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Impact of Selected Project Characteristics on Construction Claims in Niger State, Nigeria

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***Abstract*:** Over the last three decades, the construction industry in the developing countries has experienced continuous increase in claims, liability exposures and disputes, along with increasing difficulty in reaching reasonable dispute settlements. The research aimed to investigate the impact of project characteristics on construction claims in Niger State. It was hypothesized that there is no statistically significant difference between size of a project or the project duration and claim amount in building projects in Niger State. The review of literature revealed five main causes of claims. The study used both quantitative and qualitative methods through administration of questionnaires and the analysis of secondary data such as the estimated project duration, and actual completion dates of 196 projects using descriptive and inferential statistics. The research revealed that unrealistic time targets, and poor communication, are two of the five major causes of claims. The study revealed that duration of project is the characteristic with the most influence in Niger State, and that both size and duration of a project have the tendency of increasing or decreasing simultaneously. It was recommended among others, that key players in construction projects should ensure that sufficient float is built into the schedule so that when delays do occur, they are absorbed into the contract and are less likely to become critical to the overall construction schedule.

***Keywords*:** Claims, duration, project characteristics, project complexity,

1. Introduction

The construction industry is one of the sectors that provide crucial ingredients for the development of an economy (Leibing, 2001). For example, according to the Nigeria Bureau of Statistics, the construction industry in Nigeria accounts for 3.05 % of the Gross Domestic Product (GDP) and also provide employment opportunities for over 11 million Nigerians (NBS, 2015). Despite its importance, in the past three decades, the construction industry in the developing countries has experienced increase in claims, liability exposures and disputes, along with increasing difficulty in reaching reasonable dispute settlements in an effective, economical and timely manner (Barrie and Paulson, 1992; Semple, 1994; Ibbs, 1985; Glenn and Keoki, 2005; Diekmann and Nelson, 1985; Jagboro and Aibinu, 2002; Ashworth, 2007; Levin, 2008; Doloi, Sawhney, Iyer, and Rentala, 2012; Yau and Yang, 2012; Pourrostam and Ismail, 2011; Vidalis, and Najafi, 2002; Ajanlekoko, 1987; Odeyinka and Yusuf, 1997; Aibinu and Jagboro 2002; Frimpong, Oluwoye and Crawford 2003). The existence of claim could result in dispute between the parties, arbitration, litigation or total abandonment of a project (Jagboro and Aibinu, 2002).

Ajanlekoko (1987) observed while investigating ways of controlling project cost in the Nigerian construction industry, that the performance of the construction industry time-wise is poor. Similarly, Frimpong et al. (2003) observed that 33 (70%) out of 47 projects in Ghana experienced delay. Odeyinka and Yusuf (1997) further confirmed that seven out of ten projects surveyed in Nigeria suffered delays in their execution. Semple (1994) opined that in Canada, more than half of the claims constituted an additional cost of at least 30% of the original contract value based on their survey of construction projects. In addition, about a third of claims amounted to at least 60% of the original contract value. In some cases, the claim amounts were almost as high as the original contract value. Onyango (1993) found that 52% of all UK construction projects ended up with a claim of some type.

Claims can be frequent in large projects and can cause budgetary difficulties to employers and loss of liquidity to contractors (Bassioni *et al.,* 2012). According to Thomas (2001), many projects were subjected to claims as a result of extension of the contract period, additional payment proclaimed by contractor for any additional work that is out of the initial scope of the projects.

Akinsola *et al.* (1997) claimed that construction projects are generally unique, accommodating different designs, sizes and construction methods. Each project has different characteristics influencing how the project is initiated, designed, organized, managed and the final outcome of the finished product. In recent years, the number of claims within the construction industry continues to increase as a result of increase in construction cost, the continuous fall of naira value compared to the United States dollar, leading to increase in the price of building materials, high competition among

contractors, increased project complexity and risk, and reduced profit margin to contractors (Ho and Liu, 2004). Other project characteristics considered to be important include type of project (housing estate, dam, road); special weather condition and project lifespan among others.

Revay (1990) defined construction contract claims as request or application for something or notification of presumed entitlement to which the contractor considers, believes or contends. Levin (2008) also defined claim as a demand or assertion by one of the contractual parties who seek, as a matter of right, adjustment or interpretation of contract terms, payment of money, extension of time, or any other relief with respect to the terms of the contract. Although, refusal by the owner to recognize the claim does not ordinarily authorize the contractor to discontinue or stop field operations, Clough, Glenn and Keoki (2007) submitted that almost any extra cost or time required of the contractor by the action or inaction of the owner or owner's agent can be a valid basis for claim against the owner.

Delays are incidents that impact a project's progress and postpone project activities. Delay-causing incidents may include weather delays, unavailability of resources, design delays among others. Ibbs (1985) observed that what was found to be true about larger projects was that they were susceptible to more serious disputes and claims. This is not surprising, since they generally had more expensive and sophisticated products, which more often were targets of disputes.

A project may be regarded as a successful endeavour when it satisfies the cost, time, quality and performance specification attached to it. However, it is not uncommon to see a construction project failing to achieve its goal within the specified cost, time and quality (Nega, 2008). According to Enekwechi (1992), out of a total utility of 100%, the client places the following importance upon the three functional aspects as follows; quality 45%, price 35% and time 20%.

Many researchers have defined various characteristics affecting project performance. (Favie and Maas, 2008; Ling, 2004; Dissanayaka and Kumarawamy, 1999; Tukel and Rom, 1998; Baccarini, 1996; Bennett, 1991; Naoum, 1989;). For example, Favie and Maas (2008) examined 43 project characteristics that influence project performance as identified by previous authors and ranked them according to their importance. The study indicated that complexity of project (special ground condition or technological requirement) was ranked as the most important project characteristic. Size of the project (value, number of stories, kilometre of roads) was considered as the second most important project characteristic, project environment as the third, and the duration of project ranked 4th in the list. Project density was considered the least important project characteristics.

The aim of this research work is to examine the impact of project characteristics on construction claims in Niger State, Nigeria, so as to possibly reduce or avert claims. Objectives of the study are as follows: (i.) To identify the major causes of claims in public building projects in Niger State, Nigeria; (ii.) To examine the frequency of construction claims in public building

projects in Niger State, (iii.) To examine the impact of selected project characteristics on claims in Niger State, and (iv.) To determine, the relationship between value of claim and selected project characteristics of public building projects. There are two research hypotheses developed for the study. (1.) **Ho_1**:There is no statistically significant difference between size of a project and claim amount in building projects in Niger State. (2.) **Ho_2**:There is no statistically significant difference between duration of a project and claim amount in building projects in Niger State.

The scope of this research work covers building construction projects executed between 2007 and 2015 by the Niger State government in the three senatorial zones, in various ministries, departments, and agencies. The project characteristics considered include (1.) complexity of the project, (2.) size of the project, and (3.) duration of the project.

Some of the difficulties experienced in the course of collecting historical cost data for this study was the lack of proper documentation of records by some of the organizations. Also in the course of administration of questionnaires, several challenges were encountered which include misplacement of questionnaires by some respondents, refusal of respondents to fill the questionnaires and cases of absenteeism of respondents in the office or site.

2. Literature Review

2a. Project Characteristics

Ojo (2012) conducted a research to investigate the influence of project characteristics on the risk associated with client's cash flow prediction. The research focused on five most significant project characteristics which include the following: (1.) client type, (2.) project type, (3.) project duration, (4.) project value, and (5.) procurement method. The result showed that there exists significant relationship between project value and individual risk factors; and between project value and reduced risk factors (nature of the project, tendering procedure related factors). Also, project type and procurement method had significant influence on valuation assessment as a risk factor when forecasting cash flow by the clients.

2a(1). Complexity of project

There is no universally accepted definition of the term project complexity in the construction industry. Wikipedia dictionary simply defines complexity as having a large number of interacting parts. According to Holland (1985), liability claims have become more common due to the increase in the complexity of building. According to Baccarini, (1996) project management activities such as planning, coordination, goals determination, organizational form, project resources evaluation, personnel management, and project cost and time are all affected by the level of complexity involved in a project. Here the problem is determining who is at fault when a failure occurs.

2a(2). The Size of Project

Diekmann and Nelson (1985) observed that there was a consistent relationship between the sum of claim settlement and contract size. Also, there was a predictable increase in the size of individuals claim with increasing project size. They further submitted that

claims on small projects averaged $5,000 each claims on medium sized projects averaged $16,000 each and claim, on large projects $26,000 each. Diekmann and Nelson (1985) opined that the bigger the project the more opportunities for modification due to shear scope of the project. In their study, the projects were divided into three categories; large projects (greater than $5,000,000), medium sized projects, ($1,000,000 - 5,000,000) and smaller projects (less than $1,000,000).

Achuenu (1997) observed that the bigger the size of projects the longer it takes to complete. As a project takes longer time to complete, effects of fluctuation become more pronounced. Bigger projects are also more complex and hence tend to have more variations and a number of other factors respectively for increase in cost of construction than smaller ones. These assertions were observed during the time analysis carried out. Achuenu (1997) research revealed for instance, that fluctuation and variation account for 35.7% and 33.9% cost increase of building projects between 1 to 5 million naira. While adjustment of prime cost and provisional sum account for 16.1% and 8.9%, respectively. However, re-measurement was 3.6% and other 1.8%.

2a(3). Project Duration

Williams (1997) observed that time constraint on projects are becoming tighter, and time-based liquidated damages heavier, exacerbating the effects cause delays. Ofoma (1990) opined that the main purpose of the extension of contract time under clause 23 is to relieve the contractor from his liability for liquidated damages for late completion. Diekmann and Nelson (1985) showed that approximately 25% of all additive claims also requested a time extension and those time extensions averaged 20 days each. As expected, strikes and weather related claim accounted for the largest proportion of time extension awards.

2b. Categories of Claims

Al Subaie (2012) categorized types of claim into four groups. The first category is the Change claims due to contractor's encounter of subsurface or hidden conditions during the construction of a project, which were not anticipated and which may have a major impact on the time and cost of performing their work.

The second category of claim is the Delay claims which are claims caused by a number of unexpected events during construction which increase the time required for completing the work or increase the work which must be completed within a specific period of time.,

The third category of claim is the Extra work claims resulting from alterations, changes and extra work claims usually involve construction changes where the client declines to acknowledge that the work has changed. According to Bramble and Callahan (2000), this is one of the more litigated issues on a construction project. A constructive change occurs where a contractor performs work above the contract requirements, without a formal order under the changes clause, either due to an informal order from, or through the fault of the client. Before it can recover, the contractor must show that the client ordered it to perform the additional work. The additional work performed by the contractor cannot be beyond the

general scope of the contract. Modifications ordered by the client beyond the scope of the contract will constitute a breach of contract.

The fourth category of claim is the Contractual claims. The client generally does not have much obligations under the contract, but required by the contract to: a.) provide the contractor with access to the site; b.) provide adequate information and instructions in order for the contractor to execute the work; and c.) pay the contractor in accordance with the terms of the contract**.** This duty to provide access to the project site is often an implied warranty, as opposed to being an express term of the contract (Bramble and Callahan, 2000). An owner may interfere with the contractor's access to the site and fail to cooperate by: (a) Denying access to the project site; (b) Imposing restricted work areas; (c) Using the site in a way that impedes the contractor's work at the site; or (d) Allowing other contractors to work on the project site in a way that interferes with the contractor's work.

3. Methodology

An exploratory research design method was used to determine the relationships among the variables. A combination of direct observation and administered survey questionnaire were determined to be the most appropriate techniques for the study. Both quantitative and qualitative data were collected.

The study population was drawn from stakeholders (clients, consultants and contractors) in the construction industry. Clients comprise of owners of projects and Chief executive officers and their representatives of the various government establishments. The consultants and contractors were randomly selected from those registered with the selected agencies and ministries that were involved in the execution of projects. The research samples were selected randomly from the list of registered consultants and contractors in the ministries and agencies.

The sample units for this study were the various projects completed in Niger state by the selected Agencies and Ministries which include Niger State Universal Education Board, Niger State Housing Corporation, Niger State Public Procurement Board, Niger state Ministry of Works and IBB University, Lapai.

Probability sampling technique was used to allow each segment of the population to have an equal chance of being selected. In this case, the samples are chosen from the larger population by a process known as simple random sampling. Probability sampling method was adopted because it utilizes some form of random selection. Samples were obtained from the three senatorial districts (zone A, B and C) from the selected ministries and agencies of the state.

The sample size for the study was drawn from the 242 registered contractors in the selected agencies and the 96 client representatives, which gave a total of 338. The sample size was calculated using a simplified formula proportion as illustrated by Glenn (2013) as follows:

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where; n = Sample size
N = Population size in the sample unit
e = Level of precision which is + 5% (0.05), at 95% confidence level.

$$\frac{338}{1+338(0.05)^2} = 183$$

Both primary and secondary data were used to address the specific research objectives.

This study employed the use of questionnaires, oral interviews and archival documents as data collection instruments. Questionnaires were self-administered to respondents that are construction practitioners (client/owner, consultants, contractors) from selected government ministries, department and agencies to obtain primary data. Oral interview was conducted with thirty (30) individuals randomly selected among clients, contractors and consultants. The interview was conducted in the span of three (3) weeks to increase the chances of interviewing different respondents. An interview guide was designed to guide the researcher in obtaining relevant information from the respondents. The secondary data were gotten from the records of different completed projects executed by the selected government ministries, department and agencies between 2007 and 2015, in which contract documents, project reports, correspondence letters and payment certificates as well as relevant related literature were thoroughly reviewed and information about project type, initial contract sum, final completion sum, amount of claims were collected.

The close ended questions focused on assessing the perception and understanding from knowledgeable respondents, which are construction practitioners (client/owner, consultants, contractors) regarding the impact of various project characteristics on claims and its effects on construction projects in Niger state. In the study, a five degree Likert-type scale was adopted and arbitrary values of 1-5 were assigned to each of the degree of agreement to causes of claim and the various project characteristics using a five – point Likert scale of 1 – 5, where; 1 = Strongly Disagree or No Effect, 2 = Disagree or Little Effect, 3 = Neutral, 4 = Agree or High Effect, and 5 = Strongly Agree or Very High Effect as the case may be.

The following cut-off points for measurement of level of effect, awareness and risk assessment techniques introduced by Morenikeji (2006) were adopted for examining the influence of some project characteristics on claims in Niger State: (1.) No Effect = 1.0 to 1.49; (2.) Little Effect = 1.50 to 2.49; (3.) Neutral = 2.50 to 3.49; (4.) High Effect = 3.50 to 4.49; and (5.) Very high Effect = $\geq$ 4.50

Descriptive statistics (frequency and Relative Importance Index) and

statistical inference (correlation analysis) were used for the analysis. The Statistical Packages for Social Sciences (SPSS) computer software was used for data analysis. Professional judgment was used to quantify personal observations and other responses.

A pilot survey was conducted by the researcher to investigate the relationship between project characteristics and construction claims. Random and purposive sampling technique was used to survey 20 respondents which comprised of contractors, consultants, clients and professionals in the built environment in Niger State, to ascertain the major project characteristics to focus on in the study. The result of the pilot study identified the following project characteristics as the five most influential according to ranking, these are: Project Complexity, Project Size, Duration of Project, Project Funding and Project Type.

4.0 Data Presentation

Table 1 presents information about number of questionnaires administered for the study. As shown, 183 questionnaires were administered to Consultants, Contractors, and professionals in the five selected public institutions which represent clients. 121 were retrieved which represent approximately 66.12% of the questionnaires administered.

Table 1: Distribution of Questionnaires Administered and Returned

	Frequency	**Percentage (%)**
Questionnaires Administered	183	100.0
Questionnaires Retrieved	121	66.12

Source: Researcher's Field Work, 2015

Table 2 shows the ranking of project characteristics according to their importance. As shown, the complexity of a project was identified as the most important.

Table 3 shows the Impact of Project Characteristics on Claims. As shown, the complexity of a project was identified as the most significant impact with a mean score of 4.03.

Table 2: Ranking of Project Characteristics

S/N	Rank	Project Characteristic
1.	1st	Complexity of project (e.g. special ground conditions or
2.	2nd	technology requirements).
3.	3rd	Size of project (e.g. value; number of stories; floor area; km of road)
4.	4th	Effects of relevant political, legal and economic systems,
5.	5th	including market conditions
6.	6th	(project environment)
		Project duration
7.	7th	Type of project (e.g. housing estate, road, dam, office building
8.	8th	refurbishment)
9.	9th	Form of contract (functional grouping of contract: separated or
10.	10th	integrated) and the division of responsibilities and liabilities
11.	11th	Specific location, special weather and environmental concerns
12.	12th	Level of technological advancement
		Project life span / lifecycle
13.	13th	Value of a project
14.	14th	Quality of a project
15.	15th	Type of client (e.g. public/private/mixed; experienced/one-
16.	16th	off/project staff caliber and their strengths, weaknesses and management style)
17.	17th	Any other special conditions
		Project funding
18.	18th	Level of specialization
19.	19th	Availability of information at project inception and points at
20.	20th	which any remaining information will be required/be available
21.	21st	Nature and status of local construction industry, including
22.	22nd	available capacities of potential project participants, scarcity of
23.	23rd	work in particular fields, competitiveness.
24.	24th	Percent of repetitive elements
25.	25th	Availability of materials and equipment that are required for the
26.	26th	works
		Ownership of building
27.	27th	Type of specification
		Flexibility of scope of works when contractor is hired
		Project scope definition completion when bids are invited
28.	28th	Importance for project to be completed within budget
		Importance for project to be delivered
29.	29th	Selection process / methodology (bidding procedure, number of
30.	30th	bidders, selection criteria, bidding environment)
31.	31st	Performance of available contractors and consultants on previous
32.	32nd	(similar) projects in the area in terms of meeting cost, quality
33.	33rd	and time targets; safety records and client satisfaction levels: as
34.	34th	compared with the procurement modalities used.
35.	35th	Local familiarity and confidence in/disillusionment with,
36.	36th	particular types of procurement with reasons
37.	37th	Technical approval authorities
38.	38th	Contractual arrangement
39.	39th	Payment mode to the contractor
40.	40th	Presence of special issues
41.	41st	Extent to which bid documents allow additions to scope
42.	42nd	Design completion when budget is fixed
43.	43rd	Bidder's knowledge of the budget
		Time given to contractor to bid
		Time given to owners / consultants to evaluate bids

	Extent to which the contractor period is allowed to vary during bid evaluation stage
	Number of bidders
	Prequalification or short-listing
	Bid evaluation and selection criteria
	Bidding environment
	Density of a project

Source: Favie and Maas (2008)

Table 3: Impact of Project Characteristics on Claims

Key: 5 = (Very high effect), 4 = (High effect), 3= (Neutral), 2 = (Little effect), 1 = (No effect)

S/N	Project Characteristics		Mean Score
1	Complexity of Project	4.03	
2	Size of Project	3.91	
3	Duration of Project	3.86	
4.	Type of project (e.g. housing estate, road, dam, office building refurbishment)	3.74	
5.	Effects of relevant political, legal and economic systems, including market conditions (project environment)	1.98	
6.	Importance for the project to be completed on time	2.61	
7.	Form of contract (functional grouping of contract: separated or integrated) and the division of responsibilities and liabilities	2.02	
8.	Specific location, special weather and environmental concerns	2.90	
9.	Level of technological advancement	3.10	
10.	Project life span / lifecycle	2.98	
11.	Value of a project	1.93	
12.	Quality of a project	2.31	
13.	Type of client (e.g. public/private/mixed; experienced/one-off/project staff caliber and their strengths, weaknesses and management style)	2.16	
14.	Project funding	3.69	
15.	Level of specialization	2.99	
16.	Availability of materials and equipment that are required for the works	2.55	
17.	Ownership of building	2.18	
18.	Type of specification	1.73	
19.	Contractual arrangement	1.51	
20.	Payment mode to the contractor		1.63

Source: Researcher's Field Work (2015)

Figure 1 presents the academic qualifications of the respondents. As shown, 4.13% have ND qualification, 31.41% have HND qualification, 24.79% are BSc/BTech degree holders and 39.67% are holders of MSc/MTech certificates (see Figure 2). This indicates that majority of the respondents are master's degree holders which implies that they have reasonable knowledge about the subject of claims.

Figure 2 presents the professions of the respondents. As shown, the majority of the respondents are Quantity Surveyors representing 26.45%, 22.31% represents

Builders and Architects each, 19.84% are Civil Engineers and other profession represents 9.09%.

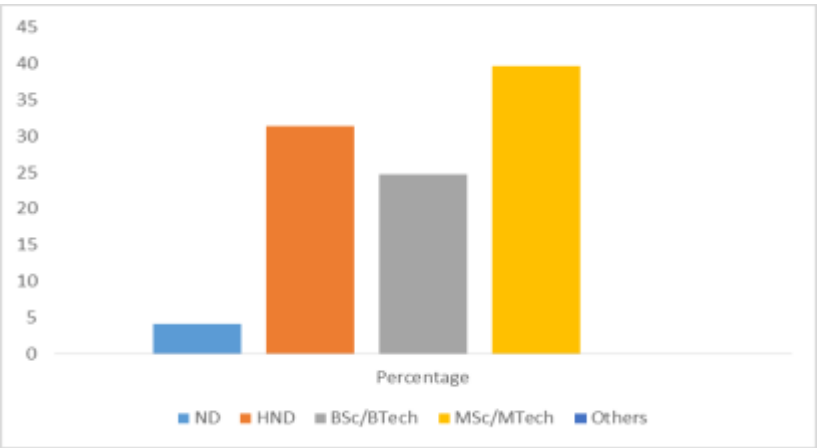

Figure 1: Academic qualification of Respondents
Source: Researcher's Field Survey (2015)

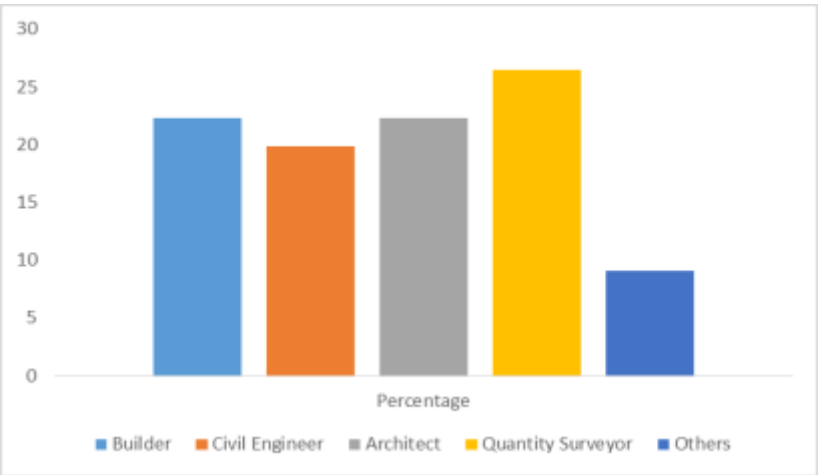

Figure 2: Profession of the Respondents
Source: Researcher's Field Survey (2015)

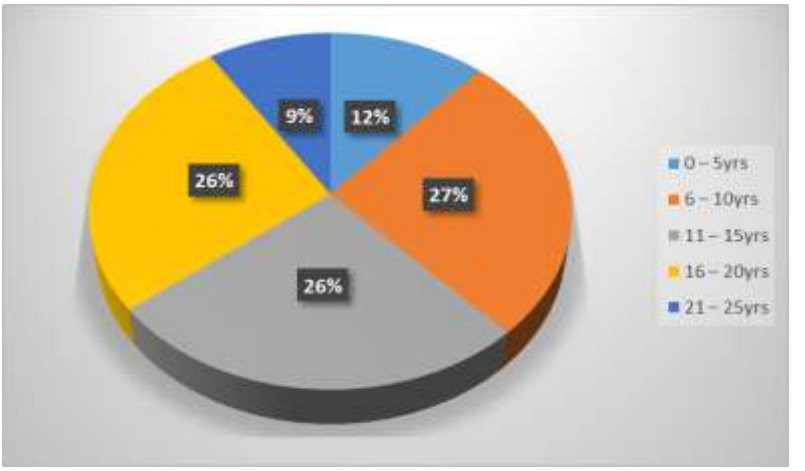

Figure 3: Years of Experience of Respondents in the Construction Industry
Source: Researcher's Field Survey (2015)

Figure 3 presents Respondents' Years of Experience in the Construction Industry. As shown, 11.56% of the respondents have 0 to 5 years of experience, 26.45% have between 6 – 10, 11 – 15 and 16 -20years of experience and those that have 21 – 25 years of experience represent 9.09% of the respondents.

Table 4: Causes of Claims in Construction Projects in Niger State

S/N	Causes of Claims	Mean Scores	Relative Importance Index (RII)	Ranking
1	Inadequate design information	3.79	0.76	4th
2	Inaccurate design information	3.86	0.75	6th
3	Inadequate site investigations	3.70	0.74	8th
4	Slow client response (decisions)	3.81	0.76	4th
5	Poor communication	3.99	0.80	2nd
6	Unrealistic time targets	4.05	0.81	1st
7	Inadequate contract administration	3.66	0.73	9th
8	Uncontrollable external events	3.65	0.73	9th
9	Incomplete tender information	3.93	0.79	3rd
10	Unclear risk allocation	3.36	0.67	13th
11	Increased complexity of building projects	3.60	0.72	11th
12	Effects of high inflation in the construction sector	3.76	0.75	6th
13	Increased competition due to decrease in the number of projects in the area	3.14	0.63	14th
14	A decrease in profits	2.98	0.60	16th
15	Decreased capital availability	3.17	0.63	14th
16	Withdrawal of governmental support hitherto extended to the contractor	2.82	0.56	17th
17	Increase in government regulations	3.43	0.69	12th

Source: Researcher's Field Work (2015)

Table 4 presents the Mean Score and the Relative Importance Index (RII) of the main causes of claims in construction projects amongst professionals in the selected public institutions, consultants and contractors on construction sites in Niger State. As shown, inadequate design information, inaccurate design information, inadequate site investigations, slow client response (decisions), poor communication, unrealistic time targets, inadequate contract administration, uncontrollable external events, and incomplete tender information were significant. The ranking for each factor was interpreted by using weighted average of the responses received. For example, Unrealistic time targets reveal a Mean Score of 4.05, which indicated that the weighted average of the responses received was close to the response option coded as '4' on the Likert scale, which represents 'Agree'. The risk variable also had an RII of 0.81, which meant it was the most important risk factor associated with cause of claims in construction projects, in the opinion of the respondents to the study. This implies that majority of the respondents agreed that unrealistic time targets is the major cause of claims in construction projects in Niger State. The five most significant causes of claims in construction projects are; unrealistic time targets, poor communication, incomplete tender information, inadequate design information and slow client response (decisions) which 1st, 2nd, 3rd, 4th and 4th respectively.

Table 5 presents the frequency of claims in construction projects. As shown a mean score of 3.29 amongst the respondents indicated that the weighted average of the responses received was close to the response option coded as '3' on the Likert scale, which represents 'Seldom'. This implies that majority of the respondents are of the opinion that claims seldom happens in construction projects in Niger State.

Table 5: Frequency of Claims in Construction Projects in Niger State

Frequency of Claims	**Very Frequent (5)**	**Frequent (4)**	**Seldom (3)**	**Rarely (2)**	**Never (1)**	**No of Respondents**	**Mean Score**
Consultant							
Sum	5	56	42	14	0	36	3.25
Contractor							
Sum	5	60	45	18	0	40	3.20
Clients							
Sum	30	60	45	18	0	45	3.40
Overall	40	176	132	50	0	121	3.29

Source: Researcher's Field Work (2015)

Table 6 presents the origin of claims among the three categories of respondents. As shown, the group that makes the most claims are contractors representing 84.30% of the respondents, while subcontractors are the least category that makes claims.

Table 6: Origin of claims among the three categories of respondents

Variable	Frequency	Percentage (%)
Clients	16	13.22
Contractors	102	84.30
Subcontractors	3	2.50
Total	121	100.00

Source: Researcher's Field Work (2015)

Table 7 presents the influence of selected project characteristics (complexity of project, size of project and duration of project) on claims in Niger State. Likert scale with values ranging from 5 to 1 representing very high effect, high effect, neutral, little effect and no effect is used to calculate the Mean Score which allowed responses to be categorised in terms of the response option most favoured by respondents. This is further ranked in terms of the importance accorded it by the respondents.

Table 7: Influence of Selected Project Characteristics on Claims in Niger State

S/N	Project Characteristics	Very High Effect(5)	High Effect (4)	Neutral (3)	Little Effect (2)	No Effect (1)	Mean Score
1	Complexity of Project	70	312	57	22	3	3.84
2	Size of Project	55	268	66	38	3	3.55
3	Duration of Project	160	280	33	10	3	4.02

Source: Researcher's Field Work (2015)

In Table 7, the influence of complexity, size and duration of projects on claims reveal a Mean Score of 3.84, 3.55 and 4.02 respectively by the respondents which were deemed to be of high effect because they fall between 3.5 – 4.49 based on Morenikeji (2006) cut off points. Furthermore, duration of project from the findings have the most influence which also implies that majority of the respondents among the different players on construction projects agreed that complexity, size and duration of projects have high effect on claims in construction projects in Niger State.

5.0 Data Analysis

Table 8 presents the Project Characteristics with the Most Influence on Claims. As shown, duration of project (53.72%) is the project characteristic with the most influence on claims, followed by complexity of project (33.06%) and then the size of

project (13.22%). Therefore, duration of project is the characteristic with the most influence, while size of project is the characteristic with the least influence. This is also in line with results obtained from questionnaire administration (see Tables 6 and 9).

Table 8: Project Characteristics with the Most and Least Influence on Claims

Variable	Frequency	Percentage (%)
Complexity of Project	40	33.06
Size of Project	16	13.22
Duration of Project	65	53.72
Total	121	100.00

Source: Researcher's Field Work (2015)

Tables 9 presents the analysis of the relationship between the claim value and the size and duration using Pearson Product-Moment Correlation. As shown, poor communication and unrealistic time targets ranked 1st, inadequate design information, inaccurate design information, and inadequate site investigations ranked 3rd, 4th and 4th respectively. Therefore, despite the difference of the findings obtained from questionnaire administration and interviews conducted, there is a common ground regarding the major causes of claims which are poor communication and unrealistic time targets. While, the least causes of claims are increased competition due to decrease in the number of projects in the area, decrease in profits, and withdrawal of governmental support hitherto extended to the contractor.

Tables 10 presents the information about the relationship between Claim Value and Project Size. As shown, the r-value of 0.752 at 0.05 significance level indicates a strong relationship between the claim value and the project size. This implies that the size of a project significantly influences the claim value such that both variables have the tendency of increasing or decreasing simultaneously. The r-value of 0.752 which is greater than 0.67 means the rejection of the null hypothesis (H_{01}). Therefore, the alternative hypothesis is accepted.

Table 9: Causes of Claims in Niger State

Causes of Claims	Yes	Percentage (%)	Ranking	No	Percentage (%)	Ranking
Inadequate design information	22	73.33	4th	8	26.67	12th
Inaccurate design information	22	73.33	4th	8	26.67	12th
Inadequate site investigations	23	76.67	3rd	7	23.33	15th
Slow client response (decisions)	21	70.00	6th	9	30.00	11th
Poor communication	25	83.33	1st	5	16.67	16th
Unrealistic time targets	25	83.33	1st	5	16.67	16th
Inadequate contract administration	17	56.67	11th	13	43.33	7th
Uncontrollable external events	19	63.33	9th	11	36.67	8th
Incomplete tender information	20	66.67	7th	10	33.33	9th
Unclear risk allocation	13	43.33	14th	17	56.67	4th
Increased complexity of building projects	19	63.33	9th	11	26.67	12th
Effects of high inflation in the construction sector	20	66.67	7th	10	33.33	9th
Increased competition due to decrease in the number of projects in the area	11	36.67	15th	19	63.33	1st
A decrease in profits	11	36.67	15th	19	63.33	1st
Decreased capital availability	16	53.33	12th	14	46.67	6th
Withdrawal of governmental support hitherto extended to the contractor	11	36.67	15th	19	63.33	1st
Increase in government regulations	14	46.67	13th	16	53.33	5th

Source: Researcher's Field Work (2015)

Tables 11 presents the information about the relationship between Claim Value and Project Duration. As shown, the r-value of 0.723 at 0.05 significance level indicates a strong relationship between the claim value and the project duration. This implies that the duration of a project significantly influences the claim value that might result. The r-value of 0.723 which is greater than 0.67 means the rejection of the null hypothesis (H_{01}). Therefore, the alternative hypothesis is accepted.

Table 10: Pearson Correlation of Claim Value and Project Size

		Initial cost	Final cost
Initial cost	Pearson Correlation	1	.752**
	Sig. (2-tailed)		.000
	N	33	33
Final cost	Pearson Correlation	.752**	1
	Sig. (2-tailed)	.000	
	N	33	33

**. Correlation is significant at the 0.05 level (2-tailed).

Table 11: Pearson Correlation of Claim Value and Project Duration

		Initial time	Final time
Initialtime	Pearson Correlation	1	.723**
	Sig. (2-tailed)		.000
	N	33	33
Finaltime	Pearson Correlation	.723**	1
	Sig. (2-tailed)	.000	
	N	33	33

**. Correlation is significant at the 0.05 level (2-tailed).

6.0 Discussion of Findings

The influence of complexity, size and duration of projects on claims revealed mean scores of 3.84, 3.55 and 4.02, respectively. Duration of project is the characteristic with the most influence on construction claims in Niger State, while size of project is the characteristic with the least influence, among these selected variables.

The size of a project significantly influences the claim value of a project such that both variables have the tendency of increasing or decreasing simultaneously. The r-value of 0.752 which is greater than 0.67 means the rejection of the null hypothesis (H_{01}). Therefore, the alternative hypothesis was accepted. The study also revealed that the duration of a project significantly influences the claim value that might result. The r-value of 0.723 which is greater than 0.67 means the rejection of the null hypothesis (H_{02}). Therefore, the alternative hypothesis is accepted.

Ibbs (1985) observed that larger projects were susceptible to more serious disputes and claims. This is not surprising, since larger projects generally had more expensive and sophisticated products, which more often cause disputes. Also, the participants had more profit at stake with these more expensive items, and they, therefore were willing to contest the matter more aggressively. Furthermore, these more expensive

items were often central and crucial to the contractors' work-plan, and denials of the nature, subsequently had more serious indirect ramifications on the project schedule.

The study established that unrealistic time targets and poor communication before and during construction are the major causes of claims in Niger State. This is probably due to lack of comprehensive communication strategy and poor project planning with tight project schedule leading to unnecessary presumes. It was also observed that there is usually no period for engagement amongst all members of the team (inclusive of the major contractor), during which key individuals could be identified and forming relationships translates to the fact that the construction phase may begin with lack of forum and channels for communication being appropriately established. Also, determination of the period for completion of a project relies profoundly on the personal experience and judgment of the public official who appraises the factors that affect the project. The competence of the public official is critical in the development of a realistic contract duration for projects. At times, designers permit the owner's usage or need for the project to establish the contract time

6.0 Conclusion

The aim of this research work is to examine the impact of project characteristics on construction claims in Niger State, Nigeria. The analysis of data obtained from the administration of questionnaires, interviews conducted and records of construction claims reviewed led to the conclusion that in terms of frequency of occurrence, claims seldom happens in constructionprojects in Niger State. The analysis also revealed that unrealistic time targets, poor communication, incomplete tender information, inadequate design information and slow client response are the five major causes of claims in construction projects in Niger State. Based on the research findings, the following recommendations are proffered to reduce the influence project characteristics on claims in public construction projects in Niger State:

1. Key players in construction projects should ensure that sufficient float is built into the schedule, to ensure that there is adequate construction time for the circumstances. When delays do occur, they are absorbed into the contract and are less likely to become critical to the overall construction schedule. In addition, adequate time should be given to the project consultants to prepare designs, specification notes, Bills of Quantities and other project details as most projects are poorly documented in a hurry, with attendant large claims tolerance during the post contract stages. Also, project participants need to evolve planning and implementation strategies that aim at minimizing the variation of project scope once cost limits have been established to address unrealistic time targets.
2. Proper coordination of design documents is extremely important. Written specifications should be reviewed to avoid ambiguities and conflicts between architectural and engineering drawings as well as client. There is need to ensure fair and complete disclosure of information at an early stage of the

construction project to establish a channel of communication.

3. Contractors should ensure the preparation of a work-plan in accordance to project schedule, since duration of project has the major influence on claim amount in construction projects in Niger State.

7.0 References

Aibinu, A. A. and Jagboro, G.O. (2002). The Effects of Construction Delays on Projects Delivery in the Nigerian Construction Industry. *International Journal of Project Management*, 20, 593 – 599.

Achuenu, E. (1997). Appraisal and Assessment of Cost Overruns of Public

Buildings Project in Nigeria. Unpublished M.Phil Thesis, Department of Building, University of Jos.

Ajanlekoko J. O. (1987). Controlling cost in the construction industry. Lagos QS Digest, Lagos; 1(1):8–12.

Akinsola, A. & Ndekugri, I. (1997). Identification and evaluation of factors influencing variations on building projects. *International Journal of Project Management*, 15(4), 67.

Ashworth, A. (2007). *Contractual Procedures in the Construction Industry. 2nd ed.* New Zealand: UNITEC.

Al-Subaie, O. (2012). Construction claims in Residential Houses in Saudi Arabia.*Construction Engineering Management Journal Paper Representation*, 34(2), 54-56.

Baccarini, D. (1996). The Concept of Project Complexity - A Review. *International Journal of Project Management*, 14, 201-204.

Barrie, D. S., and Paulson B. C (1992). *Professional Construction Management*. New York: MCGraw Hill.

Bennett, A. (1991). *International Construction Project Management: General Theory and Practice*. Oxford: Butterworth-Heinemann.

Bramble, B. B. & Callahan, M. T. (2000). *Construction Delay Claims (3rd ed.)*. Ontario: Aspen Law & Business.

Clough, R. H., Glenn, H. C. & Keoki, S. (2007). *Construction contracting. A practical guide to company management (7th ed.)*. New York: John Wiley & Sons Press Ltd.

Diekmann, J. E. & Nelson, M. C. (1985). Construction Claims Frequency and Severity. *Journal of construction Engineering and Management*, 3, 74-81.

Dissanayaka, S. M. and Kumaraswamy, M. M, (1999*).* Comparing contributors to time and cost performance in building projects. *Building and Environment journal, 34, 31-42.*

Doloi, H., Sawhney, A., Iyer, K. C. and Rentala, S. (2012). Analysing factors affecting delays in Indian construction projects. *International Journal of Project Management*, 30(4), 479-489.

Favie, R. & Maas, G. J. (2008). Ranking Construction Project Characteristics. *Proceedings CIB Transformation Through Construction, Dubai.*

Frimpong, Y., Oluwoye, J. and Crawford, L. (2003). Causes of
Delays and Cost Overruns in Construction of Ground water Projects in Developing Countries; Ghana as a case study. *International Journal of Project Management, 21, 321 – 326.*

Glenn, D. I. (2013). "Determining Sample Size". Institute of Food and Agricultural
Science (IFAS), University of Florida, Gainsville, FL 32611. Retrieved on June 3, 2013 from edis.ifas.ufl.edu/pdffiles/PD00600 .pdf,

Glenn, H. C. & Keoki, S. (2005). *Construction contracting. A practical guide tocompany management (7th ed.).* New York: John Wiley & Sons Press Ltd.

Ho, S. P. & Liu, L. Y. (2004). Analytical model for analyzing construction claims and opportunistic bidding. *Journal of Construction Engineering and Management*, 130(1), 94-104.

Holland, J. P. (1985). Profession liability of the Architect and Engineers. *Journal Construction Engineering and Management*, 3(2), 57-65.

Ibbs, C. W. (1985). Product specification practice and problems. *Journal of construction Engineering and management*, 3(2), 157-172.

Jagboro, G. O. & Aibinu, E. (2002). The effects of construction delays on project delivery in Nigerian Construction Industry. *International Journal of Project management*, 4, 20-21.

Leibing, R. (2001) *The Construction Industry: Process, Players*. New Jersey: Pretense Hall Publishers.

Levin, P. (2008). *Construction Contract Claims, Changes & Dispute Resolution (2nd ed.).* New York: ASCE Press.

Ling, .Y.Y. (2004). Key Determinants of Performance of Design-Bid-Build Projects in Singapore, *Building Research & Information, 32(2), 128–139*

Morenikeji, W. (2006). *Research & Analytical Methods (For Scientists, Planners and Environmentalist).* Jos, Nigeria: Jos University Press Ltd. National Bureau of Statistics Report (NBS), (2015).

Nega, F. (2008). Causes and effects of cost overrun on public building construction projects in Ethiopia. Unpublished PhD Thesis, Department of Building Construction, Addis Ababa University, Ethiopia.

Naoum, S. G. (1989). An investigation into the performance of management contracts and the traditional methods of building procurement. Unpublished Masters Thesis, Brunel University.

Odeyinka, H. A. and Yusuf, 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), 31 – 44.*

Ojo, G. K. (2012). Project Characteristics Influence on Risk Associated with Construction Client's Cash Flow Prediction. *Journal of Research in International Business and Management 2(5), 142-150*

Onyango, D. (1993). *Reduction of Conflicts in Construction*. Loughborough, UK: MSReport, Loughborough University.

Pourrostam, T. and Ismail, A. (2011). Significant Factors Causing and Effects of Delay in Iranian Construction Projects. *IACSIT International Journal of Engineering and Technology*, 5(7), 450-456

Revay, S. G. (1990*). "Claim Seminar." 2nd ed.* British Columbia: Macmillan Bloedel Limited Revay and Associates Ltd.

Semple, C. (1994). Construction Claims and Disputes: Causes and Cost/Time Overruns. *Construction Management and Economics, 12, 785-795.*

Thomas, R (2001). *Construction contract claims. 2nd ed.* Hamsphire: Palgrave Publisher

Tukel, O. I., Rom, W. O. (1998). Analysis of the Characteristics of Projects in Diverse Industries, *Journal of Operations Management, 16, 43-61*

Vidalis, S. M. and Najafi, F. T. (2002). *Cost and time overruns in highway construction*, in Proceedings of the 4th Transportation Specification. Conference of the Canadian Society for Civil Engineering, pp. 2799–2808, Montreal, Quebec, Canada, June 2002.

Williams, T. M. (1997). Empowerment versus Risk Management. *International Journal of Project Management, 15*(4), 219-221.

Yau, N. J. and Yang, J. B. (2012). Factors causing design schedule delays in turnkey Projects in Taiwan: An empirical study of power distribution substation projects. *Project Management Journal*. 43 (3), 50 – 61.