruction for that work differs from the description given for such work in the Contract Bills; or

.4 the execution of work for which an Approximate Quantity is included in the Contract Bills, to the extent that the quantity is more or less than the quantity ascribed to that work in the Contract Bills,

there is a substantial change in the conditions under which any other work is executed (including CDP Works), then such other work shall be treated as if it had been the subject of an instruction requiring a Variation and shall be valued in accordance with the provisions of this section 5.

2.5.5 Additional provisions

5.10 .1 To the extent that a Valuation does not relate to the execution of additional or substituted work or the omission of work or to the extent that the valuation of any work or liabilities directly associated with a Variation cannot reasonably be affected in the Valuation by the application of clauses 5.6 to 5.9, a fair valuation shall be made.

.2 No allowance shall be made under the Valuation Rules for any effect upon the regular progress of the Works or of any part of them or for any other direct loss and/or expense for which the Contractor would be reimbursed by payment under any other provision in these Conditions.

2.5.6 Interim valuations and Application by Contractor

4.11 Interim valuations shall be made by the Quantity Surveyor whenever the Architect/Contract Administrator considers them necessary for the purpose of ascertaining the amount to be stated as due in an Interim Certificate, except where Fluctuations Option C (formula adjustment) applies, in which case an interim valuation shall be made before the issue of each Interim Certificate (JCT, 2005).

4.12 Without affecting the Architect/Contract Administrator's obligation to issue Interim Certificates, the Contractor, not later than 7days before the date for issue of an Interim Certificate, may submit to the Quantity Surveyor an application setting out what the Contractor considers to be the amount of the Gross Valuation. If the Contractor submits such an application the Quantity Surveyor shall make an interim valuation. If the Quantity Surveyor disagrees with the amount shown in the Contractor's application, he at the time of making the valuation shall submit to the Contractor a statement, which shall be in similar detail to that given in the application and shall identify the disagreement (JCT, 2005).

2.5.7 Ascertainment

4.16 The Gross Valuation shall be the total of the amounts referred to in clauses 4.16.1and 4.16.2less the total of the amounts referred to in clause 4.16.3, applied up to and including a date not more than 7days before the date of the Interim Certificate (JCT, 2005).

.1 There shall be included the following which are subject to Retention:

.1 the total value of the work properly executed by the Contractor (including any work so executed for which a value has been agreed pursuant to clause

5.2.1orwhich has been valued under the Valuation Rules and work for which a Schedule 2Quotation has been accepted), together , where applicable, with any adjustment of that value under Fluctuations Option C, but excluding any restoration, replacement or repair of loss or damage and removal and disposal of debris which under paragraphs B.3.5and C.4.5.2ofSchedule 3are treated as a Variation. Where there is an Activity Schedule, the value to be included in respect of the work in each activity to which it relates shall be a proportion of the price stated for the work in that activity equal to the proportion of the work in that activity that has then been properly executed;

.2 the total value of the materials and goods delivered to or adjacent to the Works for incorporation therein by the Contractor but not so incorporated, provided that the value of such materials and goods shall only be included as and from the times that they are reasonably, properly and not prematurely so delivered and have been adequately protected against weather and other casualties; and

.3 the total value of any Listed Items, the value of which is required under clause 4.17 to be included in the amount stated as due.

.2 There shall be included the following which are not subject to Retention:

.1 any amounts to be included in Interim Certificates in accordance with clause 4.4asaresult of payments made or costs incurred by the Contractor under clauses 2.6.2, 2.21, 2.23, 3.17 and 6.5.3and paragraph A.5.1, B.2.1.2 or C.3.1 of Schedule 3;

.2 any amounts ascertained under clause 3.24 or 4.23 or in respect of any restoration, replacement or repair of loss or damage and removal and disposal of debris which under paragraphs B.3.5 and C.4.5.2 of Schedule 3 are treated as a Variation; and

.3 any amount payable to the Contractor under Fluctuations Option A or B, if applicable.

.3 The following shall be deducted:

.1 any amounts deductible under clause 2.10, 2.38, 3.11 or 3.18.2; and

.2 any amount allowable by the Contractor to the Employer under Fluctuations Option A or B, if applicable.

2.5.8 Off-site materials and goods

4.17 The amount stated as due in an Interim Certificate shall include the value of any Listed Items before their delivery to or adjacent to the Works provided that the following conditions have been fulfilled (JCT, 2005):

.1 the Listed Items are in accordance with this Contract;

.2 the Contractor has provided the Architect/Contract Administrator with reasonable proof that:

.1 the property in such Listed Items is vested in the Contractor so that under clause 2.25, after the amount in respect thereof included in an Interim Certificate as

properly due to the Contractor has been paid by the Employer, such Listed Items shall become the property of the Employer; and

.2 such Listed Items are insured against loss or damage for their full value under a policy of insurance protecting the interests of the Employer and the Contractor in respect of the Specified Perils, during the period commencing with the transfer of property in the Listed Items to the Contractor until they are delivered to, or adjacent to, the Works;

.3 the premises where the Listed Items have been manufactured or assembled or are stored, there is in relation to such item's clear identification of:

.1 the Employer as the person to whose order they are held; and

.2 their destination as the Works, and such items either are set a part or have been clearly and visibly marked, individually or in sets, by letters or figures or by reference to a pre-determined code; and

.4 in the case of uniquely identified Listed Items, the Contractor, if it is stated in the Contract Particulars as required, has provided from a surety approved by the Employer [42] a bond in favour of the Employer in the amount specified in the Contract Particulars and in the terms set out in Part 2ofSchedule 6; or

.5 in the case of Listed Items which are not uniquely identified, the Contractor has provided from a surety approved by the Employer [42] a bond in favour of the Employer in the amount specified in the Contract Particulars and in the terms set out in Part 2 of Schedule 6.

2.6.Components ofInterim Valuation

The goal of interim valuations is to provide advice to the certifier on a construction project for the issuance of interim certificates and payment notices. The certifier could be the contract administrator, employer's agent, the project manager or the employer depending on the contract conditions being used. The quantity surveyor's function is to assess value as distinct from cost, particularly with reference to prices of certain items in the preliminaries section and temporary works. Interim valuation involves a revaluation of the whole work, not the work done since the last interim certificate or payment notice was issued. The quantity surveyor carrying out the interim valuation must be aware of the overall position of any valuation within a project; to assess what remains of the anticipated final contract value after each interim valuation and ensure that within the terms and conditions of the contract this will be adequate to complete the works. This action is particularly valid towards the end of the contract (SCH, 2001).

Generally most valuations, irrespective of the contract conditions being used, will involve consideration of some or all of the following components (RICS, 2015):Work executed, Variations/changes, Expenditure of provisional sums, Adjustment of prime cost (PC) sums/prices, Adjustment of provisional quantities, Site materials/materials on site, Materials and goods off-site, Contractor's design fees, Loss and expense, Acceleration costs (NEC3 only), Costs and expenses relating to the contractor's right of suspension, Costs in connection with specified clauses (JCT only), Costs in connection with 'confirmed acceptance of an acceleration quotation' (JCT only), Overheads and profit, Fixed-price addition/adjustment, Risk analysis, andDirector's adjustment. The provision also recognizes adjustments in respect of:Advance/advanced payments, work not properly executed (i.e., not in accordance with the contract), Disallowed costs (NEC3 only), Fluctuations, Errors in setting out, Retention,

andAmounts previously paid. Each of the aforementioned components are discussed in detail below.

2.6.1 Work executed

Work executed encompasses two components as follows:

- Preliminaries and
- Work executed by the contractor.

2.6.1.1 Preliminary:

Preliminaries are items that form first part of bill of quantities that do not form the major component of the structure, or work section (i.e., measured works). For example, management and staff, site establishment, temporary services, security, safety and environmental protection, control and protection, common user mechanical plant, common user temporary works, the maintenance of site records, completion and post-completion requirements, cleaning, fees and charges, site services and insurances, bonds, guarantees and warranties. The information provided will enable the contractor to ascertain the price for, among other things, management of the building project, site establishment, security, safety, environmental protection and common user mechanical plant, as well as the employer's completion and post-completion requirements.

Preliminaries are a cost significant aspect of any building project; and often equate to 10% to 20% of the contract sum. Therefore, for the purposes of valuation, it is essential that the quantity surveyor obtains from the contractor a full and detailed breakdown that clearly identifies the items; showing how the contractor's price for each item within and the total price for preliminaries have been calculated.

From the detailed price breakdown of preliminaries, the quantity surveyor will be able determine fixed priced items (e.g., one-off payment items) and time-related items (e.g., payment items related to the programme).

Fixed-priced items should be further divided into set-up and removal costs where appropriate. For example, the price for providing access scaffolding will include erection costs, maintenance costs, costs for modifications, and dismantling and removal costs. A mixture of fixed- and time-related costs.

Preliminaries contained within the pricing document are easily quantifiable; and it is advisable to agree the costs of identified individual preliminary items at the commencement of the contract or when payment of individual preliminary items will become applicable.

In valuing the amount of work executed, the quantity surveyor must also consider making adjustments to time-related preliminary costs where the contractor is behind programme. On some contracts the quantity surveyor and the contractor's quantity surveyor merely agree to consider all items to be time related and simply divide the total costs of the preliminaries by the duration of the contract, such practice is not advisable and should be discouraged.

2.6.1.2 Work executed by the contractor:

The scope of work executed by the contractor that need to be included in a valuation is to be for 'work properly executed by the contractor' only i.e., work executed by the contractor that is fully in accordance with the terms and conditions of contract. The value of work executed by the contractor will be readily ascertainable from the pricing document, for example the:

- ✓ Bill of quantities

- ✓ Work schedules
- ✓ Priced activity schedule
- ✓ Contract sum analysis and
- ✓ Stage or milestone payment schedules.

The contract administrator in his capacity would be within his or her powers to refuse to cover or include work which he or she feels has not been properly executed i.e., work that is not in accordance with the contract. Mindful of this, it is recommended that the quantity surveyor request details of any non-conforming work from the certifier before undertaking each valuation.

2.6.1.2.1 Bill of quantities

I. Valuation of the measured work

Valuations are to include an assessment of the work properly executed using the quantities and rates within the bill of quantities. This assessment will normally be carried out using rates within the bill of quantities. However, where the item is only partially executed, adjustment to the rates will be necessary having due regard to the location and circumstances of the work.

Where assessment is to be made against an 'elemental bill', the quantity surveyor should begin with the 'facilitating works bill' and proceed in order through all the succeeding elements which contain items of work which have been wholly or partially carried out.

The total valuation of each bill (by group element) or bill sub-section (by element or sub-element) is to be recorded, indicating by use of bill item references (cost codes) what is included in each amount. This is so that each amount can then be verified and substantiated subsequently,

should any query arise. If the whole of a group element, element or sub-element has been completed, it is only necessary to show its total.

Notes made during the inspection of the works by the quantity surveyor are used to assess the approximate quantity and value of any partially completed items, elements or sub-elements. The completed work as a percentage of the whole should be indicated opposite bill item references (cost codes).

The basis of valuing works using bill of quantities based on other work breakdown structures is the same as for elemental bills. For example, with work section bills the quantity surveyor should start with the first work section bill and proceed in order through all the succeeding work sections which contain items of work which have been wholly or partly completed. Prices contained in the 'bill of quantities' should be used in the valuation of the work completed by the contractor, regardless of whether the contractor has under-priced or over-priced the work when compiling his or her tender.

II. Provisional quantities

The quantity surveyor should take regular measurements during the construction of all work for which there is an approximate quantity in the bills. If measurements are taken regularly, the quantities for these items will be up-to-date and available for valuations, or to check against the contractor's submission. The rates for the work are contained in the bill of quantities and adjustments made in valuations for partially completed work

III. Contractor designed work

Contractor designed works (often referred to as contractor design portion or CDP) include any works that require the contractor to undertake its design, whether directly or via a subcontractor. Prices contained in the 'bill of quantities' should be used in the valuation of the design work completed by the contractor.

IV. Credits

Credits are refunds sometimes offered by the contractor to the employer in return for the benefit of taking ownership of materials, goods, items, mechanical and electrical plant and equipment, etc. arising from demolition or strip out works. Refunds are to be recovered when they are removed from site, in the next valuation.

V. Bill of approximate quantities

Valuations are to include an assessment of the work properly executed using the rates within the bill of approximate quantities. The quantities are subject to re-measurement as the extent of work is defined by the designers.

2.6.1.2.2 Work schedules

Where a valuation is to be based on a work schedule, the proportion of work properly executed in respect of each activity or item defined in the schedule is valued; with the value of work properly executed for each activity and item added together to provide the total value of work properly executed.

2.6.1.2.3 Priced activity schedule

Payment is based on completion of each activity or group of activities, and not before.

2.6.1.2.4 Contract sum analysis

Where a valuation is to be based on a contract sum analysis, the proportion of work properly executed in respect of each activity or item defined in the contract sum analysis is valued; with the value of work properly executed for each activity and item added together to provide the total value of work properly executed. Price information that shows how the sums included in the contract sum analysis is often obtained from the contractor during post tender negotiations. Such information will aid the quantity surveyor in valuing the works executed.

2.6.1.2.5 Milestone payment schedules

Similar to valuations based on priced activity schedules, payments are due when the stipulated performance of a pre-defined event or section of work (i.e. a milestone) has been achieved, and not before. However, milestone payment activities will normally be larger than those defined in a priced activity schedule.

VI. Stage payment schedules

The stage payment will be included in valuations when the scope of work to which the stage payment relates has been completed and so indicated by the contract administrator.

2.6.2 Variations/changes

The value of works completed under a written instruction can be included within the valuation. Such instructions may or not have a financial implication. The term ‘instruction’ is a generic

term for directions, orders and certain other categories of information that the contract conditions expressly provide and may be issued or given to the contractor. In most standard forms of building contract, the word is normally used to refer to orders given to the contractor by the contract administrator, whose power in relation to the type of such instructions will be restricted by the express provisions of the contract conditions. Instructions may be said to fall under five categories:

a) The ordering of additions, omissions, alterations, modifications and/or substitutions to the design, quality or quantity of the work or the kinds and standards of goods and materials for use in the works.
b) The provision of information, procedural or clarifying instructions necessary for the works to be carried out and completed.
c) Changes in the timing, sequence or method of working.
d) Expenditure of sums which the employer has reserved the right to expend as works progress (i.e., expending provisional sums and prime cost (PC) sums).
e) Actions in relation to work found or at lease thought not to be in accordance with the contract.

Although most standard contract conditions specify that all instructions must be issued in writing, some standard contract conditions contain detailed provisions regarding what is to happen if, for example, the contract administrator purports to issue an instruction which is not in writing. This is a necessary provision and recognises the common situation where the contract administrator gives an oral (or verbal) instruction. If the contract administrator confirms it, the instruction takes place from the date of the confirmation (i.e., the date on which the written instruction is issued). If the contract administrator does not confirm, the contractor must confirm

within a prescribed number of days (e.g., seven calendar days under the JCT Standard Building Contracts) and it will take effect after the expiry of a further prescribed period (e.g., a further seven calendar days under the JCT Standard Building Contracts) if the contract administrator does not by then dissent. Note that the prescribed periods are not necessarily the same under the different standard forms of building contract.

Most standard contract conditions require that effect be given in interim certificates and payment notices to the measurement and valuation of variation or change instructions. For this to be done, each instruction must be valued, either accurately or approximately, as soon as possible after issue. The burden of other work may cause delay in dealing with instructions, but it may prove risky to have to resort to guesswork in consequence. It is wise, therefore, to give priority to them, even if only to the extent of an approximate evaluation of the net effect of each instruction before each valuation date. The question of how to deal with the effects of omissions on the elemental or work sections within pricing documents is bound to arise. There are two alternatives: Alternative

1. To ignore the instructions when dealing with the measured or defined work, the omissions being allowed for when adding the net value of the instructions. Alternative
2. To take the omissions into account when valuing the measured or defined work and adding the value of additions only against the heading of instructions.

In practice, a combination of the two alternatives will serve best; with alternative 1 being be used as a general rule and alternative 2 used where a complete element, work section or group of items in the pricing document are affected by an instruction. When dealing with instructions in

the context of valuations, the following simple rules should be followed. For simplicity, instructions can be categorised in accordance with the following:

1. Pre-agreed items where the instruction has been agreed in terms of content, price and time before being instructed.
2. Items agreed in terms of price but not in terms of effect on the contract.
3. Instructed to be carried out and to be evaluated in terms of the contract.

Items identified by the contractor as variations/changes but not instructed at the time of valuation. All instructions should be identified in the quantity surveyor's valuation in a separate section so that they can be easily identified.

(a) Pre-agreed items – for the purposes of valuations, items in this category are easily dealt with by following the rules of valuation under 'work executed'. It is relevant to keep the instructed items separate even if the work within the Instruction is the same as that within measured or defined work.

(b) Items agreed in terms of price but not in terms of effect on the contract, the price for work in this category, having been agreed, can be dealt with as for pre-agreed items. The quantity surveyor has to seek further information from the contract administrator and the contractor regarding effect on contract. There may be no easy answer in respect of this item.

(c) Instructed to be carried out and to be evaluated in terms of the contract the instruction must be evaluated using the valuation rules set out in the contract conditions. The quantity surveyor must seek agreement with the contractor for the way in which any instruction is accounted for at an early stage.

Remember, the contractor will be seeking to maximise his or her interim recovery in respect of the item until final agreement is reached. In an ongoing situation the contractor will be basing his or her level of recovery on the amount which he or she has to pay out (to his or her work package contractors, suppliers and consultants) and for an interim valuation the quantity surveyor should seek from the contractor the same information, invoices, etc. so that he or she can make a judgment using the same information.

(d) Items identified by the contractor as variations/changes but not instructed at the time of valuation only instructions properly instructed under the terms of the Contract are to be valued and included in a valuation. Payments for non-instructed item should not be included in the quantity surveyor's/cost manager valuation, as a fundamental provision in conditions of contract is that the contract sum can only be adjusted via a formal instruction by the contract administrator.

Under NEC3, a project manager's instruction changing the works information can invoke the compensation event mechanism within the contract conditions. If it is held that a compensation event has arisen, or will arise, as a result of a project manager's Instruction the contractor may be entitled to submit a quotation to address the compensation event. Further guidance on valuing variations and changes is provided in the RICS guidance note Valuing change, 1st edition (2010).

2.6.3 Dayworks

When it has been decided by the quantity surveyor that valuation of an instruction is to be undertaken using daywork vouchers, and they have been signed by the person empowered to do so by the employer, the quantity surveyor has no power to substitute his or her own estimate of the resources it should have taken to do the work.

It is common practice for employer's representatives to annotate daywork sheets with the phrase 'for record purposes only' (or similar phrase) when signing and dating them, often inferring that the quantity surveyor should review and amend the resources recorded if his or her estimation is less. Such a statement is irrelevant, as daywork sheets signed and dated by properly authorized persons constitute a proper and accurate record of the resources used by the contractor to complete an item of work irrespective of the phrase 'for record purposes only' having been inserted. For that reason, as long as the daywork sheets have been signed and dated by properly authorised persons, the quantity surveyor has no power to substitute his or her own estimate of the hours it should have taken to do the work.

Where the quantity surveyor agrees that works are to be valued on the basis of dayworks, he or she must check that daywork sheets have been signed by properly authorised persons (e.g. both the contractor's site manager and the contract administrator), check that the time charge rates for labour and plant, and the percentage additions to prime costs are in accordance with those quoted by the contractor in the contract.

2.6.4 Expenditure of provisional sums

The adjustment of provisional sums is subject to instruction.

2.6.5 Adjustment of prime cost (PC)

Sums/prices the adjustment of prime cost (PC) sums/prices is subject to instruction by the contract administrator.

2.6.6 Adjustment of provisional quantities

Approximate quantities the adjustment of provisional quantities (also known as approximate quantities) is subject to instruction by the contract administrator.

2.6.7 Site materials/materials on site

Most contract conditions comprise a clause that deals with payment to the contractor for on-site materials and goods. However, before including in the valuation it would be wise for the quantity surveyor to check the contract conditions to see if it can indeed be done, as well as to determine the prerequisites for incorporation. The common restrictions on what materials and goods can be included in a valuation are as follows: Materials and goods must:

1. Be delivered to or adjacent to the works. Delivery to the contractor's off-site storage facility is not enough, unless that facility is adjacent to the works. 'Adjacent' means lying near or contiguous to the works.
2. Have been reasonably, properly and not prematurely brought to or adjacent to the works. The word 'prematurely' is probably best interpreted by reference to any programme or progress schedule in existence or to the (optional) master programme.
3. Must be adequately protected against weather and other casualties. 'Other casualties' includes theft and certain other risks referred in the contract conditions.

Under the provisions of most contract conditions these materials and goods become the employer's property once they are certified and paid for provided that the contractor has a valid title to them; although the contractor remains responsible for loss or damage to them.

2.6.8 Materials and goods off-site Under the JCT Conditions of Contract

Most versions of the JCT Contract Conditions provide for materials and goods stored off-site to be included in interim payments. They can be included so long as the conditions of payment set out in the contract conditions relating to off-site materials and goods have been fulfilled. The materials or goods must be referenced as 'listed items' either uniquely identified or not uniquely identified in the contract particulars.

'Listed items' are materials, goods and/or items pre-fabricated for inclusion in the works. They must be listed as such items by the employer in a list supplied to the contractor and annexed to the pricing document (i.e., to the bill of quantities, the specification, the work schedules, or priced document, as applicable).

The contract clauses deal with off-site materials and goods and give the certifier discretionary power to include in interim certificates and payment notices the value of such materials and goods subject to the conditions lay down. It is intended to cover the increasing use of pre-fabricated products and building components off-site, and to enable the contractor to get paid for them prior to their coming to site. That is prior to the time when they would normally be eligible for payment as site materials.

Certificates and notices for payment of such off-site materials or goods are, however, at the discretion of the certifier, who cannot even consider certifying unless specific conditions set out in the contract conditions have been fulfilled. The law as to when property in materials and goods passes is that it depends on the intention of the parties to the sale contract.

There is one important situation in which the certifier must refuse to certify materials and goods; this is where there is a 'retention of title' clause in the supply contract. Retention of title: It has

become common for suppliers to include in their terms of supply a clause stating that they retain ownership of the materials and/or goods until the materials and/or goods have been paid for and in some cases such clauses provide that ownership shall be retained by the supplier until all debts due from the buyer to the supplier have been paid.

Once materials and goods have been built into the works (i.e., they cannot be removed without damage to the structure, fabric, finishes or services installations to the building), ownership passes to the employer, in spite of any reservation of title clause. It is essential that the certifier establishes from the written sale contract on what conditions property passes. Another common provision would normally be that it only passes on payment. This must create problems when the goods and materials are not owned by the contractor but he is obtaining them from a supplier (or also perhaps from a subcontractor who in turn may be getting them from a supplier). The ramifications and the problems involved are obvious.

As a further complication, in ensuring the basic point that the employer becomes the owner of off-site materials and/or goods when he has paid for them, there is the problem that the contractor or subcontractor or supplier, after receiving payment and passing ownership to the employer gets into financial difficulties and the materials and/or goods are at the time still in their possession.

In an attempt to overcome some of the difficulties associated with the early payment of materials or goods off-site, the employer will request a vesting certificate from the supplier or sub-contractor. After the off-site materials and/or goods have been paid for by the employer they become his or her property and cannot be removed from the premises where they are stored at the date of payment; except for use in the works.

The contractor is responsible for storage costs while off-site; for loss or damage while off-site; and for handling costs at the storage premises and getting them to the works; and for insurance. The contractor will need to discuss their insurance obligations in respect of off-site materials with their insurance brokers who may well wish to investigate the nature and security of any premises where such materials and goods are to be stored prior to dispatch to the works, before they can obtain the insurance required to satisfy the terms and contract conditions.

Once materials and goods have been delivered to and placed on or adjacent to the works, they are treated as site materials (or on-site materials and goods) Under NEC3.

NEC3 provides that 'Whatever titles the Contractor has to Plant and Materials which is outside the Working Area passes to the Employer if the Supervisor has marked it as for the Contract.' This action identifies them for payment.

2.6.9 Contractor's design fees

Where the contractor is responsible for both the design of the whole, or parts, of a building he or she will be entitled to be paid for design fees incurred for the design completed at the due date.

2.6.10 Loss and expense

Loss and expense may be included within an interim valuation. However, the basis of the loss and expense in a contract must be established before any monies are included in an interim payment. Note that payments for loss and expense are not subject to retention.

2.6.11 Acceleration costs

Under the NEC3, agreed acceleration costs may be included within an interim valuation. However, the basis of the acceleration costs must be established and the acceleration instructed by the project manager before any monies are included in an interim payment.

2.6.12 Costs and expenses relating to the contractor's right of suspension

The intervention of the Local Democracy, Economic Development and Construction Act2009 means that where the employer has failed to pay all sums due, including any VAT properly chargeable in respect of the sum due, to the contractor by the final date for payment; the contractor – subject to giving the required notice period – has the right to suspend the works. The contractor is also entitled to recover all costs and expenses as a consequence of suspending the works from the employer, including loss of interest.

Any costs and expenses incurred by the contractor as a result of the contractor exercising his or her statutory right of suspension are to be included within interim payments. Obviously, it is for the contractor to demonstrate such expenses and costs.

2.6.12 Costs and expenses relating to the contractor's right of suspension

In accordance with section 112 of the Housing Grants, Construction and Regeneration Act1996, standard building contracts provide for the contractor's right to suspend performance of 'any or all of' his or her obligations under the contract for non-payment.

They further provide for the employer to be liable to pay to the contractor exercising the suspension right a reasonable amount in respect of costs and expenses incurred as a result of the exercise of the suspension.

Costs and expenses incurred by the contractor as a result of the exercise of the suspension are to be included in the valuation by the quantity surveyor, as and when they become due to the contractor.

2.6.13 Overheads and profit

Overheads are the contractor's costs associated with head office administration, proportioned to each building contract on which they work. Profit is the contractor's return on capital investment and services provided. Both overheads and profit are normal based on percentage additions, a proportion of which is to be included in each valuation.

2.6.14 Fixed price addition/adjustment

Notwithstanding that most standard contract conditions allow for fluctuations; it has become increasingly common for employers to seek price certainty – by requesting contractors to include a fixed price addition/adjustment in their tender price in return for no future adjustment for fluctuating price levels.

The contractor's fixed price addition/adjustment can be recalculated as a percentage of works cost – i.e., the contract sums less all of the defined, less provisional sums, overheads and profit, fixed price addition/adjustment, risk and any director's adjustment.

A portion of the contractor's fixed-price addition/adjustment should be included in the quantity surveyor's valuation.

2.6.15 Risk allowance

If the pricing documents comprises a risk allowance that is payable to the contractor in return for accepting certain risks, should they materialise, a portion of the contractor's risk allowance

should be included in the quantity surveyor's valuation and the certifier's interim certificate or payment notice.

2.6.16 Director's adjustment

A 'director's adjustment' is a reduction or addition to the contractor's tender price, derived by the contractor's estimators, offered by the directors of the contractors. A portion of the director's adjustment should be included in the quantity surveyor's valuation.

2.6.17 Price adjustments

2.6.17.1 Advance payments

Most standard contract conditions contain a clause relating to 'advance payment'. These are optional clauses which makes provision for the employer to make an advance payment to the contractor. If the employer and the contractor agree that an 'advance payment' should be made by the employer to the contractor, the amount agreed and the date for payment must be inserted in the contract particulars to the contract together with a schedule showing the times and amounts of repayments from the contractor to the employer.

A form of (protection) bond is available if required by the employer – called an 'advance payment bond' or an 'advance payment protection bond'. It is difficult to envisage a situation in which a bond would not be required by the employer for an advance payment of this kind. The provisions in the JCT Standard Building Contracts 2011, the JCT Design and Build Contract 2011 and the JCT Intermediate Building Contract 2011 are identical. They require any reimbursement due to the employer on an advance payment to be deducted in the interim

certificate or payment notice. The bond must be provided by a surety (i.e., a bank) that meets the employer's approval.

If the contract particulars require the contractor to take out an advance payment protection bond, then the advance payment is conditional upon the contractor providing a bond in accordance with the procedures set out in the contract conditions. NEC3 also provides an optional clause which makes provision for the employer to make advanced payment to the contractor.

2.6.17.2 Work not properly executed

Under standard contract conditions, note that the contract administrator would be within his or her powers to refuse to certify work which he feels has not been properly executed – i.e., that is not in accordance with the contract requirements.

The value of work not properly executed by the contractor is to be deducted from the contractor's interim application by the quantity surveyor, if notified at the time of undertaking his or her valuation, or by the certifier prior to issuing his or her interim certificate or payment notice, whichever is applicable.

The contract administrator should advise the quantity surveyor in writing of work which, although having been carried out, is not in accordance with the contract. The value in the contract for this work should not be included within an interim valuation. The quantity surveyor, when compiling his or her valuation, assumes that all work completed is in accordance with the contract. It therefore follows that he or she must then deduct the value of work which is not.

The quantity surveyor should compile a list of the work and values deducted and include the list with the notes passed to the contractor.

The previous two paragraphs assume that, in deducting for work that is not in accordance with the contract, the work will be required to be redone or amended. However, the work not in accordance with the contract may be accepted by the contract administrator and a reduction in value allowed for it. This reduction is shown as a deduction to the valuation.

2.6.17.3 Disallowed costs

Under NEC3 contract conditions; note that the project manager would be within his or her powers to refuse to certify work which he or she feels has not been properly executed – i.e., which are not in accordance with the contract requirements.

2.6.17.4 Fluctuations

The cost to the contractor of labour, plant and materials used in the works will alter during the contract period. It might fall but, more usually, it will rise. In the absence of any provision in the contract, the contractor would have to take the risk. In order to cover him or herself, the contractor would probably make an estimate of the likely rise in costs before inserting his or her price in his or her tender; higher tender figures and subsequent contract sums will result.

It is thought to be an advantage to the employer, as well as giving the contractor some guarantee of recovering his or her costs, to insert a clause in the contract to recover some or all of the increases if and when they occur; rather than price the risk. Most standard contract conditions allow for this to be done by providing clauses that may be included or deleted as the parties agree.

For example, both the JCT Standard Building Contracts and the JCT Design and Build Contract have a selection of three alternative provisions:

(a) Fluctuations Option A: This allows contribution, levy and tax fluctuations – a bare minimum provision to take account of statutory adjustments to items such as national insurance contributions.

(b) Fluctuations Option B: This allows labour and materials cost and tax fluctuations. Under this provision the contractor can recover full fluctuations on the construction work, but not his or her preliminaries.

(c) Fluctuations Option C: This allows fluctuations in accordance with price adjustment formulae rules specified in the contract conditions. Details of price changes are issued monthly. There is usually provision for making part of the contract sum not subject to this formula (i.e., the non-adjustable element). With this exception, full fluctuations are recovered by the contractor.

The JCT Intermediate Building Contract allows for the contractor to recover fluctuations contribution, levy and tax changes only, whereas there is no provision for dealing with fluctuations under the JCT Minor Building Works Contract.

The sums ascertained in respect of fluctuations are to be included in the contractor's interim certificate, the quantity surveyor's valuation and the certifier's interim certificate or payment notice. Where the operation of the fluctuations clause and the subsequent calculation indicates a reduction, a deduction will have to be made to the valuation.

The sums ascertained in respect of fluctuations are to be included in the contractor's interim certificate, the quantity surveyor's valuation and the certifier's interim certificate or payment notice.

2.6.17.5 Errors in setting out

Setting out is the procedure whereby the dimensions of a building are transferred to the site by means of theodolites, measuring tapes, etc. The principal walls of a building or position of piles are indicated by pins, lines and profiles. The process calls for great accuracy and on larger and complex works a specialised engineer may carry out this part of the work.

Under the JCT Standard Building Contracts, the contract administrator is responsible for the accuracy of the drawings and for providing sufficient information to enable setting out to be completed. However, he or she is not responsible for the accuracy of the setting out itself. That is the contractor's responsibility. Consequently, if errors have been made in setting out by the contractor, these errors may not be amended (at the sole cost to the contractor).

A deduction may be made to the contract in lieu. In such cases, with the consent of the employer, the contract administrator may instruct the contractor not to rectify the setting out and an appropriate deduction be made in lieu to the contract sum.

NEC3 implies that the contractor is responsible for setting out the works in accordance with the employer's works information, but does state who verifies that the setting out is correct. If the works information is found to be incorrect, the project manager will need to issue a project manager's instruction to change the works information.

2.6.17.6 Retention

Retention should be deducted from the gross valuation at the rate stated in the contract conditions. Retention is applied in terms of the contract conditions.

2.6.17.7 Amounts previously certified

Although it may be obvious, the total of the sums stated as due to the contractor in previous interim certificates, payment notices or pay less notices are to be deducted from the gross valuation. It is important to check the amount certified or notified by the certifier and not to assume that the amounts within the quantity surveyor's previous valuation have been used.

However, payment to the contractor by the employer as distinct from certification/notification by the certifier is a different matter. Payment to the contractor is determined by the employer, and the quantity surveyor should ignore the amounts paid. The quantity surveyor's valuation should refer to the total value to the due date less the amount certified or notified by the certifier. Retention held at interim valuations is partially released at practical completion (or of the works and where the employer takes partial possession of part of the works.

2.7Guide for Preparing Interim Valuation based on Conditions of Contract Provisions

Most quantity surveyors/cost managers carry out valuations under either one of the JCT suite of Building Contracts or the New Engineering Contract. Namely:JCT Standard Building Contract (with Quantities, without Quantities, and Approximate Quantities); JCT Design and Build Contract; JCT Intermediate Building Contract (also with Contractors Design); JCT Minor Works Building Contract (also with Contractor Design); NEC3: Options A, B, C, D, E, F; and the Short NEC.

Consequently, guidance provided is primarily based on these standard forms of building contract. These contract conditions are only intended for use where the employer has engaged a professional consultant to advise on and to administer their terms and conditions (RICS, 2015). The RICS in 2015 publish a guidance note on Interim valuations and payment detailing the

activities that must be undertaken as best practice to achieving effectiveness while preparing interim valuations for the purpose of interim payment certification. The guidance note divides the interim valuation process into 4 distinctive steps namely: planning, pre-valuation, valuation, valuation documentation, issue valuation and post valuation. This research focuses on requirements within the planning step (hence the scope of the research). These requirements are outlined in Tables 2.1, 2.2 and 2.3 describing the general requirements, employer related requirements and team-based requirements respectively.

Table 2.1 outlines 18 general requirements for the preparation of interim valuation. These requirements are essentially geared to what the QS must be equipped with in terms of the contract provisions guiding the preparation of the interim valuation.

Table 2.1 - General Requirements within the Interim Valuation Process

S/N	Description of Activities
1	Check contract signed by both employer and contractor
2	Comprehend the interim valuation and payment provisions in the conditions of contract
3	Determine if interim valuation and/or payment provisions amended by amendment to conditions of contract
4	Identify payment method
5	Establish fluctuations provision applicable to contract, and how it will be applied
6	Identify items subject to retention and not subject to retention
7	Identify 'prescribed period' for payment: Payment chart need to be prepared to identify cash flow system required in the contract
8	Determine key dates for each interim payment
9	Produce 'schedule of payment dates'
10	Determine if any materials are subject to off-site valuation
11	Ascertain method for valuing materials subject to off-site valuation
12	Determine how the contract sum is derived
13	Obtain a breakdown of preliminaries from the contractor
14	Identify any adjustments made in calculating the contractor's tender price, which now constitutes the contract sum
15	Determine which preliminaries items are one-off expenditure items, related to cost, and which are related to time
16	Determine structure and presentation for interim valuations
17	Produce a template for presenting interim valuations

18	Generate record of valuations and payments

Source: RICS (2015)

Another consideration within the planning phase of interim valuation process is the requirements related to the employer. These are outlined in Table 2.2. Six specific requirements are focused on the employer which necessitates the success of the interim valuation process.

Table 2.2 - Employer's Specific Requirements within the Interim Valuation Process

S/N	Description of Activities
1	Agree schedule of payment dates with employer
2	Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor
3	Establish whether the employer requires valuations to be built-up under various headings
4	Confirm whom the employer requires the contractor's invoice to be made out to
5	Verify method for valuing materials subject to off-site valuation
6	Ascertain form of 'vesting certificate' to be used

Source: RICS (2015)

From Table 2.2 the employer or his adviser on technical matters has to provide some information that bears significantly on the effectiveness of the interim valuation process. For instance, not only should be employer agree on a schedule of payment dates but also to structure of the interim valuation. Lastly, the guidance note also acknowledges the importance of teamwork within the interim valuation process. The team related requirements are outlined in Table 4.3.

Table 2.3 - Team Specific Requirements within the Interim Valuation Process

S/N	Description of Activities
1	Agree a schedule of payment dates with the contractor
2	Issue a schedule of payment dates to the employer, contractor, consultants and the certifier
3	Inform the contractor whom the employer requires invoices made out to
4	Agree structure and presentation of the contractor's interim application for payment with the contractor
5	Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information

6	Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information
7	Agree basis on which preliminaries will be incorporated into interim valuations
8	Agree basis on which sums in adjustments in the contractor's pricing document (and/or in the correction of errors) will be incorporated into interim valuations
9	Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes
10	Remind the contract administrator (or employer's agent or project manager) that he or she (or their authorised deputy) has responsibility for verifying daywork vouchers
11	Explain method to be used to notify the quantity surveyor of any work or materials/goods not in accordance with the contract
12	Confirm, in writing, that the quantity surveyor will not adjust interim valuation for work not in accordance with the contract that is notified after the valuation date stated on the schedule of payment dates, in writing
13	Discuss importance of diligence and accuracy in checking records of resources used by the contractor
14	Issue schedule of payment dates to clerk of works/site inspector (JCT) or the supervisor (NEC3)
15	Arrange with the clerk of works/site inspector (JCT) or the supervisor (NEC3), if required, to receive labour record (which is required for checking wages fluctuations)

Source: RICS (2015)

Table 2.3 shows 15requirements revolving around contractor, contract administration, and the clerk of work. These planning requirements i.e., general, employer related and team related, all formed the basis of requirements of interim valuation investigated as shown on the questionnaire.

2.8 Review of related Studies

Interim Payment

Judi and Rashid (2010) carried out an investigation on Contractor's Right of Action for Late or Non-Payment by the Employer. The study aimed at investigating other remedies available apart from arbitration for contractor to explore when he is not paid on time or have not been paid at all by the employer. The objective of the study is to determine the various actions that a contractor can take in the event of late or non-payment by the employer. The study recommended that when faced with the problem of late or non-payment by the Client, Contractor may exploit the options

to suspend the work, claim for interest, apply for summary judgement, apply for winding up of the Client's company or he may determine the contract with the Client. But consideration must be given to the actual construction of the contract and details of each case.

Ramachandra and Rotimi (2015) undergo a study on Causes of Payment Problems in New Zealand Construction Industry. The study aimed atdevising ways of mitigating payment problems. The objective of the study is to develop mitigating solutions. The study adopted a survey approach using an online questionnaire, administered to practitioners from the New Zealand construction industry, comprising consultants, head contractors and subcontractors. The data obtained was analysed using inferential statistical techniques, including comparing means and factor analysis. Factor analysis enabled clustering of the inter-related causes of payment delays and losses in order to find reduced number of causes. The study found that payment problems mainly relate to contractual issues, financial strength of industry players, disputes, short-comings of payment processes and 'domino effects. The study concludes that the financial stability of players is central to payment problems in the construction industry. Stability of payment is ensured through a regular flow of cash during work progress and ensures that all parties' financial claims are able to be settled as and when they are due.

Nayan, Mustaffa & Judi (2017) investigated valuation of interim payment: issues encountered by the parties involved in relation to interim payment. The paper aimed at establishing issues and problems faced by parties to interim valuation. The objective of the study is to itemize the problems in peculiarity to Employer, Contractor and Consultant who are actually experience in interim valuation preparation. The study adopted preliminary survey (in-depth interview) by identifying and shortlisting the problems encountered by parties during interim valuation. The research was carried out based on Malaysian quantity surveyors Act 1967. The study found

problems of competency, professionalism, negotiation and valuation as what is causing disagreement among parties. The study recommended that strict policy must be upheld in order to overcome all issues arose caused by the valuation and interim payment. It also verily significant to educate quantity surveyors concerning this issue so that competent quantity surveyor is appointed. This will overall lift the standard of quantity surveyor as professional in Malaysia.

Ibrahim (2010) carried out a study "on the measurement of work in progress using computer vision: a computerized reporting model", the research aimed to develop a reporting model based on progress capture using computer vision. The study first presented trends in research relating to use of computer vision, it then employs the unified modelling language to present the conceptual development of the model. The computerised reporting model was developed using the visual basic programming language. The study developed a conceptual model for integrating computer vision-based on progress measurement with cost and schedule control and interim valuation/payment. The study reported some of the shortcomings that might affect the model which includes: lighting conditions, occlusions, shadows and other changes in site condition. He then suggested that in order to enhance accuracy, future research efforts should be geared towards developing more robust and intelligent algorithms that better address these issues.

Oyegoke (2006) identified a study on "Building Competence to Manage Contractual Claims in International Construction Environment: the case of Finnish Contractors", the study aimed at building competence for managing contractual claims in a standardized practice. The study defines claim as a request by the contractor to recompense for some loss or expense that he has suffered or an attempt to avoid the requirement to pay liquidated and ascertained damages. Comparative studies of British and Finnish contracting practices were used to determine the

reason why claims are not pronounced in a standardized practice. Interviews and questionnaires were employed. Three players were the respondents which includes: clients, consultants and contractors. The study reported the effects of: legal system, procurement methods, standardized practice and size of market on the management of contractual claims. Some the suggested remedies were operational management and management competence development of employees.

Ogunsina and Obiegbu (2018) investigated "factors confronting quantity surveying practice: the case of Nigeria", the study aims to report findings on factors confronting professional quantity surveyors using Nigeria as a case. The researcher used structured questionnaire for collecting data. 64 out of 100 were returned filled by practicing quantity surveyors from Lagos, Port Harcourt and Enugu. They identified top five factors perceived to be confronting the profession to include: poor marketing of the profession, opposition from engineers, the dominance of multinational companies that do not have quantity surveying as a distinct profession in their country of origin, widespread corruption in Nigeria and professional incompetence of some quantity surveyors. A total of 17 factors were ranked by two categories of respondents ie professional quantity surveyors and probationers, their response was tested using spearman's rho. The result shows that difference in perception on factors confronting quantity surveying practice in Nigeria is not significant at $p < 0.01$. they suggested for future paper that would present empirical evidence with regards to strategies being developed by Nigeria quantity surveyors to combat these factors.

Olatunji et al. (2018) the research investigates cost variability in construction projects by exploring "Causal Relationship between Material Price Fluctuation and Project's Outturn costs", the study aimed at examine the causal relationship between persistent changes in price of

construction materials and project's outturn costs. They obtained and analysed price data of construction materials published in a Nigerian national daily in the 16 years between 2000 and 2015.additional data were obtained from quantity surveying firms to validate the archival data on material prices, and to compare the firm's robust data base. The objective of the analysis is to explore spontaneity and causal impact in the relationship between changes in prices of construction materials and project costs. Kolmogorov-Smirnov and Anderson-Darling tests were used to obtain the probability distributions of the causal relationship. The study found disproportionate positive correlation between changes in material prices and outturn costs in Nigeria. They concluded that although fluctuations in material costs often trigger variations to project costs, outturn price only accounts for about one-third of actual cost variability. Recovery of costs not least profit making, under these conditions is a complex process. They suggested that the risk avoidance practice in which clients hold contractors accountable for resource price fluctuation is an onerous cultural problem. Therefore, the industry and research community must work together to solve this, by way of enlightenment, creating models that reward efficiency and price intelligence, and cost management systems that are open and transparent.

Matipa et al. (2009) highlighted the availability and use of software systems in the Irish construction professional cost consultancy process. Shen and chung (2006) provided findings on the use of information technology among the quantity surveying organisations in Hong Kong. Questionnaire survey were employed, quantity surveying practice must adapt and integrate cost management systems within the lifecycle cost plan of a building. Use of well design IT systems should complement the existing knowledge base of traditional cost models. For quantity surveyors to fully implement total cost management during the product life cycle, it is important to integrate cost management systems. Software interoperability offers a good prospect for total

cost management, though there has been a lack of market data from the industry which, if available, would be crucial for the marketing of the software solutions emanating from research institutions. The nature of quantity surveying is such that it uses a relatively high volume of assorted information from a myriad of sources; as a result, a suitable package from the quantity surveyor's point of view, is one that can capture as many of the operational dimension they are involved in day today running of the business, without disrupting the body of knowledge built over the years; systems ought to complement existing cost algorithms such as standard methods of measurement. Additionally, collaborative working would result in the implementation of total cost management, hence contributing to sustainable construction. It becomes absolutely crucial that surveyors take up newer integrated systems if they are to compete adequately on the market.

Olanrewaju and Anahve (2015) undergo a study on "Duties and Responsibility of Quantity Surveyors in te Procurement of Building Services Engineering", the study examines the kinds of services quantity surveyors play in the procurement of building services. A questionnaire survey was employed. They identified services of quantity surveyors to include: procurement of building services, cost advice during construction is the most offered service while advice on the impact of building engineering services on environment is seldom offered. They reported that the quantity surveying services is still at downstream and suggested that there is urgent need to move to upstream in the supply chain.

Odeyinka and kaka (2005) carried out a study on Evaluation of contractor's Satisfaction with Payment Terms Influencing Construction Cash-flow. The study aimed at investigating whether contractors are satisfied or dissatisfied with payment terms impacting cash flows in differing procurement methods. Payment terms were identified from literature, payment terms potentially thought to impact construction cash flow. Perception of respondents were sort through the

instrumentality of questionnaire, using 6-point Likert-type scale, contractors were asked to assess their level of satisfaction with identified payment terms influencing construction cash flow. It was found that although the contractors were satisfied with most of the contractual factors investigated under both procurement systems, they were dissatisfied with two of the factors, namely, time lag between entitlement to receive and actually receiving cash payment and percentage of contract sum retained. The study suggested that dissatisfaction calls for action to consider devising alternative means of dealing with retention and delay payments.

Cunningaham (2018) identified a study onPreparing Interim Payment Valuations for Construction Works-Worked Examples and Solutions. The study examines the principles and procedures for calculating interim payments in accordance with terms of the Royal Institute of the Architects of Ireland (RIAI). The study investigates the use of yellow and blue form and the public works contract PW-CF Group as amended. The study found that both the RIAI and PW-CF groups are considered to be Tier 1 contracts for the purposes of the Act and these, indeed. Provide an adequate mechanism for calculating payment amount and intervals.

Delay In Payment

Akundushima (2011) undergo a study to appraise the Causes of Delayed Payments in Public Construction Projects in Nigeria. The work aimed at identifying and assessing the causes and possible ways of mitigating delayed payments in public construction projects in Nigeria. Causes and possible ways of mitigating delayed payments were identified from literature. Respondents were asked to rank these causes and possible ways of mitigation based on the level of occurrence. Perceptions of the respondents were sought through the instrumentality of structured questionnaire from stakeholders in the construction industry within Abuja and Zaria. Findings of

this research showed that the contractors' opinion was that paymaster's withholding of payment is the highest cause of delayed payment in public projects, bureaucracy in processing according to the consultants and poor performance of the contractor by the client. The study found that bureaucracy in processing payment was the most dominant cause of delayed payments in public construction projects. It was suggested that the best way to mitigate the aforesaid is to impose penalty to the party delaying payment been the popular opinion of all respondents.

Fugar and Agyakwa-Baah (2010) identified a study on Delays in Building Construction Projects in Ghana. The study investigates the causes of delay of building construction projects in Ghana to determine the most important according to the key project participants; clients, consultants, and contractors. They ranked financial group factors ranked highest among the major factors causing delay in construction projects in Ghana. They explore semi-structured interviews of 15 key players in the implementation process, they then list delay causes and subjected them to questionnaire survey for the identification of the most important causes of delay. They further suggested that adequate and timely provision of financial resources in building construction project management should be strictly adhered to. It was concluded that adequate finance is the hub around which everything else revolves. Everybody and everything connected with construction is adversely affected by lack of sufficient cash flow. The project is not only delayed but the morale of workers plummets because of non-payment or irregular payment of wages. Subcontractors and suppliers of materials and components and their employees are likewise affected. The challenge to construction managers and of course, clients, is to identify ways to eliminate or at least reduce the occurrence of financial crisis during the construction process. In that regard, the following recommendations are made.

Abdul-rahman (2009) undergoes a study on Financial-related causes contributing to project delays he defines delay in construction projects as a common phenomenon and a costly problem. The paper addresses the issues of financial-related delays in construction projects. It identifies the root causes and scrutinises the suitable mitigation actions of financial-related project delays. Four main factors were identified in the literature, namely late payment, poor cash flow management, insufficient financial resources and financial market instability. Primary data were collected by way of a preliminary interview, questionnaire survey and in-depth structuredinterviews. The result revealed that poor cash flow management is the most significant factor that leads to a project' s delay followed by late payment, insufficientfinancial resources and financial market instability. Contractors' instable financial background, client's poor financial and business management, difficulties in obtaining loan from financiers andinflation were identified as the most significant underlying causes. The study findings indicate that clients play the most important role in reducing the impact of financial problems towards the extent of project's delay. Several suitable mitigation actions were suggested by the respondents. The study highlights the importance of having more intensive research that give emphasis on clients achieving a well-managed cash flow in order to obtain a prompt payment practice in the construction industry.

Assaf and Al-Hejji (2005) carried out a study on causes of delay in large construction projects. The study aimed to investigate the causes of delays in construction in Eastern Province of Saudi Arabia. The researcher carried out a survey on time performance of different types of construction projects in Saudi Arabia to determine the causes ofdelay and their importance according to each of the project participants, i.e., the owner, consultant and the contractor. The study identified by all the three parties was change order as most common cause of delay.

Surveys concluded that 70% of projects experiencedtime overrun and found that 45 out of 76 projects considered were delayed.

Faruq (2017) carried out study on Assessment of causes of Delayed Payments to Consultants in the Nigerian Construction industry: (A Perspective of Consultants). He ranked lack of enforceable penalty for default in payment and bureaucracy in processing payments as the most significant causes of delay with the least cause being poor performance of consultant. He also identified adherence to agreed payment arrangement which appears to be the most potent way of mitigating payment delays while provision of payment guarantee was perceived to be the least effective means of mitigating payment delays. Previous studies have identified various causes of delay in payment in construction industry. Therefore, this study aim was to assess the causes of delayed payments to consultants in the Nigeria construction industry with a view to mitigate the causes in the industry. The researcher adopted quantitative research approach which involves the use of structured questionnaire for eliciting relevant data from registered consultancy firms majorly in Kaduna state and Abuja, opinion of respondents was sought on the 16 causes of delayed payments and 9 possible ways of mitigating them as identified in literature which was analysed using descriptive and inferential statistical tools. He then suggested area of further studies as to investigate the impacts of delayed payments may have on consultants and sub – consultants were not investigated in this study; further research should be conducted to ascertain the extent to which late payment impacts consultant's performance on a project.

Cost Control on Building

Olusegun and Olumuyiwa (2014) identified a study on Effect of Cost Control on Building Projects Delivery in Nigeria. They opined that Bill of Quantities, interim valuation/ stage

payment, valuation of variation and other cost control techniques were utilised on government building contracts while none of the cost control techniques was utilised by private developers. Interviews were conducted for selected Quantity Surveyors, Architects, Civil Engineers, Builders, and Contractors. Observations were also made on construction sites of government and private developers. Many studies had been carried out on cost control on project delivery, but this study aim to determine the effects of Cost Control Techniques on building projects delivery for both government and private developers based on quality, time and cost. They recommended that the Federal Government of Nigeria should make regulations to compel private developers to utilize cost control techniques, so as to raise quality of building projects, zero down delivery time and ultimate cost. All these will minimise building collapses and abandonment of building projects.

Chukwudi and Tobechukwu (2014) investigate Participation of Indigenous Contractors in Nigerian Public Sector Construction Projects and their Challenges in Managing Working Capital. They ranked mismanagement of funds and working capital which makes them prone to bankruptcy, with poor project execution and abandonment the likely outcome to which they suggest that Contractors must have enough working capital to cushion the effects of delay in payment of certificates, gap between valuation of work and actual payment. Several studies have been carried out on indigenous contractor participation in construction project in Nigeria but this study aim focused on studying the extent of participation of indigenous contractors in Nigerian construction projects, identifying andexamining the most severe factors that hinder effective and efficient working capital management and affect the level or amount of working capital requirement of indigenous contractors. Data were gathered through field survey, oral interviews were carried out to determine the major challenges faced by contractors in managing working

capital and the extent of indigenous participation in public projects respectively, while questionnaires were distributed to a selected sample of contractors inImo state to obtain the severity weight of each factor. In their findings revealed that evidently, the common challenges facing Nigerian indigenous contractors in Nigeria in the area of working capital management are low awareness of the need for working capital management, one-man business setbacks, under-capitalization, poor funding and cash flow problems, high cost of construction finance, economic recession, reckless spending and diversion of funds, poor project planning and control. They recommended that in order to enable indigenous contractors realize construction projects within pre-planned cost, time and quality, reduce the incidences of project abandonment and improve their overall participation, there is need for concerted efforts on the part of the contractors to take appropriate steps in maximizing their awareness on the gains of proper working management and minimize incidences that will lead to cost escalation of his working capital requirement and on the part of the Government, a focused, political will to devise policies and create the enabling environment for improving indigenous content in the construction industry.

Maradun (2014) identified a study on assessing the impact of factors affecting cash flow performance of residential buildings. This research aimed at assessing the impact of factors affecting cash flow performance of residential buildings. The study found that mistake in executing works has the highest impact on cash flow, on residential building. But the lowest among the factors in the overall is relations with owner. The researcher further suggests that special caution must be taken to avoid the occurrence of above-mentionedfactors in the project. The research finally suggested that Contractors should be encouraged to get professionals to manage their financial plan as poor financial management was one of the factors that affect cash

flow. The study also opined that major sources of income to all contractors who undertake construction projects are interim valuations and related claims.

Abdulrasheed (2015) carried out a study on assessment of contractors' perception of the effect of cash flow on construction project delivery. The research aimed to assess contractors' perception of the effect of cash flow on construction project delivery. He states that positive cash flow is essential for the financial health and the survival of any business and contracting is no exception. The researcher defines Cash flow; as the actual movement of money in and out of a business. He identified that several researchers have shown that a lot of projects continue to suffer the problem of cash flow due to lack of prior knowledge on the effect of cash flow.The study was conducted through a well-structured questionnaire administered to construction firms within Abuja Metropolis and were analyzed using the descriptive analysis and relative important index to rank the factors, effect and ways to reduce the effect of cash flow on the construction. The findings from the study indicate the main factors causing cash flow problems which are categorize under different group of financial management are change in progress payment duration and financial position of the contractor, subcontractor failure, change in price and delay in delivery prior to construction, poor design and incorrect bid item during constructionproject delay, improper planning and management and mistake in executing the work,relations with the consultant but he suggest that if pragmatic measures are not taken to reduce this factors that affect cash flow, it will lead to the following effect on the contractor working on a project which are project abandonment, cash deficit, project delayed, and delay in making payment to the subcontractor rated high among the effect. The researcher then recommended that for contractors to mitigate these problems which are rated high by respondents: coordinating the payment cycle, understanding your payment cycle, create cash aware culture and chase of unpaid retention.

CHAPTER THREE

3.0 RESEARCH METHODS

This chapter narrates the research design and procedure employed to investigate the performance of interim valuation process in the Nigerian construction industry. The research made use of selected professionals in the field of construction specifically practicing Quantity Surveyors.

3.1 Research approach

Research approach as define by Creswell (2003) is the plans and procedures for research that span the steps from broad assumptions to detail methods of data collection, analysis and interpretation. Creswell (2003) further stated that the selection of a research approach can be based on nature of research problem or issue being addressed, and then categorized the approaches into three which are: Quantitative, Qualitative and Mixed methods. Creswell (2003) also described the relationship between the approaches as a continuum with qualitative approach at one end and quantitative on the other end thereby having the mixed method in the middle of the continuum. The quantitative approach which makes use of closed ended questions, numerical expressions and statistical tools to analyse data was used for the study. This approach is used for examining the relationships among variables, measuring such variables on instruments and analyzing those using statistical procedures (Creswell, 2003). The survey technique is most widely used method in social sciences and the most appropriate for this study (a self-administered questionnaire survey was adopted for this study).

Quantitative research approach is generally designed to produce objective and reliable statistical data that tell us in terms of quantity how many people think or do something. The Quantitative data is in numerical representation in form of averages, ratio or ranges. It asked the question of

who, what, when, where, how much, how many, and how. It is adopted when simple objectives response can be received such as yes or no questions.It usually ends with affirmation or disconfirmation of an argument or concept. It equally identifies one or few variables that is intended to be used in the research work and proceed with data collection which have direct link with those variables. The objective of adopting quantitative method is to appraise interim valuation planning process of construction contracts (JCT base),based on mathematical approach and theories in-line with the said phenomenon.

Most at times quantitative research method, scientific techniques are used to obtain measurement (quantified data) e.g social survey such as; self-administered questionnaires, interview surveys, telephone surveys computer assisted surveys, as well as based survey (Ahmad, 2014)

Haven said that, quantitative research approach was adopted in this study in order to achieve the research objectives and in furtherance to realize the overall research aim using questionnaire survey as technique for obtaining quantified data.

3.2 The Self-administered Questionnaire Survey

This is a structured form of questions which are mostly closed ended (as shown in the appendix to this research). The respondents were allowed to fill the questionnaire independently without intervention of the researcher. Closed ended questions have list of possible options listed, from which the respondent is expected to choose based on the experience of project he or she is involved.

Questionnaire is mostly employed to gather information such as facts, activities, level of knowledge, opinions, expectations and aspirations, membership of various groups, and attitudes and perceptions (Ahmad, 2014).

In furtherance, to achieve the first objective literature review of previous related studies were explored while the self-administered questionnaires was used to address the second to fifth objectives, these was achieved from the options available in the questionnaire, through the identification of which of the activity from the list of activities in each table was achieved and also if the information required for such activities to be carried out were readily available or sufficient in project to which the respondent was involved. The self-administered questionnaire was used to collect the aforesaid data in this study.

3.3 Population of the study

In consideration of the nature of the study and type of data required to realize the objectives, self-administered questionnaire survey was adopted to accomplish it. Practicing quantity surveyors were chosen as the target respondents for the survey. The practicing quantity surveyors were highly considered as most appropriate to provide the required or relevant information due to their acquired skills and experience in handling or direct involvement ininterim valuations preparation.Target respondents were experienced practicing quantity surveyors that have put in years carrying out interim valuation services not less than five years. To ensure adequate and reliable data collection, the sample is required to be homogenous and comprehensive and should give a true representation of the population. Therefore, the targeted population of this study were practicing quantity surveyors and they are to provide information for a specific project that is recent and well known to them. Random sampling was used to select the respondents relevant for this study. Yamane 1986's formula was used to obtain the sample size. The categories of practicing quantity surveyorsaccessed as the respondents were: Probationer, MNIQS, RQS, &FNIQS. These professionals obtained their level of registration from the Nigerian Institute of Quantity Surveyors (NIQS) down to Quantity Surveyors Registration Board of Nigeria

(QSRBN). It is believed that this rank of professionals will not fall short of required training that mandates them to partake in carrying out valuation of various works in the industry.

3.4Data Collection method

Questionnaires were used for this study. Questionnaire survey as a mode of data collection is adopted. It was chosen due to the fact that it is widely used for descriptive and analytical surveys. Enshessi *et al*. (2010) stated that the questionnaire is a widely used approach for descriptive and analytical surveys to find out the facts, opinions and views of respondents. The development of questionnaire was done in such a way that each question was clearly phrased to avoid ambiguity and checked for expression. Two hundred and fifty (250) were distributed and one hundred and sixty-four were retrieved which represent 66%. The questionnaire was designed in four (4) parts. The first deals with general questions to respondents withregard to their bio-data andtheir status in the profession. This background information helped in ascertaining the reliability and credibility of data from the survey. The second part deals with requirements for preparing interim valuations, this part contain checklist for interim valuation requirements,the third part contains components of interim valuations also guided by the checklist of the standard format of content of interim valuation. The fourth part contains performance of interim valuation process where satisfaction was measured to determine its success or otherwise. The questionnaires were distributed randomly to four categories of practicing Quantity Surveyors which include: Probationers, MNIQS's, RQS's and Fellows.

3.5Sampling Frame and Sample Size

To ensure that adequate representation of information was collected, the sample frame used in this study was drawn using Yamane 1986 method. Questionnaire were issued directly to the

practicing quantity surveyors through hand delivery at a workshop organized by Quantity Surveyors' Registration Board in collaboration with the Nigerian Institute of Quantity Surveyors in Abuja FCT themed and other practicing quantity surveyors in both Nasarawa and Kaduna states, these places were chosen because of concentration of quite a great number of the said professionals. For this study, analytical approaches and quantitative statistical approaches were adapted to examine, identify, and categorize interface problems in quantity surveying professionals. Data were gathered from the required respondents. Questionnaires were distributed to participants in person to obtain primary data.This approach removed undue pressure from the respondents and gives them the freedom to fill in the questionnaires as truthfully as possible.

According to regulatory body (NIQS and QSRBN) publications (2018), there are 7,891number of probationers, MNIQS, RQS and FNIQS. Sample size for this research was deduced using Yamane 1967's formula for calculating sample size.

i.e.; $n = N/1+N(e)^2$

Where; n = required sample size, N = population size, e = level of precision

Assume e= 0.0632 therefore $n= 7891/1+7891(0.0632)^2= 250.34$ □ approximately equals 250

Sample size for this research was 250 and 164 questionnaires were retrieved

3.6Sampling Technique

Cochran (1963) said that there are two broad types of sampling; they are probability sampling (representative samples) and non-probability sampling (non-representative samples). Sampling can be defined as a representative picture of the population without studying the entire

population. For the sample frame of this study, the Yamane formula was use to obtain the sample size. For the study, convenient samples of two hundred and fifty (250) respondents were arrived at using the Yamane formula. (Professional practicing quantity surveyors) were selected using random sampling technique from the three states. In order to minimize unintended skewness due to professional biases; it was decided to select random number of participants from each of the four category of practicing quantity surveyors. The Questionnaire were distributed between Nasarawa, Kaduna states and Abuja FCT. These states were chosen because of their peculiar high number of both practicing quantity surveying professionals and a great number of constructional works happening within the said environments. Only 164 questionnaireswere retrieved for the analysis and results.

3.7 Data Analysis Technique

Given the nature of the data required for the study which is geared towards finding out "what is" frequency distribution and percentages were computed and this form the basis of the outcome. While mean is a popular statistic used in most research its suitability for this research is questionable since the likert scale was the bases for investigating the major variables of the study??? (Cooper & Schindler, 2008) advised that for studies adopting the likert scale the mean values are not sufficiently robust in describing a distribution that is based on multidimensional analysis.The reason advanced for this is that where the likert scale is used for opposing extremities each of the scale within the extreme is of upmost important hence the inappropriateness of a single figure representing the multiple scale which is what the means does (Kothani & Garg, 2014).

CHAPTER FOUR

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

This chapter seeks to review the strategies employed in the presentation and analysis of the data collected for the study. It describes the source and nature of the data collected and also presents the findings and analysis of the interim valuation process.

4.1.1 Presentation and analysis of data

4.2 Survey responses

A total of 250 sets of questionnaires were sent out to practicing quantity surveyors who are the targeted respondents and were reached in both private and public institutions within two states of Kaduna and Nasarawa and the FCT Abuja, 164 responses was received. The response rate was 66%. While those that were not returned, constitutes the remaining (34%). Thus 164 valid questionnaires were used in the data analysis.

Table 4.1 Response Rate

S/NO	Questionnaires	Percentage
No. Distributed	250	100
No. received	164	66

Table 4.2: respondents experience distribution

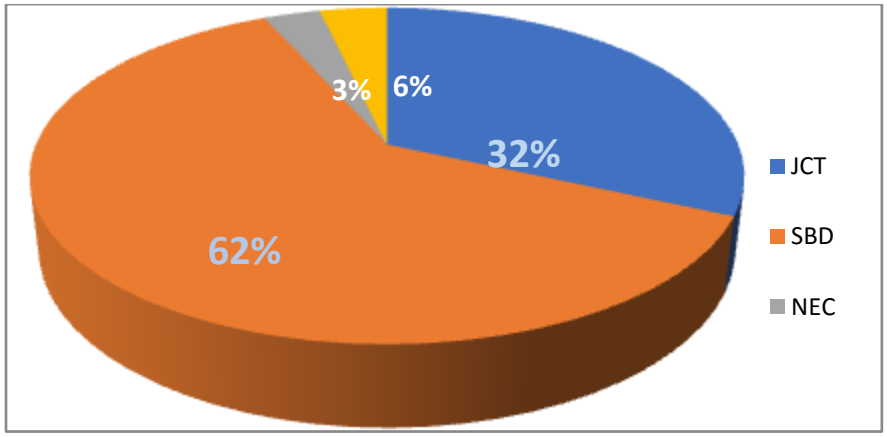
The table below presents the distribution of the years of experience of the sample observed

	Frequency of Observations	Group%
Years of Experience		
Upto 5 Years	42	26%

6-15 years	70	43%
16-25 years	40	24%
26-35 years	64%	
Above 35 years	6	4%
Total	**164**	**100%**

As seen in the table 4.2 above, majority of respondents' working experience is 6-15 years (43% =70no.), followed by 1-5 years (26% =42no.), then 16-25 years (24%=40), 26-35 years (4%=6no) and above 35 years (4%=6). The working experience of the respondents gives significant impact to the study as respondents who have more experience in the construction industry will have more exposure and understanding on interim valuation procedures. This improves the reliability and validity of the findings for this study.

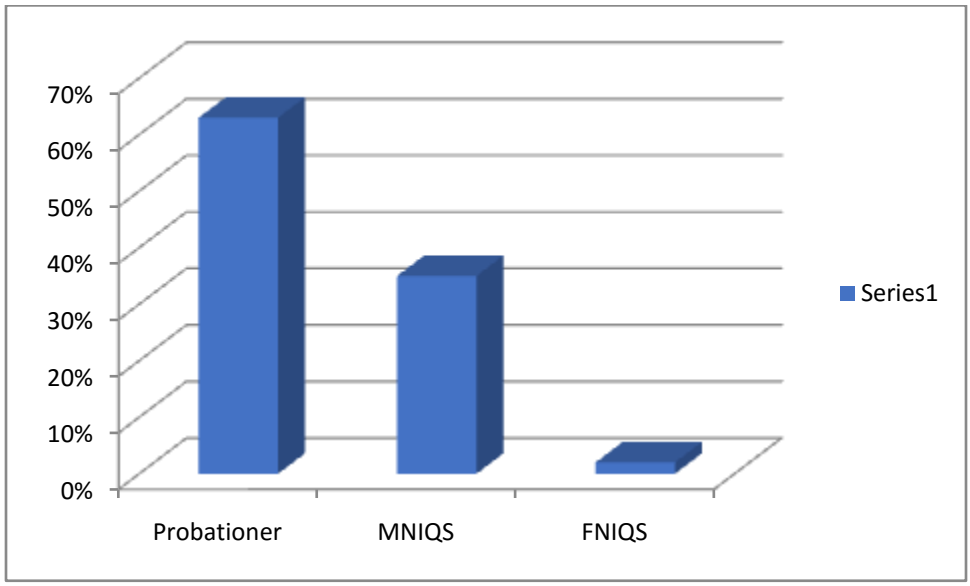
Figure 4.1: Contract Conditions



The pie chart above illustrates the percentage of usage of various contract conditions in the Nigerian construction industry. Majority of the respondents frequent the use of Standard Bidding Document (SBD) which is (62%=101no.), followed by Joint Contract Tribunal (JCT) which is (32%=52no.), New Engineering Contract (NEC3) is (3%=5no.) and then others is (4%=6no).

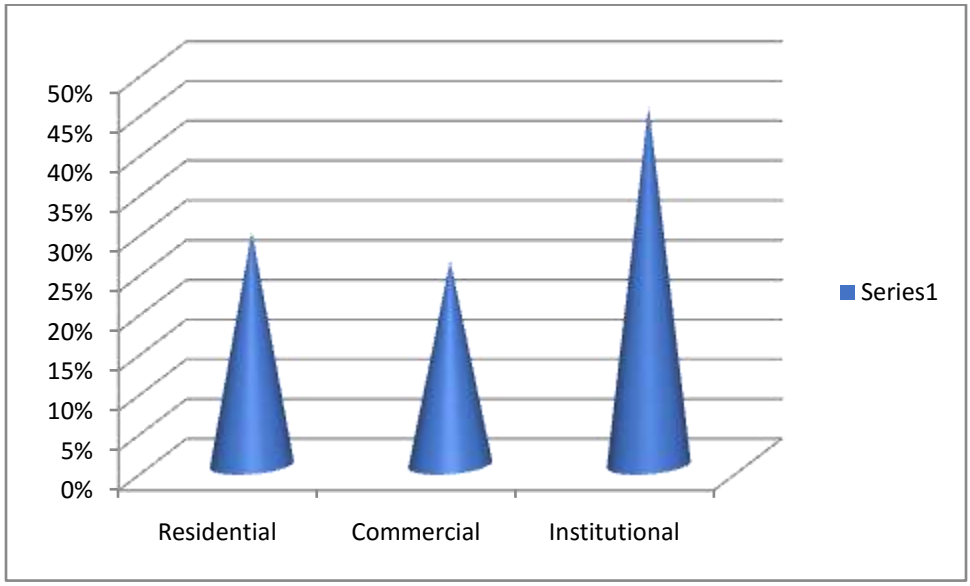
The respondents used various bidding document to carry out their interim valuation in different projects this confirmed the reliability of the data for the analysis.

Figure 4.2 Respondent's professional qualification



The chart above illustrates the percentage of categories of professionals in quantity surveying practice in Nigeria. Majority of the respondents are Member Nigerian Institute of Quantity Surveyors (MNIQS) members with (59%=97no.), followed by probationer members which is (38%=63no.), Fellow Nigerian Institute of Quantity Surveyors (FNIQS) is (2%=4no.).This has confirmed the reliability of the data for the analysis.

Figure 4.3 Type of projects



The column illustration above shows the type of projects handled by the numerous respondents. It can be seen that the institutional has the highest patronage as having 45% while residential and commercial have 29% and 26% respectively.

Table 4.3: contract value

The table below presents the distribution of the values of contracts handled by respondents

Valuein (₦)	Frequency of projects	Group%
Upto 500 million 100	61%	
501-1000 million	2113%	
1001-3000 million 85%		
Above 3000millions35	21%	
Total	**164**	**100%**

The table 4.3 above illustrates the percentage of categories of projects and their worth in the industry in Nigeria. Majority of the projects fall within the worth of up to 500million

(61%=100no.), followed by above 3000million (21%=35no.), 501-1000million is (13%=21no.) and 1001-3000million at (5%=8no.). This has confirmed the reliability of the data for the analysis.

Table 4.4 Project Client

Demography

Table 4.4 bellow shows the demography of the respondents. Majority of the respondents handled public projects (58% = 95), thenthe private projects (42% = 69). This confirmed the reliability of the data as predominantly in practice it is in public projects that interim valuations practices are mostly observe to save the contractor from sponsoring the entire project.

Client	Frequencies	Percentage
Public	95	58%
Private	69	42%

4.3 Data Analysis of Requirements of the Interim Valuation Process

As outlined in the literature review, three main requirements were investigated namely: general requirements, employer related requirements and team related requirements. To each of these requirements, the investigation focused on whether they were achieved in the project for which each respondent was providing information, whether there was information available to the quantity surveyor to achieve the requirement, and where information was available whether it was sufficient or not. This section describes the analysis of data collected for this purpose.

4.3.1 General Requirements of the Interim Valuation Process

This section outlines the analysis of data collected on whether general requirements were achieved in the projects for which respondents provided information. The outcome of the analysis is presented in Table 4.5. The Table provides information on the three aspects investigated to achieve the study objectives. From the Table, in terms of whether the requirements were achieved or not, two different patterns are recognized i.e., those for which there is a clear difference in the percentage between the 'No' and 'Yes' categories i.e., greater than 25%, and those for which the difference is not too distinct i.e. less than 25%. Using the 25% criteria, 7 out of the 11 requirements investigated were undertaken by the quantity surveyors in at least 60% of the projects for which they provided information. Some of these requirements include 'check contract signed by both employer and contractor' (100% said yes); 'comprehend the interim valuation and payment provisions in the conditions of contract' (67%); 'identify payment method' (98%); and identify prescribed period of payment (99%). Quantity surveyors could not achieve two of the requirements namely: 'Establish fluctuation provisions applicable to the contact' (61% indicated 'No') and 'Produce schedule of payment dates' (71%).

Table 4.5–Percentage Response of General Requirements

Interim Valuation Requirements	Achieved		information needed			
			Available		Sufficient	
	No	Yes	No	Yes	No	Yes
Check contract signed by both employer and contractor.	0	100	0.6	98.6	2.5	97.5
Comprehend the interim valuation and payment provisions in the conditions of contract.	33.1	66.9	0.6	98.6	62.1	37.9
Determine if amendment to conditions of contract is made	21.5	78.5	23.9	75.5	28	72
Identify payment method	1.8	98.2	0.6	98.8	16.1	83.9
Establish fluctuations provision applicable to contract, and how applied.	61.3	38.7	38.7	60.7	17.4	82.6
Identify items subject to retention and not subject to retention.	27	73	14.1	85.3	29.2	70.8
Identify 'prescribed period' for payment	1.2	98.8	0.6	98.8	29.2	70.8
Determine key dates for each interim payment	26.8	73.2	38.7	62.3	54	46
Produce 'schedule of payment dates'	70.7	29.3	50.3	49.1	65.8	34.2
Determine if any materials are subject to off-site valuation	58.3	41.7	56.4	42.9	85.1	14.9
Ascertain method for valuing materials subject to off-site valuation.	58.9	41.1	68.1	31.3	72	28

For the other pattern i.e., those whose percentage difference between the 'No' and 'Yes' response categories is less than 25%, 3 out of the 11 general requirements investigated fall under this category i.e., they were either not achieved or achieved in up to half of the projects for which information was provided. These included: 'Establish fluctuation provisions applicable to the contract' (61% indicated 'No', 39% indicated 'Yes'); 'Determine if any materials are subject to off-site valuation and 'Ascertain method for valuing materials subject to off-site valuation' both to which 58% of the respondents indicated 'No' while 42% indicated 'Yes'.

In addition to asking respondents to indicate whether a requirement was achieved during the interim valuation process, they were also asked to indicate if information required for achieving each requirement was available and if the available information was indeed sufficient to achieve

the requirement. Using the 25% difference criteria, seven (7) out of the eleven (11) requirements had a difference greater than 25%, indicating that in at least 63% of the projects for which respondents provided information about interim valuation process, the information needed to achieve these general requirements was either available or not available. Some of these requirements are 'Check contract signed by both employer and contractor'; 'Comprehend the interim valuation and payment provisions in the conditions of contract'; 'Identify payment method'; 'Identify prescribed period for payment'; all of which up to 98% of the respondents indicated that information was available for acquiring the requirements.

For the remaining 4 requirements, there was a near equal proportion (no significant difference in response) of projects in which the information needed to achieve these requirements were not available (i.e., 'No') and available (i.e., 'Yes'). These requirements include: 'Produce 'schedule of payment dates' (i.e., 50% indicated not available, 50% available); 'Determine if any materials are subject to off-site valuation' (56% not available); 'Establish fluctuations provisions applicable to contract, and how applied' and 'Determine key dates for each payment' (both in which the responses are 39% not available, 61% available).

It is also noteworthy to point out requirements for which information needed to achieve them was not available in at least 30% of the projects investigated. A further look at Table 4.5 reveals that five (5) of the eleven (11) requirements fall within this category i.e., in more than a third of all the projects for which quantity surveyors provided interim valuation process information, information needed to achieve interim valuation requirements were not available with a range between 33% - 70%. This revelation points to the fact that while the quantity surveyor may put in so much effort at preparing the interim valuation, many of its general requirements cannot be met due to the unavailability of information needed to achieve these requirements.

Furthermore, respondents were asked to provide information on whether the available information provided to achieve the requirements were sufficient or not. This is shown in the 'sufficient' column in Table 4.5. The percentage responses are based on only respondents who indicated 'Yes' the question whether information needed is available. Those who indicated 'No' did not form part of the percentage responses computed. To applying the percentage difference criteria toward interpreting the results, Table 4.6 shows the differences between the 'No' and 'Yes' responses. A negative percentage signified that the proportion of respondents that indicated 'No' is higher than those that indicated 'Yes' computed thus: proportion of respondents that indicated 'Yes' minus the proportion of respondents that indicated 'No'.

Table 4.6 - Percentage Difference of Sufficient Information for General Requirements

Interim Valuation Requirements	% Diff
Check contract signed by both employer and contractor.	95
Comprehend the interim valuation and payment provisions in the conditions of contract.	-24
Determine if amendment to conditions of contract is made	44
Identify payment method	68
Establish fluctuations provision applicable to contract, and how applied.	65
Identify items subject to retention and not subject to retention.	42
Identify 'prescribed period' for payment	42
Determine key dates for each interim payment	-8
Produce 'schedule of payment dates'	-32
Determine if any materials are subject to off-site valuation	-70
Ascertain method for valuing materials subject to off-site valuation.	44

Table 4.6 shows that two patterns exist for responses obtained for the general requirementsi.e., one category provides for those requirements having the proportion of the 'No' responses outweighing those of the 'Yes' responses while the other category shows the converse. Applying the 25% criteria, all the requirements except twohad percentage differences greater than 25%, showing distinctly that in more than sixty-three percent of the projects investigated available

information for achieving the general requirements were either not sufficient or sufficient. Specifically, seven (7) requirements for which information were available to achieve them had this information in sufficient quantity. These requirements included 'Check contract signed by both employer and contractor' (95% indicated 'Yes); 'Identify payment method' (68%); and 'Establish fluctuations provisions applicable to contract, and how applied' (65%). On the flipside, three (3) of these requirements had insufficient information toward achieving them. These three requirements include: 'Produce 'schedule of payment dates' (66% indicated 'No' with a difference of -31.6%); and 'Determine if any materials are subject to off-site valuation' (85%, -70%).

4.3.2 Employer's Specific Requirements of the Interim Valuation Process

The previous section discussed data analysis of the general requirements. Hence, this section outlines the analysis of data collected on whether employer's specific requirements were achieved in the projects for which respondents provided information. The outcome of the analysis is shown in Tables 4.7 and 4.8. Unlike the previous section in which achieving requirements were measured in terms of 'No' and 'Yes', this section of the investigation measured achievement using a 3 – point Likert Scale for both the 'Not Achieved' aspect and 'Achieved' aspect. Table 4.7 provides information on the 'Not Achieved' aspect investigated to achieve the study objectives.

From Table 4.7, two requirements were clearly not achieved by quantity surveyors while undertaking interim valuation since their cumulative percentages exceeds 63%. These are: 'Agree schedule of payment dates with employer' (70%) and 'Verify method for valuing materials subject to off-site valuation' (69%).The main reasons given for not achieving

employer's related requirements is non-request by the employer i.e., measured as 'Not requested', and 'employer undecided' on the requirement. In the other remaining employer related requirements i.e., those with less than a cumulative response percentage of 37.5% across the measures of 'Not Achieved', the main reason responsible for the non-achievement is 'Employer undecided' about the matter.For instance,10% of the quantity surveyors that indicated that the *"Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor"* requirement was not achieved in the project they provided information said it was because the client was undecided on it. The same applies to 'Establish whether the employer requires valuations to be built-up under various headings.

Table 4.7 - Percentage Response of Employer's Specific Requirements (Not Achieved)

Interim Valuation Requirements	**1**	**2**	**3**
Agree schedule of payment dates with employer	23	33	14
Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor	1	10	1
Establish whether the employer requires valuations to be built-up under various headings	0	10	1
Confirm whom the employer requires the contractor's invoice to be made out to	38	0	12
Verify method for valuing materials subject to off-site valuation	46	13	10
Ascertain form of 'vesting certificate' to be used	11	14	1

1 = Not requested, 2 = Employer undecided, 3 = Contract Administrator silent on the matter

The third reason why employer's requirements are not achieved as investigated is 'Contract Administrator silent on the matter' i.e., where a CA is appointed and empowered to make such decisions on behalf of the client. The range of projects where this was said to be the reason for not achieving the six (6) employer specific requirements is between 1% - 14%. For instance, 14% of the respondents indicated that 'Agree schedule of payment dates with employer' and 12% of them indicated that 'Confirm whom the employer requires the contractor's invoice to be made out to' were not achieved due to the CA's silence on the matters.

The other aspect of this part of the investigation is the responses for which the employer's specific requirements were achieved in the projects for which quantity surveyors provided interim valuation information. The outcome of the analysis on these data is shown in Table 4.8.

Table 4.8 - Percentage Response of Employer's Specific Requirements (Achieved)

Interim Valuation Requirements	**1**	**2**	**3**
Agree schedule of payment dates with employer	25	2	4
Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor	0	33	56
Establish whether the employer requires valuations to be built-up under various headings	14	26	51
Confirm whom the employer requires the contractor's invoice to be made out to	0	33	18
Verify method for valuing materials subject to off-site valuation	1	14	16
Ascertain form of 'vesting certificate' to be used	0	2	74

1 = Not requested, 2 = Requested by employer, 3 = It's best practice

Table 4.8 shows a relatively irregular pattern among the six employer's specific requirements for the three reasons upon which their achievement was investigated i.e., achieved despite that the employer did not request for the requirement; requested by the employer; and the requirement was achieved because it is best practice on the project. Looking at the percentage distribution of each requirement across the reason for their achievement, 'Agree schedule of payment dates with employer' was achieved on 25% of the projects even though it was not specifically requested for by the employer; and similarly, 'Establish whether the employer requires valuations to be built-up under various headings' – 15%. This outcome shows that in these projects, these two requirements were initiated by the quantity surveyor even without prompting by the employer. For the other requirements, majority of their achievements were not as a result of the sole initiative of the quantity surveyor.

In 56% of the projects investigated the "Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor" requirement was achieved because it was seen as best practice to do so in the projects. Two other requirements with relatively high percentage response fall under this category namely: 'Establish whether the employer requires valuations to be built-up under various headings' – 51%; and 'Ascertain form of 'vesting certificate' to be used' – 74%

The third reason why employer's specific requirements were achieved i.e.,'Requested by employer', was not too popular among the projects investigated. Across the six employer's specific requirements investigated, the proportion of projects for which these requirements were achieved based on the employer specifically requesting for them ranges between 2% – 33%. For instance, "Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor"and 'Confirm whom the employer requires the contractor's invoice to be made out to' were both requested by the employer in 33% of the projects; 'Ascertain form of 'vesting certificate' to be used' in 21%; 'Establish whether the employer requires valuations to be built-up under various headings' in 26% and 'Verify method for valuing materials subject to off-site valuation' in 14% of the projects.

4.3.3 Construction Team Related Requirements of the Interim Valuation Process

Just like the previous section which discussed data analysis of the employer's specific requirements, this section outlines the analysis of data collected on whether construction team's related requirements were achieved in the projects for which respondents provided information. The outcomes of the analysis are shown in Tables 4.9 and 4.10. Similar to the previous section, this section of the investigation also measured achievement using a 3 – point Likert Scale for

both the ‘Not Achieved’ aspect and ‘Achieved’ aspect. However, the percent distributions of each requirement in both Tables are computed based on the proportion respondents that chose a scale in either the ‘Not Achieved’ category or the ‘Achieved’ category. Table 4.9 provides information on the ‘Not Achieved’ aspect investigated to achieve the study objectives.

Table 4.9 - Percentage Response of Team's Related Requirements (Not Achieved)

Interim Valuation Requirements	**1**	**2**	**3**
Agree a schedule of payment dates with the contractor	80	19	1
Issues a schedule of payment dates to the employer; contractor; consultants and the certifier	0	50	50
Inform the contractor whom the employer requires invoices made out to	0	100	0
Agree structure and presentation of the contractor's interim application for payment with the contractor	48	50	2
Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information	1	99	0
Agree basis on which preliminaries will be incorporated into interim valuations	4	96	0
Agree basis on which sums in adjustments (i.e., variations) will be incorporated into interim valuations	100	0	0
Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes	4	96	0
Remind the contract administrator of his/her responsibility for verifying daywork vouchers	71	29	0
Explain method to be used to notify QS of any work or materials/goods not properly executed	4	4	92
Confirm that QS will not adjust interim valuation for work not properly executed that is notified late	100	0	0
Discuss importance of diligence and accuracy in checking records of resources used by the contractor with clerk of work	100	0	0
Issue schedule of payment dates to clerk of works	79	21	0
Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)	2	98	0

1 = Not Applicable; 2 = Not requested/needed; 3 = Urgency to prepare valuation

Table 4.9 reveals that where respondents indicated that team related requirements were not achieved,the highest incidences of the reason for the non-achievement fluctuated between either that they were ‘Not applicable’ or they were ‘Not requested/needed’. Requirements that were

frequently not achieved due the fact that they were 'Not applicable included: 'Agree a schedule of payment dates with the contractor' (80% of respondents who indicated 'Not achieved' are of the opinion that it was indeed not applicable to their interim valuation process); 'Agree basis on which sums in adjustments (i.e. variations) will be incorporated into interim valuations' (100%); 'Remind the contract administrator of his/her responsibility for verifying daywork vouchers' (71%); 'Confirm that QS will not adjust interim valuation for work not properly executed that is notified late' (100%); 'Discuss importance of diligence and accuracy in checking records of resources used by the contractor with clerk of work' (100%); and 'Issue schedule of payment dates to clerk of works' (79%).

Requirements that were frequently not achieved due the fact that they were 'Not requested/needed' by the team members included: 'Inform the contractor whom the employer requires invoices made out to' (100% of respondents who indicated 'Not achieved' for this requirement further indicated that it was not requested nor was it needed by team member for the purpose of the interim valuation process);'Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information' (99%); 'Agree basis on which preliminaries will be incorporated into interim valuations' (96%); 'Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes' (96%); and 'Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)' (98%).

For requirements that were frequently not achieved due to 'Urgency to prepare valuation' which quantity surveyors face, Table 4.9 further shows that only two of them had up to half or more of respondents under the 'Not achieved category indicating this reason. These requirements are: 'Issues a schedule of payment dates to the employer; contractor; consultants and the certifier'

(50%); and 'Explain method to be used to notify QS of any work or materials/goods not properly executed' (92%). Hence, from these findings, the two popular reasons why team related requirements are not met are due to the fact that they are either not required (measured by 'Not required') or are not requested by team members (measured by 'Not requested/needed'). The less frequent reason for non-achievement is the urgency QS face in preparing interim valuations (measured by 'Urgency to prepare valuation).

The other aspect of this part of the investigation is the responses for which the team related requirements were achieved in the projects for which quantity surveyors provided interim valuation information. The outcome of the analysis on these data is shown in Table 4.10.

Table 4.10 - Percentage Response of Team's Related Requirements (Achieved)

Interim Valuation Requirements	**1**	**2**	**3**
Agree a schedule of payment dates with the contractor	85	8	8
Issues a schedule of payment dates to the employer; contractor; consultants and the certifier	21	55	24
Inform the contractor whom the employer requires invoices made out to	27	59	15
Agree structure and presentation of the contractor's interim application for payment with the contractor	2	96	3
Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information	0	88	12
Agree basis on which preliminaries will be incorporated into interim valuations	0	80	20
Agree basis on which sums in adjustments (i.e., variations) will be incorporated into interim valuations	0	37	63
Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes	1	44	55
Remind the contract administrator of his/her responsibility for verifying daywork vouchers	1	45	54
Explain method to be used to notify QS of any work or materials/goods not properly executed	0	43	57
Confirm that QS will not adjust interim valuation for work not properly executed that is notified late	15	52	33
Discuss importance of diligence and accuracy in checking records of resources used by the contractor with clerk of work	15	43	41
Issue schedule of payment dates to clerk of works	33	57	10
Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)	21	19	59

1 = Not requested; 2 = Requested appropriately; 3 = It's best practice

For this aspect of the analysis which investigated the reasons for achieving the team related requirements of the interim valuation process, achievement was measured using three 3 scales namely 'Not requested' which signifies a situation where the requirement was achieved by the quantity surveyor despite the fact that team members did not request for it (best practice however requires that there must be agreement between the QS and team members on these requirements); 'Requested for appropriately' where team member put in specific request and lastly 'It's best practice', where it has been agreed by all parties that these requirements must be fulfilled in project whether requested or not. The outcome of the analysis on the data for this aspect of the investigation is shown in Table 4.10

Using the highest incidences of occurrence to describe the outcome of the analysis, only one out of the fourteenteam related requirements that was achieved was so achieved even when it was not specifically requested for namely 'Agree a schedule of payment dates with the contractor' having 85% of quantity surveyors indicating the they fulfilled this requirement even though it was not requested for. This would mean that they had to insist that this be done even amidst reluctance and resistance from the construction team members. However, some other requirements that were achieved even when not requested for did also occasionally occur in projects for which information was provided for. These includes: 'Issues a schedule of payment dates to the employer; contractor; consultants and the certifier' (21%); 'Inform the contractor whom the employer requires invoices made out to' (27%); 'Inform the contractor whom the employer requires invoices made out to' (33%); and 'Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)' (21%).

Under the 'Requested for appropriately' reason responsible for achievement, eight requirements had the highest occurrences. Four of them with the highest frequencies include: 'Agree structure

and presentation of the contractor's interim application for payment with the contractor' (96% of its achievement was due to it been 'requested for appropriately'); 'Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information' (88%); 'Agree basis on which preliminaries will be incorporated into interim valuations' (80%); and 'Issue schedule of payment dates to clerk of works' (57%). The others under this category occurred in 8% - 52% of projects in which they were achieved.

The last category under this aspect of the investigation is the requirements that were achieved as a result of abiding by best practice instituted on the projects for which interim valuation information were provided. Five requirements had the highest frequencies of occurrence in terms of achievement due to best practice, namely: 'Agree basis on which sums in adjustments (i.e. variations) will be incorporated into interim valuations' (63%); 'Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes' (55%); 'Remind the contract administrator of his/her responsibility for verifying daywork vouchers' (54%); 'Explain method to be used to notify QS of any work or materials/goods not properly executed' (57%); and 'Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)' (56%). However, the other requirements not listed here did occasionally occurred ranging between 3% - 41% of the projects.

4.4 Data Analysis of Performance of the Interim Valuation Process

Performance of the interim valuation process is known to have a positive influence on the overall performance of construction projects as outlined in the literature review. This section of the research discusses the outcome of data analysisperformed on data collected for this purpose. Two aspects form the main focus of this section. Firstare the components of the interim

valuation. This is analysed in terms of what components mainly constitutes the interim valuations prepared for building projects in Nigeria and then to find out the availability of information needed to manage the constituting components. Second is the satisfaction derived while preparing interim valuations? This was measured in term of the extent to which the quantity surveyor engaged in the interim valuation process is satisfied with relating with the employer and members of the construction team, administration of the contract and the interim valuation process.This section describes the analysis of data collected for this purpose.

4.4.1 Components of the Interim Valuation – Inclusion

Twenty-one constituting components of interim valuation consisting of fourteen main items and seven adjustment items were identified during the literature review. This section outlines the analysis of data collected on whether or not these components do indeed form the main constituents of interim valuations prepared for building projects in Nigeria. Two aspects were investigated namely components included and availability and sufficiency of information required to manage the component during interim valuation. For both aspects a 3 – point scale was used to investigate the variables. The measures for component inclusion are 'Not required/not needed', Not included but needed', and 'Included'. Those for information availability and sufficiency are 'Not available', Available but not sufficient', and Available and sufficient'. The outcomes of the analyses are presented in Tables 4.11 and 4.12.

The analysis of responses on components included in interim valuation indicates that all the main components an interim valuation contained in the valuations prepared by quantity surveyors for building projects in Nigeria as reveal in Table 4.11. Some of the adjustment items showed high incidence on not included in the projects investigated, having percentages ranging between 1 –

50%. Specifically, interim valuation components that were not included were measured in two categories i.e. 'Not requested/Not needed' and 'Not included but needed'. Under the 'Not requested/Not needed category', components that were not included in 25 – 50% of the projects investigated included: 'Risk analysis' (50%), 'Disallowed cost' (50%), 'Director's adjustments' (48%), 'Fluctuations' (45%), 'Acceleration costs' and 'Contractor's design fees (both 37%), and 'Errors in setting out' (36%).Hence,these components were not included in the valuations of these projects because they were not been requested for or needed for the project considered.

Table 4.11 - Percentage Response of Components Included in Interim Valuations

Components of an Interim Valuation	**1**	**2**	**3**
Work executed	25	0	75
Variations/changes	10	16	75
Expenditure of provisional sums	14	1	85
Adjustment of prime cost (PC) sums/prices	0	16	84
Adjustment of provisional quantities	1	14	85
Site materials/materials on-site	1	14	86
Materials and goods off-site	11	28	62
Contractor's design fees	37	28	35
Loss and expense	25	26	49
Acceleration costs	37	47	16
Overheads and profit	14	3	83
Fixed-price addition/adjustment	27	36	37
Risk analysis	50	48	2
Director's Adjustment	48	15	36
Advance/advanced payments	3	15	83
Work not properly executed	25	15	60
Disallowed costs	50	15	35
Fluctuations	45	15	40
Errors in setting out	36	16	48
Retention	1	15	84
Amounts previously paid	1	16	83

1 = Not requested/Not needed; 2 = Not included but needed; 3 = Included

The incidence ofcomponents that were not included but which in the opinion of the quantity surveyorwere needed the preparation of interim valuations, occurred in few projects ranging

between 0 – 48%. Only six of the twenty-one components had such incidence in 25 – 50% of the projects investigated. These are: ‘Materials and goods off-site’ (28%), ‘Contractor's design fees’ (28%), ‘Loss and expense’ (26%), ‘Acceleration costs’ (47%), ‘Fixed-price addition/adjustment’ (36%), and ‘Risk analysis’ (48%). Twelve of the components were not included for but were needed in 15 – 16% of the projects investigated.

Thirteen out of the twenty-one components were included in the interim valuation of more than 50% of the projects for which interim valuation information were provided during the survey undertaken. The remaining eight components were only included in the interim valuations of 2 – 48$ of projects for information was given. Components in the formers group include: ‘Site materials/materials on-site’ (86%), ‘Adjustment of provisional quantities’ (85%), ‘Expenditure of provisional sums’ (85%), ‘Retention’ (84%), ‘Amounts previously paid’ (83%), ‘Advance/advanced payments’ (83%), and ‘Overheads and profit’ (83%). Others include: ‘Work executed’ (75%), ‘Variations/changes’ (75%), ‘Materials and goods off-site’ (62%), and ‘Work not properly executed’ (60%).

4.4.2 Components of the Interim Valuation – Availability and Sufficiency of Information

Investigating the information needed for managing the components required for inclusion in interim valuations for building projects, it was discovered, as shown in Table 4.12, that only seven out of the twenty-one components did not have information for their management in almost a third of projects. These components are: ‘Contractor's design fees ‘(35%), ‘Risk analysis’ (36%), ‘Director's Adjustment’ (36%), ‘Disallowed costs’ (36%), ‘Errors in setting out’ (35%), and ‘Retention’ (34%).Information of the remaining components was not mainly

available in either 1% of the projects investigated (7 components) or in 11- 15% of these projects (7 components).

Table 4.12 - Percentage Response of Information for Components Included in Interim Valuations

Components of an Interim Valuation	**1**	**2**	**3**
Work executed	1	1	99
Variations/changes	11	1	88
Expenditure of provisional sums	1	34	65
Adjustment of prime cost (PC) sums/prices	1	35	64
Adjustment of provisional quantities	1	1	98
Site materials/materials on-site	1	2	98
Materials and goods off-site	11	59	30
Contractor's design fees	35	30	35
Loss and expense	12	59	29
Acceleration costs	12	59	30
Overheads and profit	12	13	75
Fixed-price addition/adjustment	15	36	49
Risk analysis	36	29	35
Director's Adjustment	36	62	3
Advance/advanced payments	1	2	97
Work not properly executed	24	2	74
Disallowed costs	36	16	48
Fluctuations	11	4	86
Errors in setting out	35	50	15
Retention	34	17	50
Amounts previously paid	1	3	96

1 = Not available; 2 = Available but not sufficient; 3 = Available and sufficient

Under the 'Available but not sufficient' measuring scale of information for managing components constituting interim valuation for building projects, information for ten components were available but not sufficient to manage them in 30 – 60% of projects. The components are: 'Director's Adjustment' (62%), 'Acceleration costs' (59%), 'Loss and expense' (59%), 'Materials and goods off-site' (59%), 'Errors in setting out' (50%), 'Fixed-price addition/adjustment' (36%), 'Adjustment of prime cost (PC) sums/prices' (35%), 'Expenditure

of provisional sums' (34%), 'Contractor's design fees' (30%). Eight of the remaining elevencomponents had information for managing them but the information is not in sufficient quantity in 1 – 4% of the projects investigated. The other three components include: 'Overheads and profit' (which occurred in 13% of projects investigated), 'Disallowed costs' (16%), and 'Retention' (17%).

For the 'Available and sufficient' measuring scale two main patterns can be seen from of the analysis of data as shown in Table 4.12. The first pattern is the 50 – 99% of projects in which information for managing the components for interim valuation was available and sufficient. The components under this category include: 'Work executed' (99%), 'Adjustment of provisional quantities '(98%), 'Site materials/materials on-site '(98%), 'Advance/advanced payments' (97%), 'Variations/changes' (88%), 'Amounts previously paid '(96%), 'Fluctuations' (86%). The second pattern is the 25 – 50% of projects in which information to manage the interim valuation, was also available and sufficient. The eight components that fall under this category are: 'Materials and goods off-site' (30%), 'Contractor's design fees' (35%), 'Loss and expense' (29%). 'Acceleration costs' (30%), 'Fixed-price addition/adjustment' (49%), 'Risk analysis' (35%), 'Disallowed costs' (48), 'Retention' (50%).

These patterns indicate that while information required for managing the various components of the interim valuation is mostly available and sufficient in majority of building projects, incidence do occur occasionally where this informationis either completely not available or where they are available, they are not sufficient. High incidence of this is noticeable in the following components: 'Materials and goods off-site' (either not available or available and not sufficient in 70% of projects investigated), 'Contractor's design fees' (65%), 'Loss and expense' (71%),

'Acceleration costs' (71%), 'Risk analysis' (65%), 'Director's adjustment' (97%), and 'Errors in setting out' (85%).

4.4.3 Satisfaction with the Interim Valuation Process

The last part of the investigation looks at the performance of the interim valuation process viz: components and satisfaction. This section discusses the outcome of the analysis conducted for this purpose. Three main aspects of the quantity surveyor's satisfaction with the interim valuation process were the focus of the study, namely: relationship with project team members, administration of the contract, and the valuation itself. The outcome of the analysis is shown in Table 4.13.

Table 4.13 - Percentage Response of Satisfaction with the Interim Valuation Process

Satisfaction Measures	**HD**	**D**	**SD**	**SS**	**S**	**HS**
Relationship with employer	11	1	1	33	38	17
Relationship with contractor	11	1	1	33	39	16
Relationship with consultants	12	0	33	1	38	16
Contract administration and documentation	11	47	1	1	24	17
Timely preparation and issuance of valuation	11	14	1	24	34	15
Appropriateness of value contained in the valuation	44	0	15	14	12	16

HD - Highly dissatisfied, D - Dissatisfied, SD - Somewhat dissatisfied, SS - Somewhat satisfied; S - Satisfied; HS - Highly satisfied

From Table 4.13, quantity surveyors tend to be more satisfied with their relationships with both employers and contractors compared to their relationship with consultants. For both employers and contractors' relationships, quantity surveyors indicated they were between 'Somewhat satisfied' to 'Highly satisfied' in 87% of the projects for which they provided interim valuation information. However, for their relationship with consultants, they felt between 'Somewhat

satisfied' to 'Highly satisfied' in only 55% of the projects they were involved in and for which they provided information.

Despite the relatively high incidence of their satisfaction with the relationships they engage in in the projects considered, quantity surveyors are actually less satisfied with the documentation and administration of the contract. A further look at Table 4.13 reveals that in 59% of the projects, quantity surveyors were not satisfied in terms of documentation and administration. Specifically, 11% of the projects investigated contended with quantity surveyors who are 'Highly dissatisfied' with the documentation and administration of the contract while 47% were 'Dissatisfied'.

In terms of the valuation itself i.e., its preparation, issuance and value contained therein, there is higher satisfaction with preparation and issuance compared to the appropriateness of the value it contains. Seventy-four percent of the projects for which information was provided, had quantity surveyors having satisfaction with the preparation and issuance of the interim valuation ranging between 'Somewhat satisfied' to 'Highly satisfied' while only 41% exhibited satisfaction within these range for the appropriateness of the value the valuation they prepare contain. This lower satisfaction level can be attributed to the high incidence of 'Highly dissatisfied' which was indicated by quantity surveyors in 44% of the projects investigated.

When looked holistically i.e., by aggregating all the 5 measures of satisfaction, the percentages in Table 4.13 provides a mean value of 64% for projects where in quantity surveyors were having satisfaction levels ranging between 'Somewhat satisfied' to 'Highly satisfied. This gives an overall picture that quantity surveyors are generally satisfied with the interim valuation process. But it is worth noting that even when satisfaction is high all the five measures of

satisfaction did have quantity surveyors ‘Highly dissatisfied’ in at least 11% of the projects investigated.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY OF FINDINGS

The findings of the study following the presentation, analysis and discussion of results carried out in chapter four, were as follows:

The research aimed at investigating interim valuation process in building construction projects with specific focus on the following: understanding the requirements for preparing interim valuation by the quantity surveyor; employer's specific requirement; Review of pricing documents; Liaison with contractor, consultant and clerk of works (Team work); components of interim valuation; and the extent to which quantity surveyors are satisfied with the interim valuation process. Below is a summary of the main findings based on the aforementioned six specific aspects.

To investigate the extent to which quantity surveyor can have an understanding of the requirements for preparing interim valuation, the extent to which the required activities were undertaken and whether information for them were available and sufficient, were measured. For the former, out of the ten activities that the quantity surveyor must perform to understand the requirement for preparing interim valuation, more than half of the respondents indicated that four (4) of these activities were not undertaken by the quantity surveyor in the project of which they provided information. For example, "produce schedule for payment dates" (71%); "establish fluctuations provisions applicable to contract, and how applied" (61%); and "determine if any materials are subject to off-site valuation" (58%).

However, for more than half of the projects investigated 6 of these activities were undertaken by the quantity surveyor. While for the latter i.e., extent to which information for each activity was available and sufficient, more than half the respondents indicated that information was available for seven of the ten activities out of which two did not have sufficient information, i.e., “comprehend the interim valuation and payment provisions in the conditions of contract” (62%) and “and determine key dates for each payment” (54%).

To examine the level to which quantity surveyor were able to achieve employer’s specific requirements, the extent to which these activities were achieved or not were measured. Out of the six activities that the quantity surveyor is required to perform to achieve employer’s specific requirement in interim valuation process, more than 60% of the respondents indicated that three (3) of these activities were not achieved by the quantity surveyor in the project of which they handled and provided information. For example, “Agree schedule of payment dates with employer” (33%); “Confirm whom the employer requires the contractor's invoice to be made out to” (38%); “Verify method for valuing materials subject to off-site valuation” (46%). However, more than half of the activities in the projects investigated were achieved by the quantity surveyor.

To inquire the extent to which quantity surveyor can have access to review pricing documents used in preparing interim valuation, the extent to which the required activities were performed and whether information for them were available and sufficient, were measured. For the former, out of the seven activities that the quantity surveyor must carry out as duty to review pricing documents used in preparing interim valuation, more than half of the respondents indicated that one (1) of these activities was not undertaken by the quantity surveyor in the project of which

they provided information. For example, “Identify any adjustments made in calculating the contractor's tender price, which now constitutes the contract sum” (59%).

However, for more than half of the projects investigated 6 of these activities were undertaken by the quantity surveyor. While for the latter i.e. extent to which information for each activity was available and sufficient, more than half the respondents indicated that information was available for four of the seven activities out of which three did not have sufficient information, i.e. “Determine how the contract sum is derived” (84%); “Identify any adjustments made in calculating the contractor's tender price, which now constitutes the contract sum”(61%), and “Determine which preliminaries items are one-off expenditure items, related to cost, and which are related to time” (51%).

To investigate the level to which quantity surveyor were able to achieve liaison with contractor, consultant and clerk of work, the extent to which these activities were achieved or not were measured. Out of the fourteen activities that the quantity surveyor is required to perform to achieve liaison with contractor, consultant and clerk of work in interim valuation process, more than 60% of the respondents indicated that four (4) of these activities were not achieved by the quantity surveyor in the project of which they handled and provided information. For example,“Agree a schedule of payment dates with the contractor” (51%);“Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information” (99%); “Remind the contract administrator of his/her responsibility for verifying daywork vouchers” (33%); “Issue schedule of payment dates to clerk of works” (46%). While, for more than half of the projects investigated the others were achieved by the quantity surveyor.

To inquire the extent to which quantity surveyor can include the components interim valuation during valuation process, the extent to which the required components were included and whether information required for them were available and sufficient, were measured. For the former, out of the twenty-one components that the quantity surveyor must include during preparation interim valuation, more than half of the respondents indicated that five (5) of these components were not included by the quantity surveyor in the project of which they provided information. For example, “Contractor's design fees” (37%); “Acceleration costs” (47%); “Risk analysis” (50%); “Director's Adjustment” (48%); “Disallowed costs” (50%). However, for more than half of the projects investigated 11 of these components were included by the quantity surveyor. While for the latter i.e., extent to which information for each component was available and sufficient, more than half the respondents indicated that information was available for seventeen of the twenty-onecomponents out of which four did not have sufficient information, i.e., “Materials and goods off-site” (59%); “Loss and expense” (59%); “Acceleration costs” (59%), and “Director's Adjustment” (62%).

To examine the extent to which quantity surveyors are satisfied with the interim valuation process, the extent to which these satisfactions were achieved or not were measured. Out of the six satisfaction measures investigated, more than 60% of the respondent’s indicated dissatisfaction in three (3) of them. These includes aspects relating to: “Contract administration and documentation” (47%); “Appropriateness of value contained in the valuation” (44%). While, for more than half of the projects’ investigated satisfaction was derived in: “Relationship with employer” (38%); “Relationship with contractor” (39%); “Relationship with consultants by the quantity surveyor” (38%), and “Timely preparation and issuance of valuation” (34%).

5.2 CONCLUSION

In other to prepare interim valuation the quantity surveyor is expected to have understanding of the requirements specific to any project. It was discovered that such understanding will be difficult to achieve giving that quantity surveyors are unable to undertake some of the very important activities required to have such an understanding and where they undertook other activities that required information necessary for these activities were sometimes either not available or not sufficient and, in some instances, not available and not sufficient. These situations will no doubt have a significant impact on the preparation of interim valuation which will also affect its performance in terms of correctness, and completeness. A situation where all the activities required of quantity surveyor to have an understanding for the purpose of preparing interim valuation recorded less than 100% (except one) achievement on the one hand, and less than 100% in both availability and sufficiency of information would further explain poor performances in construction industry that have been identified in literature to be related to the interim valuation process.

For a quantity surveyor to prepare interim valuation he needs to have knowledge of employer specific requirements to a project he is acquainted with. It was found that such task is difficult to achieve as reported in the finding of this study, were quantity surveyor finds it difficult to carry out some vital activities that require such skill due to situations where then parties to which these activities would be achieved are not readily available or not cooperating. These situations where' a quantity surveyor is required to carry out activities, which are employer's specific recorded less than 50%. It will be difficult to carry out such activities as parties are either undecided or silent to the activities that are to be carried out.

As reported in the finding to this research. In other to prepare interim valuation the quantity surveyor is expected to have knowledge and understanding to review pricing documents that are specific to any project. It was uncovered that such tasks were difficult to achieve owing to fact that quantity surveyor are unable to undertake some of the very important activities required in suchcapacity and where they undertook other activities that required information necessary for these activities were sometimes either not available or not sufficient and, in some instances, not available and not sufficient. These situations will no doubt have a significant impact on the preparation of interim valuation which will also affect its performance in terms of correctness, completeness or otherwise. A situation where all the activities required of quantity surveyor to have an understanding for the purpose of preparing interim valuation recorded less than 100%, achievement on the one hand, and less than 100% in both availability and sufficiency of information would further explain poor performances in construction industry that have been identified in literature to be related to the interim valuation process.

As found in this study for a quantity surveyor to prepare interim valuation he needs to have understanding as to how to liaison with contractor, consultants and clerk of works to a project he is familiar with. It was found that such tasksappeared difficult to achieve as reported in the finding to this study, were quantity surveyor finds it difficult to carry out some vital activities that required such skill due to situations where some of the activities are 100% not applicable, and in one hand not requested or urgency to prepare valuation. These situations where' a quantity surveyor is required to carry out these activities, to which some activities recorded less than 100%. It will be difficult to carry out such activities as some of them are not required in the valuation for which the information was reported. These translate to low performance of the process and thus would underscore its performance in the industry.

As reported in the findings to this study. In other to prepare interim valuation the quantity surveyor is expected to have knowledge and understanding on inclusion of components that are specific to any project. It was uncovered that such task appeared to be difficult to achieve owing to fact that quantity surveyors are unable to undertake some of the very important activities required in such capacity and where they undertook other activities that required information necessary for these activities were sometimes either not available or not sufficient and, in some instances, not available and not sufficient. These situations make it difficult to include such component as they were reported to have 100%non-inclusion and the other hand the once that are included are less than 100%, few of such component might be difficult to be included during valuation by quantity surveyor and this would have impact on the accuracy of the end result.

In preparing interim valuation quantity surveyor is required to have satisfaction in working relationship with contractor, consultant and clerk of works this smooth atmosphere would help greatly in improving the performance in terms of correctness and completeness of the result, on the other hand with the entire relevant document as source of information that may be used as instrument to the success of the valuation preparation down to delivery. As reported from the findings these satisfaction measure although even the measures that appeared to quantity surveyors as satisfied fell below 50%.

5,3RECOMMENDATION

Information required and which are specific to project, should be made available and sufficient for Quantity Surveyors during interim valuation preparations to avoid difficulties experienced.Thus, this would enhance the performance of interim valuation process.

5.4 THE CONTRIBUTION OF THE STUDY TO KNOWLEDGE

The study has provided a proof that there exist challenges to Quantity Surveyors in carrying out interim valuation preparation in the industry.

The study has also proved that there exists none availability in some instance not sufficient information to carry out interim valuation preparation in the industry.

REFERENCES

Abdul-Rahman, H. (2009). "Financial-related causes contributing to project delays". Palgrave Macmillan, *Journal of Retail & Leisure Property, 8*(3),225–238.

Abdulrasheed, M. A. (2015). *An assessment of contractors' perception on the effect of cash flow on construction project delivery*[unpublished B.Sc.thesis]. Ahmadu Bello University, Zaria.

AAhmadu (2014). "Modelling *building construction duration in Nigeria"* a thesis submitted to the school of post graduate studies [unpublished M.Sc. thesis]. Ahmadu Bello University, Zaria.

Akundushima, D. (2011). *An appraisal of the causes of delayed payments in public construction projects in Nigeria* [unpublishedB.Sc thesis]. Ahmadu Bello University, Zaria.

Assaf, S. A. and Al-Hejji, S. (2006), "Causes of Delay in Large Construction Projects", *International Journal of Project Management, 24*(4),349-357.

Azman, M. A. *et al*. (2014), "Payment Issues in Malaysian Construction Industry: Contractors' Perspective",*Journal of Technology, Science and Engineering, 70*(1), 57-63.

Babu, S. S. and Sudhakar, Ph.D. (2015),"Critical Success Factors Influencing Performance of Construction Projects",*International Journal of Innovative Research in Science and Technology,4*(5), 6-16.

Cochran, W. G. (1963). *Sampling Techniques*, (2nd Ed), John Wiley and Sons, Inc. New York.

Cooper, D. R. and Schindler, P. S. (2008). *Business Research Method*, (10th Ed),Boston: McGraw Hill.

Creswell, J. W. (2003). *Research Design, Qualitative, Quantitative, and Mixed Method Approaches*, (3rd Edition), Thousand Oaks, Sage Publication, California.

Cunningham, T. (2018),"Preparing Interim Payment Valuations for Construction Works-Worked Examples and solutions". ARROW/DIT:Doblin.

Eshanssi, A., Arain, F. and Tayeh, B. (2010),"Major causes of problem between contractors and subcontractors in Gaza Strip",*Journal of Financial Management and Property Construction,*10(1), 1366-4387.

Faruq, M. Y. O. (2017), *Assessment of Causes of Delayed Payments to Consultants in the Nigerian Construction Industry (A Perspective of Consultants)*[unpublished B.Sc. thesis] Ahmadu Bello University, Zaria.

Fugar, F. D. K. and Agyakwah-Baah, A. (2010),"Delays in Building Construction Projects in Ghana",*Australasian Journal of Construction Economics and Building, 10*(1/2), 103-116

Ibrahium, Y. M. (2010), "On the Measurement of Work in Progress using Computer Vision: A Computerised Reporting Model", *Journal of Engineering Design & Technology,8*(1) 45-63.

JCT, (2011). *Standard Building Contract with Quantities*.(2011 Edition), Sweet & Maxwell, Thomson Reuters (professional) Limited UK

Kenyatta, M. O., Alkizim, A. O. and Mbiti, T. K. (2015), "Recapitulating the Payment Default Effects to Contractors in the Kenyan Construction Industry",*International Journal of Soft Computing and Engineering, 5*(4), 2231-2307.

Kothani, C. R and Garg G. (2014), "*Research Methodology: Methods and Techniques* (3rd Edition) India: New Age International Limited.

Kulemeka, P. J., Kululanga, G. and Morton, D. (2015). Critical Factors Inhibiting Performance of Small and Medium Scale Contractors in Sub Saharan Region: A Case for Malawi. *Journal of Construction Engineering* ID 9276147 pp. 6-15

Matipa, W. M., Kelliher, D. and Keane, M. (2009),A Strategic View of ICT Supported Cost Management for Green Buildings in the Quantity Surveying Practice. *Journal of Financial Management of Property and Construction*. *14*(1), 79-89.

Maradun, A. M. (2014). *Assessing the Impact of Factors Affecting Cashflow Performance of Residential Buildings*. [unpublished B.Sc thesis] Ahmadu Bello University, Zaria.

Motawa, I. and Kaka, A. (2009). Modelling Payment Mechanisms for Supply Chain in Construction. *Journal of Engineering Construction & Architectural Management*. *16*(4), 325-336.

Murra, J. G. (2009),"Towards a common understanding of the differences between purchasing, procurement and commissioning in the UK public sector",*Journal of Purchasing & Supply Management,15*(3), 198-202.

Nayan, R. (2010). *Valuation of Interim Payment: Contract Terms and Statues* [M Sc. Thesis]. University of Technology Malaysia

Nayan, R., Mustaffa, N. E. and Judi, S. S. (2017), "Valuation of Interim Payment: Issues Encountered by the Parties involved in relation to interim Payment", *Journal of Built Environment Technology and Engineering, 2*(128), 133-141.

Ndekugri, I. E. (1986). Construction Contract Information Management an Integrated System Approach [Ph. D Thesis]. Loughborough University

Oberlender, G. D. (2000). *Project Management for Engineering and Construction*(2nd edition) Mc Grew Hill Inc. Singapore. pp. 45-60

Odeyinka, H. A. and Kaka, A. (2005),"An Evaluation of Contractor's satisfaction with Payment Terms influencing Construction Cash Flow",*Journal of Financial Management of Property and Construction,10*(3), 171-180.

Odeh, A. M. and Battaineh, H. T. (2002),"Causes of Construction Delays: Traditional Contracts", *International Journal of Project Management,20*(2002), 67-73.

Okolie, K. C. et al. (2006), "Development of a Leadership Model Effective Reduction of Building Collapse in Nigeria", *Project Management worldJournal,5*(4), 198-202.

Olanrewaju, A. and Anahve, P. J. (2015), "Duties and Responsibilities of Quantity Surveyors in the Procurement of Building Services Engineering", *Procedia Engineering,123*(12), 352-360

Olatunji, O. A. and Orundami, A. O. (2018), "Causal Relationship between Material Price Fluctuation and Project's Outturn Costs", *Built Environment Project and Asset Management,8*(4), 368-371.

Olusegun, A. E. and Olumuyiwa, A. M. (2014),"Effect of Cost Control on Building Project Delivery in Nigeria",*Civil and Environmental,6*(2), 2224-5790.

Ogunsina, O. and Obiegbu M. E. (2018), "Factors Confronting Quantity Surveying Practice: the Case of Nigeria", *Journal of Engineering Design and Technology,16*(5), 767-782.

Okafor, O.P (2007),"Misconception of Variation as the only Factor Contributing to Cost Over-run in Construction works in Nigeria",*The Quantity Surveyor Journal, 55*(3), 18-19.

Okpala, C. O. and Aniekwu, N. A. (1988). Causes of High Costs of Construction in Nigeria. *Journal of Construction Engineering and Management.8*(3), 4-12.

Odeyinka, H. and Oladapo, A. A. (1997). The Causes and Effects of Construction Delays on Completion Cost of Housing Projects in Nigeria. *Journal of Financial Management of Property and Construction*, *2*(3) 2-12.

Odeyinka, H. and Kaka, A. (2005). An Evaluation of Contractors' Satisfaction with Payment Terms Influencing Construction Cash Flow. *Journal of Financial Management of Property and Construction*, *10*(3) 171-180.

Omotayo, T. and Kulatunga, U. (2015). A Continuous Improvement Frame Work using IDEFO for Post-Contract Cost Control. *Journal of Construction Project Management and Innovation,7*(1), 1807-1823.

Omotayo, T. S (2017). *Strategic Realignment of the Post-Contract Cost Control Process in the Nigerian Construction Industry*[Ph. D. Thesis]. University of Salford Manchester pp.4-112

Oyediran, O. S. and Akintola, A. A. (2006),"A Survey of the Art of E-Tendering in Nigerian Construction Industry",*Journal of Information Technology in Construction,16*(13) 557-566.

Oyegoke, A. S. (2011), "Building Competence to Manage Contractual Claims in International Construction Environment: The Case of Finnish Contractors", *Engineering Construction and Architectural Management*, *13*(1) 96-113.

RICS. (2014). *Manual of Valuation Guidance Note, Royal Institute of Chartered Surveyors London,* (2014 Edition), Columns Design XML Ltd

RICS. (2015). *Interim Valuation and Payment Professional Guidance note, UK*(6th Edition) Royal Institute of Chartered Surveyors

SBD. (January, 2011). Procurement of Works. Retrieved from URL

Sergeant, M., Wieliczko, M. and Willan, H. F. (2014). *Construction Contract Variations (Construction Practice Series)*(1st Edition) Stockport, Manchesterpp. 207-295

Shen, Q. and Chung, J. K. H. (2007), The use of Information Technology by the Quantity Surveying Profession in Hong Kong, *International Journal of Project Management*, *25*(2007), 134-142.

Sunday, A. B. (2017). Working Relationship between Architect and Quantity Surveyor in Nigeria: Scope of mutual responsibilities and area of conflict.

(2001) "*The Surveyors' Construction Handbook", Structural Survey*.(5th Edition), 12 Great George Street Parliament Square London.

Ugochuku, S. C. and Onyekwene, T. (2014). Participation of Indigenous Contractors in Nigerian Public Sector Construction Projects and their Challenges in Managing Working Capital *Journal of Civil Engineering, Construction and Estate Management*, 1(1), 1-21.

Yamane, T. (1967). Elementary Sampling Theory (Sampling Statistics) *prentice-hall*. 519/.93

QUESTIONNAIRE

Section A - Background Information

Respondent's Experience (in years): Up to 5 [ ] 6 - 15 [ ] 16 - 25 [ ] 26 - 35 [ ] 36 + [ ]

Professional Qualification: Probationer [ ] MNIQS [ ] FNIQS [ ] Registered QS [ ]

Project Client: Public [ ] Private [ ] Type: Residential [ ] Commercial [ ] Institutional [ ]

Contract Value (in Millions): Up to N500 [ ] N501 - 1000 [ ] N1001 - 3000 [ ] N3000+ [ ]

Contract Condition: Not specified [ ] JCT [ ] SBD [ ] NEC [ ] Others _____

Section B - Requirements for Preparing Interim Valuations

Listed below are some requirements necessary for preparing an interim valuation. However, circumstances beyond the control of the QS sometimes inhibits achieving them while administering construction contracts. For each, kindly indicate whether: 1. it was achieved in this project; 2. relevant information was available and sifficient. Please tick as appropriate for *'achieved'*, *'available'* and *'sufficient'*. Make entries for *'sufficient'* only when information was available for that actitvity.

Interim Valuation Requirements	**Achieved**		**Information**			
			Available		**Sufficient**	
	No	**Yes**	**No**	**Yes**	**No**	**Yes**
Check contract signed by both employer and contractor.						
Comprehend the interim valuation and payment provisions in the conditions of contract.						
Determine if amendment to conditions of contract is made						
Identify payment method						
Establish fluctuations provision applicable to contract, and how applied.						
Identify items subject to retention and not subject to retention.						
Identify ‘prescribed period’ for payment						
Determine key dates for each interim payment						
Produce ‘schedule of payment dates’						
Determine if any materials are subject to off-site valuation						
Ascertain method for valuing materials subject to off-site valuation.						

Below are employer's specific requirements necessary for preparing an interim valuation. Kindly indicate whether or not each was achieved in this project and why. Using the scales below as appropriate, please circle the number that best describes your choice for either *'not achieved'* or *'achieved'*.

Not Achieved: *1 - Not requested; 2 - Employer undecided; 3 - Contract admin silent on the matter*

Achieved:*1 - Not requested; 2 - Requested by employer; 3 - It's best practice*

Employer's specific requirements	**Not Achieved**			**Achieved**		
Agree schedule of payment dates with employer	1	2	3	1	2	3
Determine if the contractor is to submit 'interim applications' or if valuation is to be prepared by the quantity surveyor	1	2	3	1	2	3
Establish whether the employer requires valuations to be built-up under various headings	1	2	3	1	2	3
Confirm whom the employer requires the contractor's invoice to be made out to	1	2	3	1	2	3
Verify method for valuing materials subject to off-site valuation	1	2	3	1	2	3
Ascertain form of 'vesting certificate' to be used	1	2	3	1	2	3

Listed below are some activities necessary for preparing an interim valuation which are only gotten from reviewing relevant and appropriate pricing documents which are mostly part of the contract documentation. These documents are sometimes known not to be available to the QS. For each activity, kindly indicate whether: 1. it was achieved in this project; 2. relevant information was available and sifficient. Please tick as appropriate for *'achieved'*, *'available'* and *'sufficient'. Make entries for 'sufficient' only when information was available for that actitvity.*

Activities necessary for preparing Interim Valuation	**Achieved**		**Information**			
			Available		**Sufficient**	
	No	**Yes**	**No**	**Yes**	**No**	**Yes**
Determine how the contract sum is derived						
Obtain a breakdown of preliminaries from the contractor						
Identify any adjustments made in calculating the contractor's tender price, which now constitutes the contract sum						
Determine which preliminaries items are one-off expenditure items, related to cost, and which are related to time.						
Determine structure and presentation for interim valuations						
Produce a template for presenting interim valuations						
Generate record of valuations and payments						

Below are some team processes necessary for preparing an interim valuation. Kindly indicate whether or not each was achieved in this project and why. Using the scales below appropriately, please circle the number that best describes your choice for either *'not achieved'* or *'achieved'*.

Not Achieved: *1 - Not applicable; 2 - Not requested/needed; 3 - Urgency to prepare valuation*

Achieved:*1 - Not requested; 2 - Requested appropriately; 3 - It's best practice*

Liaison with contractor, consultants and clerk of work	**Not Achieved**			**Achieved**		
Agree a schedule of payment dates with the contractor	1	2	3	1	2	3
Issue a schedule of payment dates to the employer, contractor, consultants and the certifier	1	2	3	1	2	3
Inform the contractor whom the employer requires invoices made out to	1	2	3	1	2	3
Agree structure and presentation of the contractor's interim application for payment with the contractor	1	2	3	1	2	3
Inform the contractor of procedure for receipt and verification of invoices, daywork vouchers and other supporting information	1	2	3	1	2	3
Agree basis on which preliminaries will be incorporated into interim valuations	1	2	3	1	2	3
Agree basis on which sums in adjustments (i.e., variations) will be incorporated into interim valuations	1	2	3	1	2	3
Ascertain percentage addition for overheads and profit to be charged by the contractor for variations/changes	1	2	3	1	2	3
Remind the contract administrator of his/her responsibility for verifying daywork vouchers	1	2	3	1	2	3
Explain method to be used to notify QS of any work or materials/goods not properly executed	1	2	3	1	2	3
Confirm, that QS will not adjust interim valuation for work not properly executed that is notified late	1	2	3	1	2	3
Discuss importance of diligence and accuracy in checking records of resources used by the contractor with clerk of work	1	2	3	1	2	3
Issue schedule of payment dates to clerk of works	1	2	3	1	2	3
Arrange with the clerk of works to receive labour record (which is required for checking wages fluctuations)	1	2	3	1	2	3

Section C - Components of Interim Valuations

An interim valuation is composed of major items some of which are listed below irrespective of the contract condition in use. Their inclusion in any valuation will depend largely on the nature of the contract as agreed with the employer. For each item, kindly indicate whether: 1. it was included in this project; 2. relevant information was available and sufficient. Using the scales below appropriately, please circle the number that best describes your choice for both *'included'* and *'information'. Make entries for 'information' even when item was not included in the valuation.*

Included: *1 - Not included/not requested; 2 - Not included but needed; 3 - Included*

Information:*1 - Not available; 2 - Available but not sufficient; 3 - Available and sufficient*

Components of an interim Valuation	**Included**			**Information**		
Work executed	1	2	3	1	2	3
Variations/changes	1	2	3	1	2	3
Expenditure of provisional sums	1	2	3	1	2	3
Adjustment of prime cost (PC) sums/prices	1	2	3	1	2	3
Adjustment of provisional quantities	1	2	3	1	2	3
Site materials/materials on site	1	2	3	1	2	3
Materials and goods off-site	1	2	3	1	2	3
Contractor's design fees	1	2	3	1	2	3
Loss and expense	1	2	3	1	2	3
Acceleration costs	1	2	3	1	2	3
Overheads and profit	1	2	3	1	2	3
Fixed-price addition/adjustment	1	2	3	1	2	3
Risk analysis and	1	2	3	1	2	3
Director's adjustment.	1	2	3	1	2	3
Adjustments in respect of the following:						
Advance/advanced payments	1	2	3	1	2	3
Work not properly executed	1	2	3	1	2	3
Disallowed costs	1	2	3	1	2	3
Fluctuations	1	2	3	1	2	3
Errors in setting out	1	2	3	1	2	3
Retention and	1	2	3	1	2	3
Amounts previously paid.	1	2	3	1	2	3

Section D - Performance of the Interim Valuation Process

Satisfaction is a measure of the performance of any system in order to determine its success or otherwise. This concept is not well known in the Interim valuation process but which can add tremendous value to the process. Below are some measures of satisfaction as regards IVP. For each, kindly indicate the extent of your satisfaction using the following scale *1 - Highly dissatisfied; 2 - Dissatisfied; 3 - Somewhat dissatisfied; 4 - Somewhat satisfied; 5 - Satisfied; 6 - Highly Satisfied*. Please circle the number that best describes your choice.

Satisfaction Measures	**Satisfaction Level**					
Relationship with employer	1	2	3	4	5	6
Relationship with contractor	1	2	3	4	5	6
Relationship with consultants	1	2	3	4	5	6
Contract administration and documentation	1	2	3	4	5	6
Timely preparation and issuance of valuation	1	2	3	4	5	6
Appropriateness of value contained in the valuation	1	2	3	4	5	6