

Assessing the Factors Influencing Cashflow Management in Project Delivery in Kaduna Metropolis, Nigeria

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ABSTRACT

The aim of the study is to Assess the state of contractors' cash flow and its drivers influencing on construction project delivery in Kaduna, Nigeria with a view towards improving contractors' cash flow. The study's objectives are: to identify the factors influencing cash flow management on construction projects delivery and to examine the influence of contractors' cash flow management on Construction project delivery. A questionnaire was prepared to identify the above-mentioned factors. A total of 35 responses were collected from contractors and desired results were obtained and conclusions were made. The results of the questionnaire indicated that the majority of the contractors who encountered failures in their annual project contracts, attributable to poor cash flow management and forecasting, are those contractors who did not perform cash flow analysis prior to submitting bids for projects. The survey showed that in construction industry, material management plays an important role in cash flow management followed by procurement and inventory. The survey also showed that the major sources of capital are the credit, the company assets, the advance payment and the progress payment. Inventory management is the best suited example for cash flow management in a project.

Keywords: cashflow; management; project; contractor; construction

INTRODUCTION

Cash flow is a term used to describe the pattern of cash movement in (income) and out (expenditure) of a business and the resulting availability of funds at any given time (Adebola, et. al., (2018); Nwanyanyu, (2020). Cash flow is considered the main indicator of a business's financial health. Exercising proper cash flow management is crucial to the survival of businesses (Emidafe 2018). Cash flow management refers to the practices that are adopted to balance income and expenses; it entails forecasting (planning), monitoring, and controlling practices of cash inflow and outflow and the arrangement of deficits over the life of a business (Lowe and Moronke, 2020 Ummukulthum, et. al., 2023; Hafsat et. al., 2023).

Construction companies exercise cash flow management at both the company and project levels. (Gatti, 2018) Proper cash flow management ensures the correspondence of actual cash flow with the set cash flow baseline. Financial success for a firm does not depend on the volume of the firm's capital. Rather, for a firm to be financially successful, it should have the ability to fulfill its obligations in the various transactions it undertakes. In other words, the firm should manage its cash in a way that can give it a further view of the different financial transactions in a project (Gidado, 2017). Thus, to ensure a healthy and stable financial performance for a firm, it is necessary to construct an effective cash flow forecasting model (Halpin and Senior, 2019), followed by proper management of cash inflow and outflow.

The construction industry is reputed to be one of the largest contributor to the Global economy accounting for in sizable proportion in the Gross Domestic Product (GDP) of both developed & undeveloped countries (Gross Walthes 2015). According to Lowe (2018), the value of construction is in range of 7% to 10% for highly developed economies and around 3% to 6% for developing economies such as Nigeria.

STATEMENT OF PROBLEM

Arditi, koksall and kale (2016) opined that the construction industry has continued to experience one of the highest rates of insolvency and bankruptcies when compared to other sectors such as manufacturing. They 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 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 (Emidafe 2016; Ibrahim, et. al., 2017). 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, 2017). Construction sector recorded high rate of business failure globally with 20.1% and more than 80% of these failure was attributed to lack of financial control (Emidafe, 2016; Ibrahim, 2019; Ibrahim and Abdulkadir, 2019).

Several authors have investigated the causes of failure (Argenti 2012, Slatter 2014, Lowe 2014, Arditi, Koksal and Kale 2016; Ibrahim and Abdullahi, 2016; Ibrahim, et. al., 2022a; Ibrahim, et. al., 2022b; Ibrahim, et. al., 2022c). Their results show that cash flow problems and poor management are the main causes. It is known that the levels of insolvency in construction is high (Hughes, Hillebrandt and Murdoch 2013). It ought to be possible to reduce these levels, since the major causes are known. Therefore, research on how to avoid the causes should be encouraged. In other words, the most important step to take is to help construction companies to develop good cash flow management practices.

LITERATURE REVIEW

Concept of Cash Flow

Cash flow represents the life-blood of an organization because without it, outstanding financial obligations cannot be met (Arafat and Skaik, 2016). A company must have sufficient working capital to pay its creditors, suppliers, subcontractors and employees and may be reliant on its clients’ payments to cover these expenditure items (Lowe and Moroke, 2020; Ibrahim and Adamu, 2020). Huggins (2017) aptly notes that whilst revenue is vanity, cash flow is sanity and cash is king, constituting an essential construction company resource. The significance of cash flow is related to cash as the primary source of every successful construction project (Sherif and Kaka, 2013). A stable financial performance, achieved through productive cash flow analysis, creates the potential for construction organizations to exploit their investment opportunities (Seo, et al., 2018). Finance is the fuel that energizes business, and a firm’s cash flow is one of the most significant indicators of that company’s financial strength as it impacts upon both performance and profitability (Tam,2012; Naoum, 2013; Beatham et al.,2014).

Cash flow is of particular importance to the contractor because it reflects a project’s financial performance prior to the contract being completed and the final account settled (Usman et al., 2016; Ibrahim and Abdulkadir, 2019). Irregularities in cash flow can cause capital lock-up and constitute a triggering factor for insolvency which may end up disrupting the planned project programme (Lowe and Moroke, 2020). Cash flow comprises two components: inflows and outflows (Omag, 2016).

Cash inflows derive from the company’s operational, investment and financing activities such as receipt of a bank loan; increased bank overdrafts; shareholder investment; interest from savings and investments; and payment for goods or services from customers (Lowe and Moroke, 2020; Ibrahim and Falola, 2021; Ibrahim, et. al., 2022). Cash outflows include payment of wages; rent and daily operating expenses; purchases of stock, raw materials and supplies; dividend payments or servicing any debt held; loan repayments; and the purchase of fixed assets including plant, machinery, vehicles and office furniture (Bhandari and Iyer, 2013; Berry, 2015; Ibrahim and Abdullahi, 2019).

Jabbari et. al. (2019) and Omag (2019) classify cash flow into two dichotomous groupings: positive and negative. Positive cash flow occurs when the company’s cash inflow exceeds its outflow, providing an indicator that the company is in good financial health. Negative cash flow occurs when the cash outflow surpasses the cash inflow and is indicative of a company in Financial difficulty.

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 organized 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 failures were attributed to lack of financial control (Emidafe, 2016; Ibrahim, 2020a; Ibrahim, 2020b).

Cash Flow Management Processes and Techniques

According to Sanni & Durodola (2021) being able to manage and control the cash needed to compensate all expenses, wages, service providers, investments, taxes and all the other financial outflows are traits represented by a successful contractor. If current reserves are inadequate to fund expenses, the contractor will need to borrow from a bank and the interest on that loan will be an “unallowable” expense. Without cash flow, business comes to a halt very quickly. Employees, service providers, wholesalers and, banks have little patience in waiting for outstanding funds due to them. Cash flow management processes within construction support various decision-making processes, this will ensure the contractors protection against the harmful effects of uncertainty.

FACTORS THAT AFFECT CASH FLOW

TABLE 1: Factors that affect cash flow.

Factors that affect cash flow	Source
Profit Margin, Retention Condition, Delay in payment from client, Delay in paying labor, plant hirers, material suppliers & Subcontractors, Claims, Undervaluation, Overvaluation, Front end loading, Back end loading, Interim valuation.	Harris and McCaffer (2001).
Use of available credit lines, Interest rate, Budgetconstraints, Cost of Project, Contract duration	Paulo, Barbosa and Priscilla (2001).
Estimating errors, Variations of contracts, Poor financial management/lack of fiscal discipline.	Jasper

Factors that affect cash flow	Source
Mobilization advance payment, Final account settlements	Rameezdeen, Palliyaguru and Amaratunga
Uncertainties, Unexpected changes in construction & cash flow.	Boussabaine and Elhaq (2009).
Cost variances, timing of contract start and end, exchangerate, governmental policy/regulatory policy, laborshortage, shortage of new plants, compliance with new regulations, inflation, change in exchange rate, civil disturbances, inclement weather, labor strikes,	Odeyinka, Lowe and Kaka (2008).

Source: Field Survey, 2023.

RESEARCH METHODOLOGY

Research Design

The research design adopted for this work was the questionnaires survey research design. This research design involved gathering of information on a targeted population from a sample and generalizing the findings obtained from the analyzed sample to the entire population.

Mean score- the analytical technique was used to rank categories to their significance importance. This was based on four (4) point Likert Scale with 4 as strongly agreed, 3 agreed, 2disagreed and 1strongly disagreed.

$$Mean\ score = \frac{4n^4 + 3n^3 + 2n^2 + n^1}{4(n^4 + n^3 + n^2 + n)}$$

Study Population

The Population of the study include contractors, consultant, client that undertake construction project in Kaduna metropolis.

Where n¹ = number of respondents who answered strongly disagreed n² = number of respondents who answered disagreed n³ = number of respondents who answered agreed n⁴ = number of respondents who answered strongly agreed (Oladiran,2009).

Sample Size & Sampling Technique

The study employed the use of random sampling method to administer questionnaires on the targeted respondents within construction practitioners.

Ranking of Responses: The Mean Score would be ranked from highest to lowest with the highest as 1st and lowest as last.

Method of Data Presentation and Analysis

Data presentations are in the form of tables, such as frequency/percentage &Mean Score with Descriptive statistical tool used for analyzing data.

Grand Mean: A grand mean will be calculated as mean of the Mean Scores. Options with means above the grand mean are regarded as accepted while those below are rejected.

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

TABLE 2: Data Distribution.

Description	Frequency Distribution	Percentage Distribution (100%)
Distribution	40	100 %
Returned	24	64.286%
Not returned	16	35.714%

Source: Field Survey, 2023

TABLE 3: Status of Respondents.

Respondents	Frequency	Percentage
Quantity surveyors	18	40.00%
Architects	13	28.89%
Builders	8	17.78%
Engineers	4	8.89%
Others	2	4.44%
Total	45	100.00%

Source: Field Survey, 2023

Table 3 shows that 40% of the respondents are Quantity surveyors, 29% are Architects, 18% are Builders, 9% are Engineers and 4% are contractors.

RESPONDENTS QUALIFICATION

TABLE 4: Status of Respondents.

Qualification	Number	Percentage
OND	1	2.22%
HND/BSc	29	64.44%
PGD/MSc	10	22.2%
PhD	3	6.67%
Others	2	4.45%
Total	45	100%

Source: Field Survey, 2023

Table 4 shows that HND/BSc has the highest Respondent in construction firms with 64.44 %,PGD/ MSc 22.2%, PHD 6.67, OND 2.22% and Others Participants 4.45%.

TABLE 5: Respondents Years of Experience.

Years of work experience	Number	Percentage
Less than 5 years	6	13.33%
Between 5 and 10 years	9	20.00%
Between 10 to 15 years	12	26.67%
More than 15 years	18	40.00%
Total	45	100%

The years of experience of firms are put into four categories ranging from less than 5 years’ experience to more than 15 years’ experience. As shown in Table 3 most of the firms investigated have 10-15 years’ experience and 6 firms have less than 5 years’ experience.

CLIENT RELATED FACTORS THAT AFFECTS CONTRACTOR’S CASHFLOW

TABLE 6: Client Related Factors that affects contractors cash flow.

Client-related factors that affect cashflow	Total score	Weighted mean	Standard deviation	Ranking
Delay in payment from client	271	4.52	1.01	1st
time lags	265	3.58	0.85	5th
Claims	236	3.95	1.05	2nd
Undervaluation	230	3.73	1.24	3rd
Change orders	226	3.07	1.29	9th
Mobilization/advance payment	223	3.35	1.20	8th
Overvaluation	223	3.36	1.15	7th
Payment mode	216	3.72	1.04	4th
delay agreeing variations	208	3.47	1.27	6th
changes of cost element	127	2.12	1.33	10th
Unconfirmed earned values	106	1.77	1.37	11th

Source: Field Survey, 2023

Material fluctuations as the most critical factor ranked the 1st with a mean of 4.42 and standard deviation of 0.79 while government/regulatory policy is the least and ranked the 14th with a mean of 2.72 and standard deviation 0.99.

TABLE 7: Drivers influencing cash flow management on Construction project delivery.

S/No	Drivers influencing cash flow management on Construction project delivery	Total Score	Weighted mean	Standard deviation	Ranking
1.	Effective site management and supervision	117	2.52	1.27	5th
2.	Effective strategic planning	123	2.39	1.11	6th
3.	Proper project planning and scheduling	206	1.70	1.24	8th
4.	Use of appropriate construction methods	215	2.10	1.30	14th
5.	Clear information and communication channels	186	2.02	1.78	1st
6.	Engagement of experienced sub-contractors and suppliers	124	1.94	1.03	13th
7.	Frequent progress meetings	308	2.53	1.45	4th
8.	Comprehensive contract administration	219	1.86	1.54	2nd
9.	Systematic control mechanism	103	2.21	1.34	12th
10.	Improving contract award procedures by giving less weight to pricing and more weight to capabilities and past performance of contractor	229	2.98	1.52	3rd
11.	Frequent coordination between parties	129	1.89	1.29	7th
12.	Use up to date technology	194	2.00	1.42	9th
13.	Preconstruction planning of project tasks and resources needs	172	1.86	1.22	10th

Source: Field Survey, 2023

TABLE 8: Grouping of factors affecting cash flow.

S/No.	FACTORS AFFECTING CASH FLOW	MEAN OF WEIGHTED MEAN	RANK
1	Economic Factors	3.43	1st
2	Client-related factors	3.33	2nd
3	Contractual factors	3.176	3rd
4	Contractor- related factors	3.12	4th

Source: Field Survey, 2023

DISCUSSIONS

Findings from this study helps in assessing drivers influencing Contractor cash-flow management practices which include; fluctuation of prices of materials, degree of variation, company's cash flow, improper planning and management, government policies amongst others. Literature review also helps in identifying methods for mitigated cash flow factors to include; effective site management and supervision, effective strategic planning, proper project planning and scheduling, use of appropriate construction methods amongst others. The results show that the "degree of variation, fluctuation of prices of materials, changes in initial design and estimating errors" are factors that have more severe effect on the cost performance of construction projects in Kaduna metropolis. And that can be linked to assertion made by (Odeyinka, Kaka and Lowe, 2018).

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary of Findings

The findings from the analysis can be summarized as follows:

- Delay in payment from client is the most critical factor that affect the management of cash flow,
- Equipment rentals has no effect on contractor's management of cash flow the economic factors have the most critical impact on contractor's management of cash flow.

- There is no significant difference between contractors with less than 5 years of experience and that of 5-10 years. the alternative hypothesis is rejected
- Are these the only findings from your work?

CONCLUSION

This study is set out on the drivers influencing cash flow management on project delivery and to assess contractor's perception on factors that affect contractor's performance in project delivery. The critical factors that affect contractor's performance and management of cash flow in project delivery are the economic factors. And there is no significant difference between the opinion of contractors with less than 5 years' experience and that of contractors with experience of 5-10 years. By uncovering this relationship allow construction professionals to gain insight into possible causes of ineffective cash flow management that is causing unsuccessful project delivery as perceived by building projects contractors.

RECOMMENDATION

Research into assessment of drivers influencing cash flow management is a vast area of study, which can be explored with new approaches and perspectives. In view of the findings and conclusion of this study, it is recommended that more attention should be directed towards addressing the late or delay in cash flow on project delivery, Transport Difficulties, Escalation of materials prices, bankruptcy and insolvency, Abandonment, labor strike and Capital lockup.

This will enhance effective cash flow management on construction sites. Government should also ensure that the main objectives of its construction projects are set to achieve better cash flow management and reduction in material surplus. This is to improve the cost and time performance of construction projects in Kaduna State.

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