

IMPACT OF CONTRACTUAL CLAIMS ON PUBLIC BUILDING PROJECTS PERFORMANCE IN ABUJA, NIGERIA

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Building construction projects in Nigerian are characterized by contractual claims, which remain a challenge in terms of time and cost performance, thereby triggering the need for effective contractual claims management in the building construction industry. The study is aimed at assessing the impact of contractual claims on the performance of public building projects with the view to devising strategies for effective management of contractual claims in public building construction projects. A pro forma was used to collect data on the impact of contractual claims while a structured questionnaire was used to gather information on the strategies for managing contractual claims. A random sampling of 122 respondents was done in Abuja, with a response rate of 86 percent. The obtained data were analysed using paired sample t-test, mean item score, correlation and explorative factor analysis. The study concluded that contractual claims have impact on cost and time performance, and a significant cost and time difference was experienced. An average cost increase of 16.68% was experienced in all the projects and the time increase was between 31% - 866%. To avert these problems, the study developed that effective communication, coordination and utilization of resources should be observed. It recommends that all the parties to the contract should ensure effective communication, coordination and utilization of resources in order to avert the problems of cost-time performance in public projects.

Keyword: Contractual claims, Cost performance, Projects performance, Public buildings, Time performance.

INTRODUCTION

Construction industry is the sector of the Nigerian economy that engages in preparations of lands, construction of buildings and facilities (Olufemi, 2013). The industry is almost seen as the backbone of every other sector as it accounts for about 15% of the national product of most developing countries and offers the motivating force essential for supporting financial buoyancy (Alintah-Abel and Nnadi, 2015). The industry adds an average of 5% to the yearly gross domestic product and an average of about 1/3 (one-third) of the overall fixed capital investment (Omole, 2000). Construction activities dictate the route of an economy and the industry is described as a leading economic sector (Alintah-Abel and Nnadi, 2015). There by calling for proper utilization and management of the industry.

Construction projects are set of tasks, embarked upon to make a facility, within a well-defined scope, quality, schedules and estimates. However, in some construction projects, claims are encountered which may be in the form of variation, delay in completion time, fluctuation or poor workmanship upon completion (Yadeta, 2014). Building construction projects experience claims sometimes, which occur before or after the contract is signed and they are inescapable in a building construction(s) projects (Ibbs et al., 2001). Construction claims are considered as the source of disruptions and displeasing events by project participants in the construction industry (Ho and Liu, 2004). Contractual Claims requires defined clarifications of all that make up a construction contract, from the scope, to what constitutes disruptions and allowable delays.

Completing a requisite project does not mean it is successful, but completing it within schedule, estimate and meeting the standard technically (Ivory Research, 2016). Successful projects are projects the client gets his anticipated values; which entail that the work is completed within schedule, estimate and quality as predicted at the planning stage of the project (Odediran and Windapo, 2014). Project performance, according to Cheung et al. (2004) requires the use of large number of indicators for measuring and evaluating the various dimensions of performance such as time and cost.

Contractual claim is a common problem in building and civil engineering construction projects (Yadeta 2014). Contractual claim on construction project has negative attributes to projects due to delay and disputes that sometimes generation of significant costs are effects arising during construction of projects. This negative attributes have brought about loss of client confidence in consultants, added investment risks, inability to deliver value to clients, and disinvestment in the construction industry (Eshofonie, 2008). Its presence on building projects has the potential to affect their performance.

Several studies had been conducted on the causes of claims, impacts of variation and claims management processes. However, there exists a gap on evolving strategies for managing contractual claims in the building industry. Thus, this paper is aimed at assessing the impact of contractual claims on the performance of public building projects, with a view to evolving strategies for effective management of contractual claims. Through establishing the effects of contractual claims on the performance of public project and to establish the strategies for managing contractual claims for better project performance in Nigeria.

LITERATURE REVIEW

Claims in Building Construction Contract

Claims on construction projects involve the stakeholders and is of key importance to make arrangement for uncertainties that may risk construction project. Each project has uncertainty linked with it; the degree of the particular risk will manifest itself on a given time in the project (Shapiro, 2007). Both the contractors and client know that claims cannot be avoided or solved easily as claims arise as a result of risk not well managed in construction project but when these risk are identified early and managed by appropriate methods, it will at least be controlled within some allowable range to avoid contractual claims (Nguyen, 2014). The most common type of contractual claims arises from express terms of a contract (Simon et al., 2007). Contractual claim may include any or all of the following: variation, fluctuation, loss and expense and extension of time (Simon et al., 2007; Reg, 2001). Nothing is more constant than contractual claim during the course of a construction project, despite the best efforts of all participants during the planning, implementation and administration of the contract, claims will almost certainly occur and can be damaging to any project, if not considered collectively by all the stakeholders involved in the construction projects (Arain and Pheng, 2005). Sunday (2010) asserts that the complexity of the construction industry due to different stakeholders' involvement makes it differ from other industries. This complexity gives rise mostly to unwanted situation like contractual claim with their attached effects, and the more the claims on a project, the greater the likelihood that they become time consuming and costly in construction projects (Mohamed, 2001). In building construction projects, claims may be initiated either by the contractor or the client, which are entitled to payment for work including any loss incurred by either party at the course of carrying out the project and may also be entitled to claim for additional time and or money (Murdoch and Hughes 2008). Contractors' claims may be described as requests for the reimbursement for additional costs resulting from certain employer or employer's agent's acts, which delay or disrupt the contractors progress, and which otherwise would not be recoverable under the contract (Cunningham, 2014). Though typical construction projects are not only contractual but complex and lengthy in nature, given these variables, emanating issues give rise to disputes amongst parties (Ojo, 2013). When commencing construction,

Construction Project Performance

The goal of any project is greatly influenced by success rate of performance. It is seen as “the degree of attaining certain undertakings” (Project Management Institute 2004). It relates with approved bounds objectives which forms the projects bound (Chitkara 2005). From the project management perception, it is about satisfying the requirements of the clients and the prospects of a project. Construction works are consistently unchanged, placing it consideration on core component of time, cost and quality (Cheung et al., 2004). Yates and Eskander (2002) view a successful work as the work being completed without delay, within estimate, scope and quality. Thomas et al. (2002), Naoum, et al. (2004), Josephson and Lindstrom (2007), identified several means for measuring project performance, many of which were directed towards cost, time and quality. Ling (2004) asserted that the performance of a construction work is multi-tasking which may include cost per unit, speed in construction and delivery and satisfying client need.

Strategies for Managing Contractual Claims for Better Project Performance

The success of managing any construction project cannot be economically attained forcefully, but requires the creation of environments that will inspire self-motivation and brings in play team spirit that is significant to effective project executions. Since construction sites are viewed as important arena that cash are raised or loss and is a place where significant opportunity for cultivating efficiency, productivity and quality (Jimoh, 2012). According to Yang et al. (2002), if only project stakeholders’ inputs, project characteristics, procurement system and other factors affecting performance can be carefully assessed and addressed during planning and implementation phase, these would lead to better productivity output which will in turn lead to timely completion, standard and minimized project cost. Also Sharafadeen et al. (2015) opined that project performance can be enhanced through the observation of the following: adequate and proper communication among parties involved in the contract, good contract management, good owner’s financing capacity for the payment of completed works, and avoidance of design modifications during construction and further observed that enough materials should be procured for the timely completion of the project, adequate provision of funds by building owners to consultants and contractor during construction, delays in contractor’s payment by owner should be avoided, avoid changes of design during construction and finally, identified that partial payments during construction should be avoided, adequate use of building professionals during construction and contractual management. Obiegbo (2012) opined that the following areas have to be taken very seriously in the management of construction project, if better performance is to be attained; project documents should be interpreted appropriately, the projects scope should be clearly understood, allocation of resources should be clearly done, provision of functional site layout should be ensured, implementation of the project should be planned and scheduled, having in mind quality control measures, statutory regulations should be complied with, corrective measures should be ensured in monitoring and controlling construction, processes, and engagement of well experienced professionals with well-defined roles. Maina (2012) also asserted that the type of construction contract agreed upon during procurement is to a large extent impacting on project performance and went further comparing the traditional type of contract and integrated contract, which shows that integrated contract enhances better project performance in terms of risk control, cost and time overrun which are the most important variables of the stakeholders.

RESEARCH METHODOLOGY

The study is based on government owned public building projects executed in Abuja, Nigeria from period of 2006 to 2016. Abuja houses several parastatals and agencies, with FCDA central to the development of public buildings. The public buildings considered were those executed by the Public Building Department of FCDA. A total of 120 building projects were

which falls within the study result. Memon et al. (2012) carried out a study in Malaysia and discovered an increase of 5 -10%, while Flyvbjerg (2002) carried out a study on cost overrun on global construction and found that 9 out of 10 projects had cost overrun of 50% - 100%. This shows that project overrunning its initial estimate is not only peculiar to the Nigerian construction industry, but the world at large. The National Institute of Building Science (2013) gave a deviation acceptable range of 2-3%. This implies that more needs to be done in managing cost overrun on public projects.

Table 3 Project Cost

S/N	Ref.	Project Title	Initial Contract Sum	Final Contract Sum	% Increase
1	4	Model Office complex	55,632,336.23	64,416,389.32	16%
2	5	Advanced E-Learning Centre	1,303,301,846.21	1,509,086,348.24	16%
3	6	library complex + offices	2,610,811,446.81	3,023,044,833.15	16%
4	8	female hostel	320,000,000.00	365,000,000.00	14%
5	10	Wasa Resettlement FCT. Lot D69 and A9.	64,152,441.15	77,953,075.36	22%
6	11	Residence of the speaker house of representative	924,701,193.16	1,064,014,331.47	15%
7	12 to 49	Mass Housing Resettlement projects FCT. (prototype)	1,356,435,579.14	1,636,518,417.10	21%

Source: Public building department.

Time Performance on Public Building

Table 4 presents the result of a paired sample t-test conducted to measure the significant difference in the final time and initial time of the public buildings. The output gave an average mean of 42.86 with t-value at 2.67 and p-value at 0.03 at 95% confidence level. The p-value shows that there is significant difference between the final construction time and initial estimated time. The Effect Size, eta-squared was calculated at 0.59. It indicates a large effect size, as it is above the 0.14 benchmark suggested by (Cohen 1998). This means that a large proportion of the variance of the final cost is predictable from the knowledge of the initial estimate.

Table 4: Paired Sample T-Test for Time of Claims on Public Buildings.

		Paired Samples Test						t	Df	Sig.
		Paired Differences				95% Confidence Interval of the Difference				
		Mean	Average Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Final time	71.7143	42.85714	42.44380	16.04225	3.60317	82.11111	2.672	6	.037
	Initial time	28.8571								

(2-tailed)

Further analysis in Table 5 shows that 44 completed building projects, all experienced time overrun ranging between 30% - 866%. This agrees with the study of Aghimien and Awodele (2017) who posited in their study that projects in Nigeria may experience time overrun in the range between 17% and 860%. Omoregie and Radford (2006) established that time performance in the construction industry is very challenging; due to projects not completed as scheduled and observed that time overrun is on the increase. Adeyinka and Yusuf (1997) observed 58% time overrun and 9 years later reported an increase of 188%. Nigeria and the world at large experiences projects being completed after schedule (Ogunsemi 2015).

Table 5: Project Time

S/N	Ref.	Project Title	Project Duration	Commencement Date	Completion Date	% Completion	Extension of Time	% of Delay
1	4	Model Office complex	12 months	May. 2011	May. 2013	100	12 months	100%
2	5	Advanced E-Learning Centre	3 years	Dec. 2010	Nov. 2014	100	11 months	30%
3	6	library complex + offices	3.5 years	Feb. 2010	May. 2015	100	29 months	69%
4	8	female hostel	52 weeks	May. 2015	Dec. 2016	100	28 weeks	53%
		Wasa Resettlement						

Source: Public Building Department

Strategies for Managing Contractual Claims

Table 6 present the mean ranking of the strategies for contractual claims management, they are adequate use of professionals should be employed, ensure adequate and proper communication during construction, avoid design modification, ensure control during planning and implementation phase and ensure suitable procurement method. 1st,2nd,3rd,4th,5th. These went in accordance with the studies of Sharafadeen (2015), Obiegbu (2012), they assert that the identified factors can greatly influence project performance either positively or negatively depending on their implementation. Also Maina (2012), in his study point out that integrated contract procurement enhances better project performance in terms of risk control, cost and time escalation.

Table 6 : Strategies for Managing Contractual Claims

Strategies for managing contractual claims	Client		consultant		Contractor		Overall	
	mean	Ran	Mea	ran	Mea	ran	Mea	Ran
	s	k	n	k	n	k	n	k
Adequate use of professionals should be employed	5	2	4.77	1	4.86	1	4.88	1
Ensure adequate and proper communication amongst party	4.86	5	4.74	2	4.66	3	4.75	2
Avoid design modification during construction	4.94	3	4.52	6	4.56	5	4.67	3
Ensure control during planning and implementation phase	4.71	9	4.71	3	4.6	4	4.67	4
Ensure suitable procurement method	5	1	4.45	8	4.53	6	4.66	5
Good contract management	4.71	8	4.57	5	4.66	2	4.65	6
Good client financial capability	4.71	7	4.48	7	4.46	10	4.55	7
Project document should be interpreted correctly	4.43	14	4.68	4	4.53	8	4.55	8
Establish quality control measures	4.77	6	4.37	10	4.46	9	4.53	9
Resources should be correctly determined and allocated	4.29	15	4.4	9	4.53	7	4.41	10
Built good team spirit	4.71	10	4.34	11	4	13	4.35	11
Enough materials should be provided	4.6	12	4.28	13	4.13	12	4.34	12
Functional site layout must be assessed and provided	4.43	13	4.31	12	4.2	11	4.31	13
Encourage self- motivation	4.71	11	3.84	15	3.6	15	4.05	14
Partial payment during construction should be avoided	4.89	4	3.88	14	3.86	14	4.21	15

Comparing perceptions of professionals on the Strategies of contractual claims

The findings from table 7 shows the Spearman's rank correlation revealed a perfect positive correlation among the different groups of respondents. This indicates that the respondents have the same view as regard the strategies for managing contractual claims.

Table 7: correlation test Comparing perceptions of professionals on the Strategies

Respondents	$Rho(P_{cal}) = 1 - \frac{6x(\sum di^2)}{N x (N^2 - 1)}$	Relationship
Client versus Consultant	0.980	Strong
Consultant versus Contractor	0.995	Strong
Client versus Contractor	0.972	Strong

Source: Researchers Analysis (2017)

Factor analysis reporting the three cluster strategies of contractual claims on Table 8

The questionnaire was tested for reliability through Cronbach coefficient alpha (α). The test results indicated the Cronbach coefficient alpha value for the strategies for managing contractual claims is =0.948. This exceeds the cut-off of 0.70 (Zikmund, 2009; Ogwueleka, 2011) indicating that the variable constructs were highly reliable and free from random error. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was tested with the data for the strategies for managing contractual claims, returning a value of sampling adequacy 0.955. This indicates that the constructs are highly correlated and suitable for factor analysis.

Effective Coordination: Ten items were loaded onto this factor, as presented in table 8, with a variance of 35.015%. The strategies identified, agree with the study of Sharafadeen et al (2015), Jimoh (2012) and Yng et al (2002) who itemize that the above findings will help in managing contractual claims and Maina (2012), highlights that integrated contract procurement enhances better project performance in terms of risk control, cost and time escalation.

Effective Communication: Three items were loaded onto this factor, as presented in table 8, with a variance of 22.966%. This agree with the study of Obiegbu (2012), Yng et al (2002) and Sharafadeen et al (2015) who pin point that the above strategies will help curtail claims and promote project performance.

Effective Resource Utilization: Two items were loaded onto this factor, with a variance of 20.929%. The study of Obiegbu (2012) agrees with the submission.

TABLE 8: Strategies Cluster for contractual claims management.

Cluster Factor Groupings Factor	Factor Loadings	Eigen Values	% of Variance	Mean	Communality extraction
Effective Coordination		9.4	35.015		
Adequate use of professionals should be employed	0.724			4.88	0.817
Avoid design modification during construction	0.778			4.67	0.712
Ensure suitable procurement method	0.784			4.66	0.91
Good contract management	0.582			4.65	0.781
Good client financial capability	0.597			4.55	0.758
Establish quality control measures	0.645			4.53	0.808
Built good team spirit	0.602			4.35	0.826
Enough materials should be provided	0.531			4.34	0.575
Partial payment during construction should be avoided	0.849			4.21	0.862
Encourage self- motivation	0.739			4.05	0.584
Effective Communication		1.3	22.966		
Ensure adequate and proper communication amongst party	0.743			4.75	0.885
Ensure control during planning and implementation phase	0.861			4.67	0.881
Project document should be interpreted correctly	0.785			4.55	0.752
Effective Resource Utilization		1.1	20.929		
Resources should be correctly determined and allocated	0.902			4.41	0.803
Functional site layout must be assessed and provided	0.670			4.31	0.883
			78.91%		

Table 9 present average factor loading for the strategies of managing contractual claims, the grouped strategies should be collectively assessed for better public project performance. The strategies are ranked in their order of importance, it shows that Effective Communication Cluster with average factor loading of 4.60 is very crucial to the attainment of the study goal as such due consideration should be observed. Effective Coordination and Utilization of Resources Clusters with average factor loadings of 4.50 and 4.30 should not be over looked as collective implementation of the strategies will yield an effective time and cost performance in public building projects.

Table 9: Average Factor Loading

Strategies (Clusters)	Average Factor Loading	Rank
Effective Communication	4.60	1
Effective Coordination	4.50	2
Effective Utilization of Resources	4.30	3

CONCLUSION AND RECOMMENDATIONS

The study assessed the impact of contractual claims on the performance of public building projects with the view to evolving strategies for effective management of contractual claims in public building construction projects. The study concluded that contractual claims impact public projects in terms of cost and time performance, with cost increase averaging 16.68% and time increase of 31% - 866%.

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EFFECT OF CONTRACTUAL RISKS ON BUILDING CONTRACTS IN ABUJA, NIGERIA

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Construction project activities are carried out by different parties and each of the activities has its risk which results in cumulated associated risk for the project under different circumstances. They are mostly influence to contractual risks which occur as a function of contract provisions and clauses. This study aims to examine the effect of contractual risks on building contracts with a view to suggesting strategies for minimizing the likelihood of occurrence of the risks factors. In order to achieve this aim, 35 potential risk factors were identified from standard form of contracts. Data were collected through questionnaires distributed to consulting and construction firms in Abuja. Analysis of data was using Mean Item Score and T- test. The observed P value of 0.458 was greater than 0.05. Findings revealed that there is no significant difference between the perception of consulting and construction firms on the level of awareness of the contractual risk factors. It was concluded that Contractor and consultant have adequate knowledge of risk and their sources in building contract. The study however recommended that risk management should be integrated into project management processes to improve building contract in Abuja.

Key words: Building contract, Contractual risks, Potential risk, Risk management,

INTRODUCTION

Risk is inherent in all human endeavors and construction projects are no exception as they involve activities that are prone to different type of risks (Ogunsanmi, *et al.* 2011). When comparing construction industry to other industries, it is subject to risk and uncertainty due to the unique features of construction activities (Smith, 2003). Project activities are also carried out by different parties and each of the activities has its own risk, which results in cumulated associated risk for the project (Al-Sobie, 2005). Haseeb *et al.* (2011) opined that risks affect construction sector negatively and focusing on risk reduction measures is important. However, it has been criticized for its expensive and wasteful nature, low productivity, quality problem and project delay. The reasons for all these are as varied, diverse and complex as the products of this industry itself. The process of developing a project from initial investment appraisal to completion and into use is complex (Flanagan and Norman, 2003).

Project Management Institute (PMI) (2012) and Association for Project Management (APM) (2012), defines risk as an uncertain event or condition that, if it occurs will have either a positive or negative effect on the objective, which are usually cost, time, scope and quality project.

Previous research on contractual risks in construction projects focused on risks identification, impact of risks on project delivery, and risks management strategies in public private partnership projects (Ahmad *et al.*, 2007; visser and joubert, 2008; Makui *et al.* 2009; Ehsan *et al.* 2010; Ojo, 2010; Fong, 1987; Thomas and Bone, 2002; Al-Bahar and Crandell, 1999; Raftery, 1999).

It has become imperative to critically address the factors that influence contractual risks on Building contract in Abuja, Nigeria in order to ascertain not just their sources but also their degree of intensity or severity. These research works however failed to identify factors that affect contractual risks on building contracts and there is little understanding of the implication of these factors as they influence contractual relationship between parties to contract as it relates to their obligations and duties within the confines of contracts. Hence, the focus of the study is to examine the effect of contractual risks on building contracts with a view to suggesting strategies for minimizing likelihood of occurrence of the risks factors. In order to achieve this aim, 35 potential risk factors were identified from standard form of contracts and objective is to compare the level of awareness of various contractual risks among consulting and construction firms in Abuja. The hypothesis of the study which is in line with the objectives states that: the perception of consulting and construction firms on the level of awareness of contractual risk factors does not differ significantly.

Risks in Construction Projects

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

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

The development of a construction project is fraught with enormous risks; this is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, statutory or regulatory protocols and other intrinsic and extrinsic constraints. The general consensus in current literature in the field of risk management incorporates four core steps in the process of risk management (Thomas and Bone, 2002; Al-Bahar and Crandell, 1999; Raftery, 1999). These are:

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

Studies carried out by Akintoye and McLeod (1997), Olatunji (2007) Onukwuba *et al.* (2009) and Tang (2009) identified some risks contractors are commonly exposed to while executing contracts. These risks are grouped into; Contractual, Political, Performance, Financial, Technical and Environmental risks.

Of the above mentioned classifications, contractual risks have been recognized from literature to have the most adverse consequences on the successful completion of construction. Akintoye and McLeod (1997) revealed that “more premiums are applied on contractual risk than other forms of risk”, because Contractual risks are associated with flaws in documents, inappropriate documents, or improper contractual relationship. The consequences of this risk are claims and dispute, disruption of work, stoppages of work, lack of co-ordination, delays and inflated costs (Bufaied, 1987). Contractual risks are also found to be the most encountered by contractors from the study of Olatunji (2007). He found out that “Contractors are the most likely to be exposed to contractual risks, followed by the

Table 1 Potential Risk Factors and their clauses.

Risk Factor No.	Potential Risk Factors	JCT 2005 Clause	SFBC 1990 Clause
RF 1	Delay in obtaining access to site	2.4,2.5,2.6,2.29.5	21.1
RF 2	Scope of work not properly defined	2.15,2.16	3.4
RF 3	Inadequate or insufficient site information	2.12	3.1,3.2,3,4
RF 4	Unfair or unrealizable program of work	2.17	1.3
RF 5	Misinterpretation of contract conditions	2.12	12
RF 6	Delay in setting out of the works	2.10	5
RF 7	Defective/incorrect design	2.14,2.15,2.20,2.19	12
RF 8	Changes in the design	2.12	6
RF 9	Discrepancies in drawings and specifications	2.16, 2.15,2.20	3.31
RF 10	Drawings and documents are not issued in time	2.9,2.12	3.2
RF 11	Increase to the scope of work	2.7,2.17	6.4
RF 12	Scope of work differs from contract	2.7,3.18	12
RF 13	Adjustment to the completion time of project	2.28,2.29	23
RF 14	Inaccessibility to necessary contract documents	2.8,2.9 3.1,3.3,	3.4
RF 15	Discrepancies in the Bill of Quantities	2.13	12
RF 16	Contract documents used other than the purpose of the contract	2.4.12	3.7
RF 17	Interference in the progress of work	2.33	16.1
RF 18	Imposing of subcontractors	3.15	27.1
RF 19	Imposing of suppliers	3.9	28.1
RF 20	Assigning part of the work without consent	2.33,7.1 16.1,	17.1
RF 21	Third party nomination without consent	3.3	27.1
RF 22	Delay in resolving disputes.	9.2	35.1
RF 23	Delaying in issuing and responding to instruction	2.17,2.27	2.3.1,2.3.2,1.2
RF 24	Verbal instructions not backed by writing	3.12,3.13	2.3
RF 25	Delay in making interim payment	4.11,4.13	30.1
RF 26	Delay in issuing interim certificate	2.30,4.9	30.1.1
RF 27	Failure to honour claims	5.5	
RF 28	Delay in making interim valuations	4.11	30.11
RF 29	Delay in issuing final certificate	4.15,1.10	15.1,30.5
RF 30	Delay in making final payment	4.15	30.6
RF 31	Addition of unreasonable taxes and charges to contract sum	4.6	4.2
RF 32	Failure to write instruction regarding variation	5.2.1	11.3
RF 33	Failure to reimburse for direct loss and expenses	4.23	11.8,24
RF 34	Determination of contract	8.2	26.1
RF 35	Retention money not returned	4.10,4.18,4.20	16.1.6

Source: JCT 2005 & SFBC 1990

Stakeholders Perception on Contractual Risk

According to Othman and Harinarain (2011), as soon as the client and the contractor have signed a contract they have taken on board risks. Their awareness of the risk, and the steps they have taken to minimize their share of the risk, will determine the likelihood of a problem occurring. Risks are spread through the whole project life cycle and many risks occur at more than one phase, with the construction stage as the most risky phase. It is concluded that clients from the feasibility phase onwards to address potential risks in time, and contractors with robust construction and management knowledge must be employed early to make sound preparation for carrying out safe, efficient and quality construction activities (Zou *et al.* 2006). And risks are inherent in construction production components which affect production cost and overall project cost (Al-Momani, 2000). Project activities consume resources during production or execution and the successes of any project is attributed to the adequate provision of the necessary resources and are major considerations the contractors put first during pricing (Warsame, 2006; Onukwube *et al.* 2009; Chitkara, 2008; Rahman *et al.* 2013).

Production cost constitutes a major aspect of the overall construction project cost. Bertelsen and Nielsen (1997) assert that most cost in construction is experienced in the execution phase with about 85 percent is consumed while the remaining 15 percent goes for management and supervision. Finding from Ibrahim *et al.* (2010) and Skoyles (2000) revealed that materials account for 50-65% of the total project cost in construction projects while Shashank *et al.*

The study of Emmanuel and Anjiba (2015) shows that there is no significant difference between the perception of contractors and consultants concerning the risk factors in building projects, which admit a high level of agreement between the perception of contractors and consultants. Contractors and Consultants must work cooperatively from the feasibility stage onwards to address potential risk in time, and contractors' robust construction and management knowledge must be employed early to make sound preparation for delivery out efficient and quality construction program (Luka and Ibrahim 2015).

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

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

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

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

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

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

capital territory. The rationale for this selection is due to their (QS) involvement in the preparation of valuation and payment certificate. Abuja was selected for this study because it is the administrative headquarters of Nigerian; it is one of the metropolitan cities in Nigeria that has the highest population of built environment professionals and has many ongoing construction projects.

In order to guarantee equal representation for each of the identified groups/strata in the population, stratified random sampling method was adopted. The respondents were first categorized into different strata before they were selected and randomly sampled accordingly.

It is clear from Table 1 that the sample frame for the study included: 81 Quantity surveying firms and 79 construction firms making up a total of 160 respondents. These value (160) was subjected to Dorothy (2008) sample size computation. The value was reduced to a minimum of 81. 10% confidence interval was selected for the study, showing that 81 is the minimum number of questionnaires that can be administered within the population.

Table 1: Sample frame of the study

Respondent	Total number of questionnaire administered	Total number of questionnaire returned
Quantity surveying firms	81	41
Contractors (FOCI Registered)	79	40
Total	160	81

Source: NIQS & FOCI (2016).

The collected data were analysed by using the descriptive method (Mean Item Score). Data processing was done with the aid of Statistical Package for social sciences (SPSS) software. The MIS was used to determine weighted mean average of the identified measured and the premise of decision for the ranking is that the factor with the highest MIS is ranked 1st and others in such subsequent descending order. In order to determine the statistical significant differences between mean of various group of respondents (Quantity Surveyors), the T-TEST was used to analyse the differences. The level attached to the possible effects on Level of awareness of various contractual risks among consulting and construction firms.

RESULTS AND DISCUSIONS

Perception of Contractual Risks Factors between Consulting and Construction Firms

The study compare the perception of consultant and construction firms on the level of awareness of various contractual risks on the building contract. A total of 35 risk factors were identified from literature as the common factors that influence contractual risks on building contract. The consulting and construction firms were asked to rank these factors according to the extent they perceived the influence of the factors on the level of awareness. The mean and the rank of each factor were calculated based on the construction and consulting firm's perceptions in Abuja and the result of the comparison is shown in Table 2.

The result of the analysis shown in Table 2. Finding revealed that based on the consulting firm perceptions, Verbal instructions not backed by writing was ranked highest with the mean score of 4.475, followed by Assigning part of the work without consent and Imposing of subcontractors with mean scores of 4.400 and 4.225 respectively. Delaying in issuing and responding to instruction, Delay in interim payment and Delay in issuing interim certificate were ranked next with mean scores of 4.200, 4.150 and 4.125 respectively, while Drawings and documents are not issued on time, Increase in the scope of work and Delay in obtaining access to site ranked seventh, eighth and ninth with mean scores of 4.100, 4.050 and 3.975 respectively. Contract documents used other than the purpose of the contract and Delay in final payment were the factors ranked least by consulting firm with the same mean score of 2.725 but difference standard deviation respectively. This indicates that these factors do not

In order to compare the perceptions of construction firm in regard to level of awareness of contractual risk on building contracts, 35 risk factors were also identified from extensive literature were ranked by the construction firm based on their perceptions of the level of awareness of contractual risks on building contract. The result of the analysis is presented in Table 4.11. The results revealed that Delay in final payment was ranked the highest factor influence contractual risks as per level of awareness with mean score of 4.600, followed by Delay in issuing final certificate with mean score of 4.550, Delay in issuing interim certificate and Discrepancies in drawings and specifications were ranked 3th and 4th with mean score of 4.525 and 4.475 respectively. The factors ranked 7th and 8th were Discrepancies in the Bill of Quantities and Drawings and documents are not issued on time with mean score of 4.68 and 4.225 respectively. The factor ranked least among the factors influence contractual risks as per level of awareness as identified in this study based on construction firm perception is Unfair or unrealizable program of work with mean score of 2.500. Other factors ranked by the construction firm based on their perceptions are between these extremes as shown in Table 2.0. The results from Table 4.11 also indicate that the construction firm perceived Delay in final payment, Delay in issuing final certificate and Delay in issuing interim certificate. The results also informed that when the financial need of the project is not aligned with the project milestone, it can lead to stoppage which has both cost and time implications on the project.

Table 2: Perception of Contractual Risks Factors between Consulting and Construction Firms

S/NO	Risk Factors	Consulting Firms			Construction Firms		
		Mean Score	StDev	Rank	Mean Score	StDev	Rank
1	Verbal instructions not backed by writing	4.475	0.632	1 st	3.975	0.821	12 th
2	Assigning part of the work without consent	4.400	0.860	2 nd	2.725	0.806	32 nd
3	Imposing of subcontractors	4.225	0.851	3 rd	2.750	1.356	31 st
4	Delaying in issuing and responding to instruction	4.200	0.748	4 th	4.275	0.547	6 th
5	Delay in interim payment	4.150	1.014	5 th	4.475	0.499	5 th
6	Delay in issuing interim certificate	4.125	0.871	6 th	4.525	0.632	3 rd
7	Drawings and documents are not issued on time	4.100	0.735	7 th	4.225	0.418	8 th
8	Increase in the scope of work	4.050	0.773	8 th	3.850	0.691	16 th
9	Delay in obtaining access to site	3.975	0.689	9 th	3.025	1.351	25 th
10	Delay in resolving disputes.	3.800	1.030	10 th	3.900	0.663	14 th
11	Retention money not returned	3.800	0.843	11 th	2.775	0.908	30 th
12	Delay in making interim valuations	3.675	0.818	12 th	4.125	0.599	9 th
13	Adjustment to the completion time of project	3.525	1.000	13 th	3.425	1.138	22 nd
14	Imposing of suppliers	3.475	1.024	14 th	2.550	1.284	34 th
15	Misinterpretation of contract conditions	3.475	0.866	15 th	3.075	0.905	24 th
16	Defective/incorrect design	3.475	0.632	16 th	3.850	0.792	15 th
17	Scope of work not properly defined	3.450	1.264	17 th	2.825	1.430	29 th
18	Discrepancies in drawings and specifications	3.425	0.771	18 th	4.475	0.707	4 th
19	Inadequate or insufficient site information	3.375	1.177	19 th	2.850	0.792	28 th
20	Interference in the progress of work	3.325	0.848	20 th	3.500	1.025	21 st
21	Delay in issuing final certificate	3.250	0.859	21 st	4.550	0.589	2 nd
22	Failure to honour claims	3.225	1.060	22 nd	3.925	0.848	13 th
23	Discrepancies in the Bill of Quantities	3.225	0.935	23 rd	4.275	0.447	7 th
24	Failure to write instruction regarding variation	3.200	0.678	24 th	3.550	1.139	20 th
25	Determination of contract	3.175	1.046	25 th	3.700	0.954	18 th
26	Scope of work differ from contract	3.150	1.152	26 th	4.025	0.689	11 th
27	Third party nomination without consent	3.150	0.937	27 th	2.600	1.158	33 rd
28	Failure to reimburse for direct loss and expenses	3.125	1.100	28 th	4.050	0.740	10 th
29	Unfair or unrealizable program of work	2.975	0.851	29 th	2.500	1.072	35 th
30	Addition of unreasonable taxes and charges to contract sum	2.925	0.721	30 th	2.900	0.539	27 th

Comparison of Perception of Contractual Risks Factors between Consulting and Construction Firms on the Level of Awareness

The result of the T – test for the comparison of perception of contractual risks factors between consulting and construction firms is presented in Table 2. The discussion of this result thereafter follows.

In the T - test presented in Table 2, it was observed that there exists a non-statistically significant difference between the perception of consulting and construction firms on the level of awareness of 35 contractual risk factors. The mean values observed for the perception of the consulting firms is 3.4771 while that of the construction firms is 3.5829. This also implies that the construction firms are better aware of the contractual risk factors than the consulting firms. The observed T calculated value of 0.747 was greater than the T tabulated value of 1.98, while the observed P value of 0.458 was greater than 0.05. The null hypothesis, which states that the perception of consulting and construction firms on the level of awareness of contractual risk factors does not differ significantly, was therefore accepted.

Table 3: T-Test Result on the Comparison of Perception of Contractual Risks Factors between Consulting and Construction Firms

Analys is No.	Variables Tested		Observations				Inferences		
	X ₁	X ₂	Mean Values	T _{cal}	T _{tab}	P _{value}	Remark	Action on H ₀	
1	Consulting Firm	Construction Firm	X ₁ = 3.4771 X ₂ = 3.5829	0.74	7	1.98	0.458	NSD	Accepte d

Source: Researcher's Analysis of Data (2017)

DISCUSSION OF RESULT

The result from this study on comparison of Contractual Risks Factors between Consulting and Construction Firms on level of awareness. Finding revealed that based on the consulting firm perceptions, Verbal instructions not backed by writing was ranked highest with the mean score of 4.475, followed by Assigning part of the work without consent and Imposing of subcontractors with mean scores of 4.400 and 4.225 respectively. Delaying in issuing and responding to instruction, Delay in interim payment and Delay in issuing interim certificate were ranked next with mean scores of 4.200, 4.150 and 4.125 respectively. This shows that contractors perceived Verbal instructions not backed by writing and Assigning part of the work without consent as major factors influence contractual risk on level of awareness which may eventually result to dispute, poor quality of work, delay and disruption of work.

This result agrees with the findings of El-razak *et al.* (2014) and Wiguma *et al.* (2005). El-razak *et al.* (2014) opined that Accidents & theft, Extent of float in contract schedule, Receiving interim certificates, Retention, Delays in payments from client, Provision for fluctuation payments, Estimating error, Provision for interim certificate, Material delay, Agreeing interim valuations on site, Delay in agreeing variation, Delay in settling claims are the critical factors that influence contractual risk in Egypt.

Wiguma *et al.* (2005) stressed that Unforeseen site ground condition, Weather condition, Difficult in obtaining permits and ordinances, Changes in government actions, High inflation/ increased price, Delayed payments on contract, High interest rate, Defective design, Design change by owner, Inadequately compensated variation order, Defective construction work, Low labour and equipment productivity, Low labour and equipment productivity are the critical factors that influence contractual risks in united kingdom. Although the studies used Relative Important Index (RII).

Based on the T – test, it was observed that there is no statistically significant difference between the perception of consulting and construction firms on the level of awareness of 35 contractual risk factors. The mean values observed for the perception of the consulting firms is 3.4771 while that of the construction firms is 3.5829. This also implies that the construction firms are better aware of the contractual risk factors than the consulting firms. The observed T calculated value of 0.747 was greater than the T tabulated value of 1.98

between the perception of contractors and consultants. The mean values observed for the perception of the consultant is 60.72 while that of the contractors is 64.28. This also implies that the contractors has high level of agreement than the consultant. The result of the Mann Whitney U test shows that a p-value of $0.581 > 0.05$ implies acceptance.

CONCLUSIONS AND RECOMMENDATION

The study aimed to examine the influence of contractual risks on building contracts in Abuja, Nigeria. However, the study concluded that contractual risks has adverse consequences on the successful completion of projects. Finding revealed that based on the consulting firm perceptions, Verbal instructions not backed by writing was ranked highest with the mean score of 4.475, followed by Assigning part of the work without consent and Imposing of subcontractors with mean scores of 4.400 and 4.225 respectively. Delaying in issuing and responding to instruction, Delay in interim payment and Delay in issuing interim certificate were ranked next with mean scores of 4.200, 4.150 and 4.125 respectively. This shows that contractors perceived Verbal instructions not backed by writing and Assigning part of the work without consent as major factors influence contractual risk on level of awareness which may eventually result to dispute, poor quality of work, delay and disruption of work.

In order to compare the perceptions of construction firm in regard to level of awareness of contractual risk on building contracts. The results also revealed that Delay in final payment was ranked the highest factor influence contractual risks as per level of awareness with mean score of 4.600, followed by Delay in issuing final certificate with mean score of 4.550, Delay in issuing interim certificate and Discrepancies in drawings and specifications were ranked 3th and 4th with mean score of 4.525 and 4.475 respectively. The factors ranked 7th and 8th were Discrepancies in the Bill of Quantities and Drawings and documents are not issued on time with mean score of 4.68 and 4.225 respectively. The results also informed that when the financial need of the project is not aligned with the project milestone, it can lead to stoppage which has both cost and time implications on the project.

Findings also revealed that there is no significant difference between the perception of consulting and construction firms on the level of awareness of the contractual risk factors. It was concluded that Contractor and consultant have adequate knowledge of risk and their sources in building contract. The study however recommended that risk management should be integrated into project management processes to improve building contract in Abuja.

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ASSESSMENT OF THE COST IMPLICATION OF REVIVING ABANDONED PUBLIC PROJECTS IN ABUJA, NIGERIA

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The issue of abandoned projects have remained a teething and perennial problem in most developing countries and Nigeria has not been spared the agony associated with this development. In addition to abandoned project suffering from time and cost overruns, the people are denied the benefits of access to basic services. Thus, this study assessed the cost implication of reviving abandoned public projects with a view to proffering possible solutions towards reducing the issue of project abandonment. The study adopted observation, interview and questionnaire survey approach, in which quantitative data were gathered from in-house construction participants from FCDA and contractors to FCDA within the study area, through the use of structured questionnaire. Percentile, Relative Important Index (RII), Pearson Product-Moment Correlation Coefficient, T-Test and Mann-Whitney U Test were used in the analysis of data gathered. The study reveals that there is a significant statistical relationship between the initial contract sum and the revised contract sum with a mean value of 169,608,856.96, t-value of 2.813, 24, at 95% confidence level. Also, with an effect size of 0.24, it was concluded that there is a larger portion of variance between the initial contract sum and the revised contract sum of abandoned public projects. A significant relationship was observed between the period of project abandonment and the additional cost incurred in reviving them, and average of 50% original contract sum is required depending on the period of abandonment to revive abandoned project. Also, to reduce the incidence of project abandonment; initiating only projects which can be completed with the available resources, ensuring accountability, transparency, honesty and integrity in selecting project participants, creating policies that will ensure continuity of construction works after the exist of one government, and accurate estimation of quantities and cost for projects were considered the most important measures. The study recommended that Government should create policies that will ensure continuity of projects after exit of initiating government; and such policies should be enforceable.

Keywords: *Project abandonment, cost implication, public construction project, Abuja*

INTRODUCTION

The construction industry plays an important role in the economy, and the activities of the industry are also vital to the achievement of national socio-economic development goals of providing shelter, infrastructure and employment. In Nigeria, Aibinu and Jagboro (2002) observed that the construction industry continues to occupy an important position in the nation's economy even though it contributes less than the manufacturing or other service industries. Ayodele and Alabi (2011) opined that a healthy economy usually experiences an increase in construction activities. Therefore, the successful delivery of the products of this industry is crucial for national development. Unfortunately, most construction projects delivered within the construction industry are delivered above budget and behind scheduled, while some are even out rightly abandoned (Ewa, 2013; Ogunsemi and Jagboro, 2006; Olapade and Anthony, 2012). According to Dahlan (2001) an abandoned project refers to a project in which the construction job has been delayed, even though planning consent has been approved. Olapade and Anthony (2012) further stated that an abandoned project is a project in which the client refuses to provide maintenance and working services to a building.
