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CONTRACTORS' CASH FLOW AND PROJECT DELIVERY IN AKWA IBOM AND RIVERS STATES, NIGERIA

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ABSTRACT

Purpose: The aim of the study is to investigate the state of contractors' cash flow and its influence on construction project delivery in selected states of south-south Nigeria with a view towards improving contractors' cash flow. The study objectives are: to ascertain the influence of project characteristics on contractors' cash flow projections for construction projects and assess the influence of contractors' cash flow projection on project performance.

Design/methodology/approach: In line with quantitative survey approach adopted for the study, 193 copies of a structured questionnaire were administered while 130 valid responses were received, translating into a response rate of 67.4%. Data collected were analysed using descriptive statistics and Kruskal Wallis. Findings indicate that the top three project characteristics that had influence on cash flow are procurement method, project duration, and client type while project type was rated the least.

Findings: Findings also reveal that "on schedule delivery of projects" was the top rated, followed by "on budget delivery of projects", and "projects delivered ahead of schedule". However, "projects delivered at an underrun" was the least rated. Findings also indicate that the influence of contractor's cash flow on 3 of the 6 project delivery indicators were not significant as they did not meet the 3-point threshold. The study also concludes that the top three project characteristics that have influence on contractor's cash flow are procurement method (in terms of traditional, design and build, project management etc.), project duration, and client type (public or corporate).

Practical implications: The study recommends among others that government should enact stringent laws and guidelines to punish parties to a contract that defaults on the issue of funding of projects. This will address delay in project execution and other risks that could hamper project delivery.

Originality/value: The study established that the top three project characteristics that have influence on contractor's cash flow are procurement method (in terms of traditional, design and build, project management etc.), project duration, and client type (public or corporate); and that good cash flow management of projects has the highest impact on timely delivery of projects.

Keywords: Cash flow; project characteristics; project performance; Nigeria.

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1. INTRODUCTION

The construction industry is reputed to be one of the largest contributors to the global economy accounting for a sizeable proportion in the Gross Domestic Product (GDP) of both developed and underdeveloped countries (Crosthwaite, 2000). According to Lowe (1993), the value added by construction is in the range of 7% to 10% for highly developed economies and around 3% to 6% for the developing economies such as Nigeria. As with other developed and developing nations, construction is vital to Nigeria's economic development which is why it produces nearly 70% of the nation's fixed capital formation and accounts for 1.4% of the country's GDP (VETITA, 2011, World Bank, 2013). Researchers have long attested to the claim that financial management is a veritable tool in construction industry (El Razek, Hosny, and Beheri, 2014). A healthy cash flow position results in liquidity of a company which helps it sustain its operation resulting in generation of higher profits and prudent re-investment of the profits results in the growth of the firm. Consistent positive cash flow position will facilitate higher profit levels and hence excess cash for investment.

Cash flow is defined by Oxley and Poskitt (1996) to be the difference between net receipt (cash in) and net disbursement (cash out) occurring in a given period. In the construction industry, Al-Joburi, Al-Aomar and Bahri (2012) disclosed that receipts (cash in) are derived from funds received in the form of monthly payments, stage of work payments, release of retention funds, and final account settlements. Disbursements (cash out) on the other hand relate to funds expended on a contract in order to pay wages and subcontractors, buy materials as well as plants and equipment. It is important to affirm that every client has the obligation to meet up with the demand responsibility of cash flow requirements of its contractors in construction projects. Therefore, regular payment from the client into the project forms the source of project cash flow for the execution of the project which invariably cannot be overemphasised.

The construction industry has continued to experience one of the highest rates of insolvency and bankruptcies when compared to other sectors such as manufacturing. Arditi, Koksal and Kale, (2000), Khosrowshahi (2000) and Ojo, (2010) have all argued that this scenario in the construction industry has been due to poor financial management, difficulties in raising long term capital, which leads to liquidity problems and high sensitivity to cash flow fluctuations especially inadequate attention to cash flow forecasting.

The influence of cash flow on project outcome has been emphasised in the literature. The determinants of project success are delivery with the appropriate cost limit, measurable time frame, acceptable quality standard, and a high level of client satisfaction (Ojo, 2012). Researchers argue that a positive net cash flow favourable to the contractor has a positive relationship with successful project outcome. In a study on cash flow and organisational performance, Nwanyanwu (2015) discovered that there is a strong positive relationship between cash flow position and net profit. Therefore, cash flow positions determine the extent of net profit performance. However, one noticeable limitation is that the study used organisation performance as the dependent variable while it was carried out in the hospitality and print media sector. This study empirically assesses the influence of contractors' cash flow as independent variable on project outcome as the dependent variable.

Given the background above, this study investigates the state of contractors' cash flow and its influence on construction project outcome in selected states of south-south Nigeria with a view towards improving contractors' cash flow and ultimately bolstering

project delivery. Nigeria's south-south geopolitical zone is made up of six states including Akwa Ibom and Rivers states. They account for 50% of Nigeria's GDP, 95% of her foreign exchange earnings, and 80% of all budgetary revenues that amount to over 7 trillion naira annually (Ikediashi and Ajiero, 2019). The need to empirically examine contractors' cash flow and its influence on construction project outcome in two major stakeholder states in south-south Nigeria with a view towards bolstering project delivery in the study area is the main concern of the study.

The specific objectives are to:

i) Examine the influence of project characteristics on contractors' cash flow projections for construction projects in the study area; and
ii) Assess the influence of contractors' cash flow projection on project performance in the study area.

2. LITERATURE REVIEW

2.1. Concept of cash flow

Cash flow is a concept used in accounting to describe the flowing in and flowing out of money within an organisation (Nwanyanwu, 2015). Money which is cash comprises of cash at hand, cash in bank, stocks and bank overdrafts repayable on demand. There are two schools of thought in the literature on the concept of cash flow in construction management. According to Al-Joburi et al (2012), the first sees it as the difference between cash in (monies received) and cash out (monies disbursed) within a stated period under review. What this means is that a positive cash flow is an indication that there is enough cash to spend after deducting expenses; while a negative cash flow is an indication that there wold be need for overdraft to meet up with obligations relating to a project execution. Some of the obligations include payments to subcontractors, servicing of loans, wage bills, procurement of resources such as plants and equipment, as well as settling final accounts. The second school of thought sees cash flow as the transfer of cash in and out of an organisation (Cooke and Jepson, 1986). In other words, cash that is employed to manage a firm either in the form of initial capital or continuous injection of money into the business at intervals is regarded as positive cash flow and is credited as received in the company books. On the other hand, monies disbursed by a company is termed negative cash flow and is debited in the company books. The difference between these two is the net cash flow. Cash flow management is a general process of planning, forecasting, manipulating and controlling of cash flows either at the project or corporate level. Cash flow monitoring and controlling entails adequate planning of fund utilizations, efficient monitoring of budget implementation and effective evaluation of results. It has been argued by Nwanyanwu (2015) that the strength of cash flow position of a firm is a determinant to how successful it is able to manage its finances in order to achieve stated corporate objectives. Therefore, cash flows are indispensable parts of an organisation's strategic operations. This is because it needs the inflow to manage inventories, fixed assets and outflows for operational expenses (Pandey, 1979).

2.2. Cash flow and the construction industry

It has been argued that the robustness of a country's construction industry is a function of how vibrant and organised the cash flow mechanism is which is why Ojo (2012) had pointed out that financial factors have significant impact on the success or failure of the construction industry. The Construction industry has been seen as one with high certainty of risks mainly due to both in-house and outside difficulties. These challenges include fragmented nature of the industry, excessive competition due to a relatively low barrier to entry, high uncertainty in planning and implementation, and unpredictable fluctuations in construction project delivering (Ojo, 2012). Construction sector recorded high rate of business failure globally with 20.1% and more than 80% of these failure were attributed to lack of financial control (Emidafe, 2016).

The heartbeat of the construction industry is undoubtedly good cash flow management system in place for projects. Knowledge of it enables project managers to rationally make strategic decisions with regards to cash flow forecasting. On the other hand, inaccurate prediction and forecasting of cash flow can result in bankruptcy, financial distress and possible folding up of companies within the construction industry (Kaka and Price, 1993; Chukwudi and Tobechukwu, 2014). The main factors affecting cash flow in a construction project is the widespread practice of delay and underpayment by the clients, inaccurate Cash Flow Forecasts (CFF) and lack of efficiencies in monitoring and controlling of construction cash flow (Hoseini, Andalib and Gatmiri, 2015). A positive cash flow is ultimately needed to generate profits, to pay employees' salaries and wages, taxes and servicing interest on borrow funds, materials, plant, subcontractors' accounts rendered and overheads expended during the progress of the contract (Odeyinka, Kaka and Morledge, 2003).

The construction industry has been plagued over time by the problem of cost overrun mostly caused by cash flow challenges. This has given rise to several conflicts between clients and others stakeholders such as the contractors which have led to project abandonment. It is pertinent therefore to understand how the cash flow mechanism affects the construction industry.

2.3. Project characteristics

A project is a temporary, unique and progressive attempt or endeavour made to produce some kind of a tangible or intangible result (a unique product, service, benefit, competitive advantage, etc.). It usually includes a series of interrelated tasks that are planned for execution over a fixed period of time and within certain requirements and limitations such as cost, quality, and performance. Westland (2006) describes a project as a unique endeavour to produce a set of deliverables within clearly specified time, cost and quality constraints.

Before then, the Project Management Institute (PMI) (2004) had defined a project as 'a temporary endeavour undertaken to create a unique product, service or result'. The product, in the context of the construction industry, may be a building, services installation or other infrastructural project. Hence, the relevant mix of professionals is often assembled together with the aim of achieving this goal. This group of professionals is expected to possess the relevant skills, knowledge, tools and techniques to achieve the project goals. The application of these variables, skills, knowledge, tools and techniques, with the aim of achieving the required objective is referred to as project management (PMI, 2004). A project always has an owner (client) who, in the private

sector, can be an individual or a company etc., and in the public sector, a government undertaking or a joint sector organisation, represent¬ing a partnership between public and private sector. Clients in the construction industry have been described as a heterogeneous group made up of private or public organisations operating in different environments with diverse reasons for their existence. This agrees with some research work by Sanusi (2008) and Ojo (2012). Ojo (2012) indicated client type as one of the five major characteristics. These five major characteristics include: client type, project type, project duration, project value and procurement method. Also, a project has a clearly defined objective to achieve within a distinct time, cost and technical performance. Money is a function of time which also bears on the quality of a product. It must be noted here that projects have a start and an end, and a life cycle. The organisation of project changes as it passes through this cycle, the activities starting from conception stage, mounting up to the peak during implementation and, then, back to zero level on completion and delivery of the project.

Project is multifaceted and consumes resources. These resources are materials, financial, equipment, human and time because of its complexity and scope. There must be an effective cash flow for utilization of these resources. The tasks that projects are assigned to solve, are defined in terms of more or less precise and realistic goals. Being a temporary arrangement, and also because the undertaking is more or less unique, uncertainty is often greater in the construction industry than what is common in permanent organisations. Samset (2003) noted that because projects are unique undertakings, they involve a degree of uncertainty. Uncertainty characterises situations where the actual outcome of a particular event or activity is likely to deviate from the estimate or forecast value. It follows that decision-making becomes more difficult as uncertainty grows. Further, that the availability of relevant information increases predictability and reduces uncertainty seen from the decision maker's point of view. Because of the uncertainty associated with planning and implementation, the extent to which the project will attain its goal is also uncertain. This is one of the reasons why improved know-how and tools that can better the planning and management of projects are of great and increasing economic significance. It is also one of the reasons why there has been an increasing tendency to evaluate ongoing and completed projects. Ritchie and Marshall (1993), opined that uncertainty may have many various causes, related to the situation itself, the design of the project, the time perspective, available information, the implementation of the project, etc. According to Samset (2003), there are numerous examples of projects that have caused high additional cost for the society both during and after they have been implemented. Morris and Hough (1991), in their study of major projects, concluded that the track records of projects are fundamentally poor, particularly for the larger and more difficult ones. Overruns are common. Many projects appear as failures, particularly in the public view. It therefore seems that there is a contradiction between the increasing use of projects and the fundamental problem of projects often overrunning their budgets and exceeding their set limits. However, in reality, most projects attain their objectives in one way or another. Samset (2003), noted that there are several reasons for the increasing use of projects today. One answer is that many tasks in society are so enormous and complex that individual organisations lack the competence or capacity to carry them out alone. This is particularly the case in small countries. Another answer is that the project focuses and visualizes the task, and therefore has a motivating effect on all stakeholders.

Samset (2003) has also indicated that in projects, responsibilities are clarified and the different parties are made accountable. Moreover, the project is an expedient way of

transferring risk from the financing to the implementing party. The project is also a conducive way of organisation, which allows participants to pool resources and co-operate towards a common goal.

2.4. Cash flow and project delivery

Cash flow defines the expenses and revenue of the single project or whole company per time and reflects their present and future situations by demonstrating net cash conditions (Usman et al., 2016). Cash flow is a financial model necessary to count the demand for money to meet the project cost and the pattern of income it will generate (Smith, 2008). According to Usman et al. (2016), Construction is capital intensive and money is the lifeline of any construction work which dictates the scope, pace, quality, direction and final product. Money needed to acquire construction resources such as materials, labour, plants and management expertise. The contractor also requires working capital to finance day-to-day activities on a construction site. Barbosa and Pimentel (2001), indicated that the cash flow of the project normally consists of a complete history of all payments, cost, and all revenues. Furthermore, cash flow prediction needs to be effective and fast enough, according to the inadequate time and costs especially at the tendering phase. Contractors scarcely prepare a detailed construction plan at this phase, and usually waiting until the contract being awarded. So, a fast and effective approach for prediction of cash flow is highly desirable. Cash flow is a useful tool for capital budgeting practices in decision – making process while making anew investment (Usman et al., (2016). It is good for cost planning technique helps in taking bid/no bid decisions of the company during the tendering stage of the project. Besides, cash flow will assist the contractors in the selection of contracts that will not cause serious cash problems due to the lack of sufficient financial resources (Kaka and Price, 1993). Also enables tracking both cost and revenue of the project through time. It will be useful in pretender stage for making good estimation and determine the contingency, make-up percentage of the bid cost. It develops a cash conscious culture in the company by promoting allocation, usage and control of resources effectively (Usman et al., 2016).

Cash management is required for planning, monitoring and controlling the cash flow of the project and taking necessary actions against anticipated cash flow problems, in order to complete the project on time, within the budget and to the expected quality (Usman et al., 2016). An efficient cash management should control the expense of the project and consider the possible rate increase in inflation and its pressure on the project expenses. It should also optimise cash collection and improve cash capacity to make the project more profitable. Usman et al (2016) opined that the financial management strategy and the cash flow are the two interrelated items of a project affecting and determining each other. Since cash flow is the plan of predicting the future cash requirement of the project, all attitudes about the prospect of the project should take into account while developing flow. For instance, for the same project, the final cash flow curve will change considerably if the contractor planning to apply the front- loading strategy. Besides, if cash shortage foreseen by the cash flow analysis of the project, the company should prepare financial management strategies to cover the cash deficit and complete the project (Usman et al., 2016). Therefore, it is important to determine possible strategies while making cash flow analysis. Marc (2009) has indicated some tactics applied by the contractor to improve the cash deficiency of a project such as

front- loading and back-loading. Front loading is mostly used in unit price type of contracts. In tendering stage, the contractors enhance the cash flow conditions without changing the tender price by increasing the work items going to be constructed at early stage and reducing those going to be held on at the end in order to balance the cost of the original tender price. Back loading involves situation where the contractors foresaw cash problem due to inflation, they try to postpone the item to be constructed at the expense of the earlier ones.

According to Samset (2003), projects are evaluated more frequently than institutions and other more permanent initiatives. This is because projects are temporary undertakings that are implemented in a confined period of time, where there is a desire to evaluate the outcome before the project is formally terminated. The concept of project success has remained ambiguously defined both in the project management literature and, indeed, often within the psyche of project managers. Projects are often rated as successful because they have come in on or near budget and schedule and achieved an acceptable level of performance. Other project organisations have begun to include the client satisfaction variable in their assessment of project success. Until project management can arrive at a generally agreed upon determinant of success, our attempts to accurately monitor and anticipate project outcomes will be severely restricted (Pinto and Slevin, 1988).

3. RESEARCH METHODOLOGY

3.1. Research design

This study adopted survey design. According to Creswell (2009), it provides quantitative or numerical description of trends, attitudes or opinion of a population by studying a sample of that population. The researcher then generalises or makes claims about the population from the sample results. The approach was adopted because it enabled the researcher to collect quantitative data (in this case, cash flow related data) which can be analysed quantitatively using descriptive and inferential statistical tools; while data collected can help to explain reasons for particular relationships between variables, and produce models of the relationships; the possibility to generate findings that are representative of the whole population (Saunders, Lewis, and Thornhill, 2009).

3.2. Area of study

The study was carried out in two of the six states that make up the oil rich South-South geopolitical zone of Nigeria. Nigeria's south-south geopolitical zone is made up of six states including Akwa Ibom, Bayelsa, Cross Rivers, Delta, Edo, and Rivers. The zone accounts for 50% of Nigeria's GDP, 95% of her foreign exchange earnings, and 80% of all budgetary revenues that amount to over 7 trillion naira annually (Ikediashi and Ajiero, 2019). According to the official website of Akwa Ibom State government, akwaibomstate.gov.ng (2012), Akwa Ibom state was created on September 23, 1987 out of the then Cross River state and lies between latitude 4035" and 5033" North and longitude 7035" East. It is bounded in the west by Cross River State, on the North by Abia state, and on the South by the Gulf of Guinea. It is currently the highest producer of oil and gas in Nigeria which has accounted for the high level of infrastructural development going on in

the state. This has attracted the influx of major local and international contractors to the state. On the other hand, Rivers State prides as the most populous state in the south-south geopolitical zone with a population of 5,198,716 making it the sixth populous state in Nigeria (National Population, 2006). Created on May 27, 1967, it is bounded on the south by the south-eastern states of Anambra, Abia, and Imo; to the east by Akwa Ibom state; and to the west by Bayelsa and Delta states (Ikediashi, 2014). It serves as the economic nerve centre of Nigeria's oil and gas industry which has made it to be one of the greatest construction hub in Nigeria. The two states were selected for the study to examine the state of cashflow for construction works in the study area given that the states are witnessing massive construction activities in which the researcher has been personally involved.

3.3. Population and sample

Population of a study is defined as the collection of all items whether of people or of objects or of events, that are to be considered in a given problem situation (Udofia, 2011). Population of this study comprised of clients, consultants and contractors for government and private oriented projects in the two states of Akwa Ibom and Rivers. Sample on the other hand, is a small part of the population observed for the purpose of making inferences about the population (Corbetta, 2003). Target respondents who formed representatives of clients, consultants and contractors were mainly built environment professionals such as Builders, Quantity Surveyors, Architects and Civil Engineers. However, the sample frame which forms a list of people, places, or items from which the sample is to be drawn (Udofia, 2011), was drawn from the registrar of the relevant bodies in the two states. These included the NIOB, NIA, NIQS, and NSE. Meanwhile, only registered civil engineers were extracted from the list of engineers in the registry of NSE. This is shown in Table 1.

Table 1: Sample frame of the study

State	NIOB	NIQS	NIA	NSE (NICE)	Sample Frame
Akwa Ibom	25	54	55	23	157
Rivers	31	64	69	51	215
Total	56	118	124	74	372

To generate the group sample size, the formula suggested by Yamane (1967) was adopted. It states that:

$$\mathrm{n} = \frac{N}{1+N(e)^2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (Equation\ 1)$$

Where n = sample size, N = Population size, e = level of precision = 0.05 at 95% confidence level. The result is shown in Table 2. To aggregate the group sample size proportionally into each professional body, the formula adopted by Nwankpa (2011) was used. It states:

$$\frac{n}{N}\ X\ S \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (Equation\ 2)$$

Where n = sample frame of each stratum

N = Total population

S = Total sample size

The same approach was adopted by Ebiloma (2017). Table 2 shows how it was used to generate sample size for each professional body in each of the two states.

Table 2: Sample size calculation

Professional body	Sample frame	Sample (n)
NIOB	56	29
NIQS	118	62
NIA	124	64
NSE (NICE)	74	38
Total	372	193

A total sample size of 193 was therefore used for the study.

3.4. Sampling techniques

This study adopted stratified random sampling and simple random sampling techniques. Stratified random sampling was used to divide the respondents based on location (states) so as to obtain a proportional representation from each of the two states. For each state, it was also used to stratify respondents based on their professional affiliations. To obtain the actual sample size for respondents from each professional body, the formulas suggested by Yamane (1967) and Nwankpa (2011) were used. The result is shown in Table 2.

Simple random sampling is a probability sampling technique where each and every respondent in a finite population has an equal chance of being included in a sample. For this study, names of respondents drawn from the directories of the professional bodies were coded and the codes written on slips of paper before a lottery was conducted as suggested by Kothari (2004). This was repeated several times until the actual number of sample units required were met.

3.5. Data collection

Data for this study was collected through a structured questionnaire. The questionnaire approach which underpins survey research design is very appropriate because of its inherent advantages. For instance, the responses will be gathered in a standardised way thereby facilitating easier analysis while bias errors are drastically reduced. Besides, it will be relatively faster and more convenient to collect potential information from a large group of respondents (Saunders, Lewis, and Thornhill, 2009). The questionnaire addressed questions relating specifically to (1) sample characteristics (respondents and projects), (2) contractors' cash flow projections and (3) project delivery in terms of time and cost.

The scale of measurement for the study included nominal, interval and ordinal (Likert) scales. Nominal and interval scales were used for questions relating to personal and project characteristics while Likert scale was used for questions relating to the objectives of the study. The five point Likert scale ranged from the least rating of 1 to the highest rating of 5. In particular, respondents were asked to rate the level to which they think the listed project characteristics have influenced accuracy of cash flow for projects they have been involved using a 5 point Likert scale of: 1 = very low influence, 2=low influence, 3=slightly high influence, 4=high influence and 5=very high influence. They were also asked to rate the extent to which they believe that contractors' cash flow has impacted on project delivery indicators using the scale of 1 = strongly disagree, 2=disagree, 3=slightly agree, 4=agree and 5=strongly agree.

To demonstrate the extent to which the constructs in the questionnaire would yield consistent findings, Cronbach's alpha was adopted. According to Pallant (2010), alpha values of 0.7 and above are sufficient. Table 3 shows results of the reliability analysis and clearly indicates that all the constructs are above the suggested threshold.

Table 3: Reliability analysis result

Constructs	Alpha value	Number of items
Risk factors	0.828	31
Project characteristics	0.833	5
Project delivery	0.813	6

In order to validate contents of the questionnaire, draft copies were scrutinised by a team made up of a researcher, representative each of a contractor, a client and a consultant to some on-going projects. This led to some adjustments and re-alignments to ensure effective delivery in the administration of questionnaire. Copies of the questionnaire were then administered by the researcher to 193 respondents who represented clients, consultants and contractors in the survey.

3.6. Data analysis

Data collected was analysed with the help of Statistical Package for Social Sciences (SPSS) Version 22. Specifically, descriptive statistics were used to analyse objectives of the study while Kruskal Wallis test was used to test the three hypotheses postulated for the study. According to Pallant (2010), it is a non-parametric statistical tool based on chi-square distribution to test difference between several independent groups in distributions which are not normally distributed. The decision rule is that the null hypothesis is accepted if the significant level presented as asymptotic significance is greater than 0.05 (5% level of significant difference), otherwise the null hypothesis is rejected and alternate hypothesis is accepted.

4. Results and Discussion of Findings

4.1. Response rate analysis

A total of 193 copies of the structured questionnaire was however distributed to respondents. The results of analysis is indicated in Table 4.

Table 4: Response rate analysis result

Professional body	Administered	Returned	Response rate (%)
NIOB	29	13	44.8
NIQS	62	29	46.8
NIA	64	58	90.6
NICE(NSE)	38	30	78.9
Total	**193**	**130**	**67.4**

The results show that architects had the highest return rate of 90.6% while builders had the least rate of return of 44.8%. However, of the 193 administered, 130 respondents returned valid responses giving a cumulative response rate of 67.4%.

4.2. Sample characteristics

Table 5 shows the breakdown of respondents into sex, profession, organisation, work experience and location.

Table 5: General characteristics of respondents

Characteristics	Frequency	Percentage (%)
Sex		
Male	112	86.2
Female	18	13.8
Total	130	100
Profession		
Builders	13	10.0
Quantity surveyors	29	22.3
Architects	58	44.6
Civil engineers	30	23.1
Total	130	100
Organisation		
Client	37	28.5
Consultant	35	26.9
Contractor	58	44.6
Total	130	100
Work experience		
0-2 years	10	7.7
2-5 years	42	32.3
5-10 years	76	58.5
Over 10 years	2	1.5
Total	100	100
Location		
Akwa Ibom	50	38.5
Rivers	80	61.5
Total	130	100

The results indicate that male respondents were 86.2% of the total respondents while female participants were paltry 13.8%. This apparent low response of female respondents could be attributed to the fact that the construction industry especially in Nigeria is dominated by the male folks.

In terms of **professional affiliation**, the architects were the highest number of participants with 44.6%. This was followed by the civil engineers at 23.1%, the quantity surveyors at 22.3%, and the builders at 10%. In terms of organisational affiliation, contractors had the largest number of respondents at 44.6%, followed by clients at 28.5%, and consultants at 26.9%. This was expected especially given that the research was about an issue of concern to contractors. However, in a cross tabulation analysis shown in Table 6, it was discovered that out of 37 respondents who represented the client organisations, 17 were architects, 10 were civil engineers, and 3 were builders, while 7 were quantity surveyors. Also in contractor organisations, there were 24 architects, 16 civil engineers, 7 builders and 11 quantity surveyors. Additionally, there were 17 architects, 4 civil engineers, 3 builders, and 11 quantity surveyors that represented the consultant organisations. The outcome is an indication that there was a proportional balance of the built environment professionals in the three classes of organisation used for the survey.

Table 6: Profession versus Organisation Cross tabulation

		Organisation			
		Client	Contractor	Consultant	Total
Profession	Architect	17	24	17	58
	Civil engineer	10	16	4	30
	Builder	3	7	3	13
	Quantity surveyor	7	11	11	29
Total		37	58	35	130

In terms of **work experience** in the construction industry, 58.5% of respondents had experience of between 5 and 10 years. This was followed by those within the range of 2 to 5 years at 32.3% while those with a range of 0 to 2 years were 7.7% of respondents. Only 1.5% of respondents had over 10 years of experience. This shows that a good number of respondents are experienced and share reliable information about the concept of cash flow in the construction industry. In terms of location, 61.5% of respondents are based in Rivers state while 38.5% are based in Akwa Ibom state. However, in the cross tabulation analysis of professional affiliation against location, the results show that architects formed the largest number of participants in both states (please see Table 7 below).

Table 7: Profession versus Location Cross tabulation

		Location		
		Akwa Ibom	River state	Total
Profession	Architect	17	41	58
	Civil engineer	9	21	30
	Builder	9	4	13
	Quantity surveyor	15	14	29
Total		50	80	130

Overall, the results on profile of respondents show that there was a proportional spread of respondents across all indicators while respondents who returned valid responses were knowledgeable and experienced. Therefore, information received from them were deemed reliable and free of any bias.

4.3. Influence of project characteristics on contractor's cash flow

The first objective was to ascertain the influence of project characteristics on contractors' cash flow projections for construction projects in the study area. To carry this out, 5 most cited project characteristics were sourced from the literature and subjected to the opinion of respondents. They were asked to rate the level to which the project characteristics have influenced cash flow projections for projects they have been involved using a 5 point Likert scale of: 1 = very low influence, 2=low influence, 3=slightly high influence, 4=high influence and 5=very high influence. The result of the analysis is presented in Table 8.

Result from Table 8 shows that procurement method (in terms of traditional, design and build, project management etc.) was the most rated project characteristic that has influence on contractor's cash flow. This is closely followed by project duration at 2nd, and client type (public or corporate) at 3rd while project type (public or private) was rated the least. The result however indicates that all the project characteristics have significant influence on contractor's cash flow projections for construction projects in the study area all had mean score above the 3-point threshold.

Table 8: Results of analysis for influence of project characteristics on contractor's cash flow

Code	Project characteristics	Builders		Quantity surveyors		Architects		Civil engineers		Overall	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
PC01	Project type (public or private)	4.615	3	3.724	5	3.379	5	3.700	5	3.654	5
PC02	Procurement method	4.539	4	4.276	3	3.983	2	4.266	2	4.169	1
PC03	Project value (project sum)	4.692	2	4.379	1	3.828	3	3.867	4	4.046	4
PC04	Project duration	4.231	5	4.172	4	4.120	1	3.967	3	4.108	2
PC05	Client type (public, private or corporate)	4.769	1	4.310	2	3.724	4	4.267	1	4.085	3

4.4. Test of hypothesis three on influence of project characteristics on contractor's cash flow projections

The first hypothesis postulated for the study states that there is no significant difference in the perception of respondents (based on their professional affiliations) on the influence of project characteristics on contractor's cash flow projections in the study area. Kruskal Wallis test was used to test the hypothesis. The decision rule is that the null hypothesis is accepted for p-values is greater than 0.05 (5% level of significant difference), otherwise the null hypothesis is rejected. The results of analysis are presented in Table 9.

Table 9: Kruskal Wallis test result for influence of project characteristics on contractors' cash flow projections for construction projects

Profession	**N**	**Mean rank**	**Chi square**	**Df**	**p-value**	**Decision**
Builders	13	97.38	11.907	3	0.008	Reject
Quantity surveyors	29	65.91				
Architects	58	59.65				
Civil engineers	30	62.60				

The result from Table 9 shows that the p-value for the hypothesis is 0.008, which is less than the 0.05 significant level benchmark. The hypothesis is therefore rejected, indicating that there is significant difference in the perception of Builders, Architects, Civil Engineers and Quantity Surveyors on the influence of project characteristics on contractor's cash flow projections.

4.5. Contractor's cash flow and project delivery

The second objective was to assess the influence of contractors' cash flow on project performance in the study area for construction projects in the study area. Respondents were asked to rate the extent to which contractors' cash flow has impacted on project delivery (time and cost) using a 5-point scale of 1 = strongly disagree, 2=disagree, 3=slightly agree, 4=agree and 5=strongly agree. The result of the analysis is presented in Table 10.

Table 10: Results of analysis for influence of contractor's cash flow on project delivery

Code	Project performance targets	Builders		Quantity surveyors		Architects		Civil engineers		Overall	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
PD01	Projects delivered behind schedule	2.308	5	2.310	5	2.241	6	2.700	5	2.369	5
PD02	Projects delivered on schedule	3.923	2	4.000	2	4.138	1	4.000	1	4.054	1
PD03	Projects delivered ahead of schedule	3.539	3	3.552	3	3.621	3	3.567	3	3.585	3
PD04	Projects delivered on budget	4.154	1	4.138	1	3.966	2	3.833	2	3.992	2
PD05	Project delivered at an overrun	2.692	4	3.276	4	2.552	4	3.100	4	2.854	4
PD06	Project delivered at an underrun	1.923	6	2.138	6	2.345	5	2.533	6	2.300	6

Table 10 shows that "on schedule delivery of projects" was rated 1st by respondents, followed by "on budget delivery of projects" at 2nd, and "projects delivered ahead of schedule" at 3rd. However, "projects delivered at an underrun" was the least rated. The result also indicates that the influence of contractor's cash flow on 3 of the 6 project delivery indicators were not significant as they did not meet the 3-point threshold.

4.6. Discussion of findings

Findings show that procurement method has the greatest influence on contractor's cash flow according to the opinion of respondents. This is in agreement with the findings of Ruben and Ger (2008) and Ling (2004) that discovered that every procurement method in use has high impact on cash flow for construction and engineering projects. Plausibly, the type of procurement route (which may be traditional, design and build, or project management) used for executing projects could determine how successful or woeful the inflow and outflow of cash required for the project can be. Project type (public or private) was rated however the least rated. This may mean that respondents do not see project in terms of its type as having any contributory influence on the contractor's cash flow. Findings also indicates that all the project characteristics have significant influence on contractor's cash flow projections for construction projects in the study area all had mean score above the 3-point threshold. The p-value for the third hypothesis is 0.008, which is less than the 0.05 significant level benchmark. The hypothesis is therefore rejected, indicating that there is significant difference in the perception of Builders, Architects, Civil Engineers and Quantity Surveyors on the influence of project characteristics on contractor's cash flow projections. What this implies is that there are dissenting voices among the respondents on the influence of project characteristics on contractor's cash flow.

Findings on the assessment of the influence of contractors' cash flow on project performance in the study area for construction projects indicates that "on schedule delivery of projects" was the top rated and followed by "on budget delivery of projects" and "projects delivered ahead of schedule". However, "projects delivered at an underrun" was the least rated. This implies that respondents are of the view that a good cash flow management of projects has the highest impact on timely delivery of projects. This is because when money and other resources are flowing in and out of a project normally, the project is bound to be delivered on schedule. This is also true of other project delivery indicators such as on budget and ahead of schedule.

5. CONCLUSION AND RECOMMENDATIONS

The aim of the study was to investigate the state of contractors' cash flow and its influence on construction project delivery in selected states of south-south Nigeria with a view towards improving contractors' cash flow and ultimately bolstering project delivery. Four objectives were formulated to achieve the aim. In line with quantitative survey approach adopted for the study, 215 copies of a structured questionnaire were administered while130 valid responses were received to give a response rate of 60.5%. Data collected were analysed using descriptive statistics and Kruskal Wallis.

Based on findings that emanated from the study, it is concluded that the top three project characteristics that have influence on contractor's cash flow are procurement method (in terms of traditional, design and build, project management etc.), project duration, and client type (public or corporate). Finally, the study concludes that effective management of contractor's cash flow projections has the most significant influence on projects being delivered on schedule.

The following recommendations are made based on findings of the study:

1. Clients should properly cash back projects by ensuring that cash flow mechanism of contractors is not unnecessary disrupted so as to achieve successful project delivery.
2. Government should enact stringent laws and guidelines to punish parties to a contract that defaults on the issue of funding of projects. This is to avoid delay in project execution and other risks that could hamper project delivery.
3. The study was based on perception of respondents. Although very difficult to get due to strict confidential nature of financial data, further research could be conducted using hard/archival financial data to develop robust cash flow predicting models.
4. The study was mainly quantitative-based research. A more inclusive qualitative case study research involving interviews and group discussion could be carried out to triangulate outcome of this study.
5. The study was restricted to two of the six states that make up the south-south geopolitical zone mainly due to some unavoidable restraints. A further research could be conducted to accommodate more or all of the states with a view towards generating a comprehensive database that could be used to compare with studies from other geopolitical zones in Nigeria.

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