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AN APPRAISAL OF FACTORS AFFECTING CASH FLOW'S IN BUILDING PROJECT DELIVERY IN NIGERIA

[1]Nuruddeen Usman, [2]Abdulkadir Sani, &[3]Rukayya Ibrahim Tukur
[1&2]Department of Building,Faculty of Environmental Technology,
Abubakar Tafawa Balewa University Bauchi, Nigeria
ibnothman13@gmail.com, arabs4u@gmail.com
[3]Hassan Usman Katsina Polytechnic, college of Environmental Studies,
Department of Quantity Surveying

Abstract

Appropriate cash planning techniques is necessary for adequate cost control and efficient cash management. Contractors cannot survive in the competitive environment without effective cash flow management. However, cash flow is the lifeline of project delivery, deficiency in cash flow may cause failure of the project. Therefore, this study aimed at assessing the contractor's cash flows effect on the delivery of projects in Nigeria. Thus, Explorative and questionnaire survey methods used to obtained data from literature and construction professionals. Data obtained were analysed using SPSS for descriptive statistics such as mean score and percentages. The findings of the study show that, delay payment (AMS=3.92), delay in settling of claims (AMS=3.88), loan repayment (AMS=3.87), consultant instruction (AMS= 3.82) and change in interest rate (AMS=3.77) are the main factors that are affecting cash flow on projects delivery in Nigeria.Hence, contractors should embark on project for which they have adequate fund to execute and all the claims made should be guinea and finally, client should honour certificate of payment as when due to avoiding improper funding of projects as well as settling verified claims within a reasonable time frame of the projects duration.

Keywords: Project Delivery, Contractors, Cash Flow, Effects, Average mean score (AMS)

Introduction

The construction projects are complex and risky, and it is a great employer of labour. Contractors cannot survive in the competitive construction industry without effective cash flow management, studies and investigations have shown that lack of liquidity is a major problem causing construction project failure (Al-Issa and Zayed, 2007). A model for accurately predicting trends in a project's cash flow prior to the construction phase has been

so elusive. Therefore, advance knowledge of the factors affecting cash flow and understanding their impact is essential to the contractor. Cash flow is the actual movement of money in and out of any project. Therefore, money flowin may be termed positive cash flow while the one flowing out may termed negative cash flow. Recent studies by Yaqiong, Tarek, and Shujing, (2009) indicate that, cash flow varied approximately from 129% to 20.4% with a mean value of 16.7% considering the effects of all factors on the basis of 30% total cost variation.In addition, financial management has long been recognized as an important management tool, throughout the construction process, thecontractorneeds to be comparing the actual income and expenses against the forecasted values. If there area discrepancies between these values, the contractor needs to adjust the schedule and update the project plan to match the estimated situation as early on as possible. With real knowledge of cash flow, forecasting the contractor could more efficiently and accurately manage cash flow during the construction process to prevent extra expenses and avoid project collapse Yaqiong Liu, Tarek Zayed and Shujiung Li (2009). In – spite of the high number of studies on cash flow there is no consensus for the reliability and applicability of the existing techniques for obtaining efficient cash flow Serhat (2010). The aim of this study is to investigate the factors that affects contractor's cash flow on project delivery in North- central parts of Nigeria with a view to enhancing construction productivity and timely project completion. The study become a necessity in order to identify the effect of contractors cash flow on construction project in order to increase the awareness to both employers and contractors in relation to their obligation of prompt payment and also to increase the output on timely project delivery. For the contractors, it will serve as an effective guide to site management of cash-in-flow and cash outflow and efficient management of resources to avoid project delay and abandonment. The finding of the study may also assist the stakeholders in the building industry to address the problems and effects of cashflow in a holistic manner for the benefit of all.

Nature of a Building Project

A typical building project is a temporary undertaken with a distinct beginning and end and executed at a time to evolve the physical facility. The project could be theconstruction of new buildings of different types and purposes or improvement on the existing facilities all required creating a suitable environment for human use. In any case, the project must be properly planned and organized to achieve the desired result, at anappropriate price, time and quality. Construction in a production activity subjected to the limitations imposed by the availability of the resources of material, manpower, money, machine and managerial known.

These limitations and other constraints make construction work a complex, expensive and high-risk venture, which must be effectively managed and controlled in order to achieve the desired result.

Need For Cash Flow in Project Procurement

Construction is capital intensive. The important of money in construction can likened to that of blood in ahuman being. Money is the lifeline of any construction work and 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. Working capital is a critical element needed in achieving successful construction procurement. Austine and Neale (1986) opined that money is the most important resource of all. Without it, the contractor cannot acquire the other resources and will not be able to maintain his liquidity. Many contractors underestimate the need for this resource and this account for the high number of bankruptcies in the construction industry today. In Nigeria, the small and medium sized indigenous contractors fall, victim of this error, especially when delayed, or non-payment occurs. Indeed, contractors in different industries differ in their requirement for working capital. Austine and Neale (1986) opined that the issue is not about profit but about the working capital necessary to run a contract.The construction industry presents a peculiar problem because the nature of the industry makes it possible for contractors to operate with low working capital and depend solely on progress payments for their cash flow requirements. Therefore, any disruption on payment creates severe consequences.In recent time, economic recession, inflation, political instability, unstable exchange rate, high cost of borrowing, and high construction cost, has created unfavourable business climate, which has eroded business confidence in the construction sector.Consequently, even the very few large contractors are not willing to source or use their money to finance a building project. The risk involved is very high and many who took the risk in the past never recover. This evidenced by the high rate of bankruptcies and project abandonment in the construction industry in Nigeria today.

The Cash Flow on a Construction Project

Cash flow is one of the most common cash forecasting and cost control technique that has been widely used by most of the construction companies for a long time. In economy, cash flow described as “The flow of money payment to or from a firm” (Bannock et al. 1988).

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. 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). Therefore, the usage of 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). Therefore, the usage of cash flow technique is beneficial for both the projects in tender stage and while the project are in progress since the contractors want to know in all phases of project that if their predicted cash flow is sufficient for covering the possible financial deficit of the project.

A cash flow chart visualizes the net amount of money that will required during the project as a function of time and gives an alert before the project /company will be in trouble. Therefore, cash flow chart will give achance for displaying the financial risk of the project.

It provides cash management strategies to plan, monitor and control the cash shortage or surplus. Cash flow is a useful tool for capital budgeting practices in decision – making process while making anew investment (CIB 2000).It is good for cost planning technique helps in taking bid/no bid decisions of the company during thetendering stage of the project (Kirkham, 2007). 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, 1991). 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 (CIB, 2000).

Cash Management

Cash management is required for planning, monitoring and controlling the cash flow of the project and taking necessary actions to the anticipated cash flow problems for completing the project on time within the budget.According to CIB (2000), an efficient cash management should:

- Reduce the financial risk of the project, volatility of the company's cash flow and maintain its position by providing enough liquidity.
- Control the expense of the project and consider the possible rate increase in inflation and its pressure onto the project expenses.

- Optimize cash collection and improve cash capacity to make the project more profitable.
- Plan the company's total credit capacity with banks to supply the foreseeable funding needs.
- Find necessary funds with lowest possible cost
- Maintain and improve the company's credit control and its creditworthiness to protect against a credit compress from suppliers, banks orother creditor.

The financial management strategy and the cash flow are the two interrelated items of the 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 thefront- 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. Therefore, it is important to determine possible strategies while making cash flow analysis. Despite the discussions about the morality of using them, there are some tactics applied by the contractor to improve the cash deficiency of the project stated by Marc (2009) as below:

- **Front- 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 the those going to be held on at the end in order to balance the cost of the original tender price.
- **Back Loading:** When the contractors foresaw cash problem due to inflation, they try to postpone the item to be constructed at the expense of the earlier ones.

Besides, there are some policies that should be taken to enhance cash flow of the project and reduce project expense for funding the project in cash shortage. Atallah (2006) suggests some techniques for maximizing, accelerating cash flow and controlling cash outflow:

- To negotiate with the client for getting fair and logical payment terms and retention amount so that the cash requirement of the will not threaten the project success.

- To submit the first invoice as soon as possible and get the cost of mobilization (site office setup, supervision, temporary facilities), bonding and insurance cost.

- To introduce the complete works to the client as soon as possible for making checks and strictly following up the deserved receivables.

- To practice prudent contract and change order management for improving the chances of getting paid.

- To accelerated the schedule for improving the cash inflow and decreasing the overall indirect cost of the project.

- To retain at least the same amount of money from the subcontractors in progress payments.

If the company could not take necessary actions contractually for improving cash flow, leading strategies should be developed for meeting the financial needs of the project due to the risky nature of the construction industry, high rates of business failure and bankruptcy occurred in the construction sector and many banks are unwilling to lend money to the contractors unless they are reliable (Atallah, 2006).Besides, even if the company is found eligible by the financial supplier, the lenders will loan with high rate of interest at time of cash shortage since the late interference on to project may not reduce the financial risk.(Halphin and Woodhead, 1998).

An Overview of Payment Terms Impacting Construction Cash Flow

It is common practice in the construction industry for payment of the contract sum to be made by instalments, except on the smallest contracts and sub- contracts (Murdoch and Highs, 2000). One of the main purposes of this according to Kenley (2003) is to reduce the need for the contractor to fund the development of the project. This is because the total value of each contract forms a large proportion of a contractor's annuals turn rover. Payment by instalments according to Murdoch and Hugher (2000) should eliminate the need for the contractor to brow money pending final payment. According to Kenley (2003), the more common methods

of payment by instalment in the construction industry is the monthly or stage payment. According to him, one method that is also becoming common may be described as aturnkey, under which a single payment only is provided for at the conclusion of the project. The problem with the flow of cash along the chain of recipients had been formally recognized as early as the 1960s when the Banwell report (1964) noted the importance of prompt payments and the need for a procedure to secure the proper flow of money. Three decades later, Latham (1994) and Egan (1998) echoed similar concerns. A consequence of the chain payment structure is the repercussion of the failure of one party on the other parties. This is true for all actors. Thus, the failure of the bank to support the client, the contractor or the subcontractor or the contractor's failure to support work are examples of situations where all other parties are affected, each to a various degree ranging from loss of income to a full- blown insolvency. Even in asituation where there are no obstacles in the flow of cash along the chain, there is often a considerable delay before those at lowers levels receive payments (Khosrowshahi, 2000). According to the institute for construction training and development (1992), payment term is something considered crucial because it has an effect on the price and also on the efficiency of the contractor. According to them the cardinal principle is that the contractors should not be required to fund the construction, there must be an appropriate flow of funds so that the contractor doesnot have to commit his resources to the funding of the construction. At the same time, the flow of funds will not be such in which the contractor would be tempted, having got more than enough, to show down. Abeysekera (2002), states two issues of fundamental importance arise regarding payment procedures: The time lay between expenditure and payment; andcash retention from progress payments.

Risk Factors in Construction Project Cash- Flow Analysis

Financial Management has long recognized as an important tool in theconstruction industry. However; the Construction industry suffers a lot of financial irregularities which hampers the progress and timely delivery of work. Unfortunately construction project cash flow is mainly affected by many uncertain but predictable factors. Mohammed and Hosam (2014) revealed that the largest rate of insolvency of any sector of the economy, company fail because of poor financial management, especially inadequate attention to cash flow forecasting. It is acommon consensus that cash flow management and liquidity are key elements in the survival of contractor. Therefore, many companies forecast and project expenditures to manage their finances. Uncertainty in information affects decision-making. In structured finance transaction, the different counters parties involved perceive risk with

differing levels of comfort. For many risk factors in such transaction, such as legal and regulatory risk, historical and numerical records are missing so that actuarial approaches fall short in resembling and modelling transaction specific risks. Information on such risks is often vague, subjective and uncertain. However, a confined number of experts that have intimate knowledge and some opinion of these risk factors may exist. The uncertainty and ambiguity caused not only by theproject- related problems but also to the economic and technological factors.

Methodology

This research used explorative and descriptive survey methods. The explorative method employs literature search to identify factors that have aneffect on cash flow. Then a questionnaire developed based on the identified factors so that their effect would determined at the study area. The population of the study were mainly construction professional within the study area, a judgemental sampling used in determining the number of respondents. Eighty-one questionnaires distributed to construction professionals in government and private organizations within North- central part of Nigeria. Sixty questionnaires were reterieve and analysed using SPSS. The various factors were categorised and rank to ascertain the severity of each factor using a Likert- scale of five points.The scale interpretations are 1-Not severe; 2-least severe; 3- fairly severe; 4-severe; 5-extremely severe.

Method of Data Analysis

The study used the Average mean score(AMS) to measure the opinions of respondents' on factors affecting cash flow on construction projects in Nigeria. The AMS according to (Sambo, 2008 in Inuwa, Usman and Dantong, 2014), is the most reliable and accurate descriptive statistic because: it is a single value, it can be algebraically tractable, it considered every observed value, and it examined the frequency of every observed value. The formula for computing the AMS given as (Sambo, 2008 in Inuwa et al., 2014):

$SI = \Sigma(fxi)/\Sigma f$

Discussion of Result

To determine the severity of the factors affecting cash flow in construction projects, the mean calibration proposed by Hassanain, (2008); Najib et al., (2011), the mean results were validated, and the following scale of 1-5 was used as shown in Table 1.

Table 1Mean calibration for determining theseverity of the factors affecting cash flow in construction projects.

	Extremely severe	**severe**	**fairly severe**	**least severe**	**Not severe;**
Mean score	4.5 – 5	3.5 - 4.49	2.5 – 3.49	1.5 – 2.49	Less than 1.5

Source: Hassanain, (2008); Najib et al., (2011),

From the data analysis as illustrated in Table 2. The findings revealed that, Problem with foundation, Accident and theft ,Retention, Delay in payment from client, Loan repayment, Disputes between contract and chart, Consultant instruction, Delay in settling of claims, Strikes, Level of inflation, Fluctuation, Change in interest rate were ranked severe factors as their mean score fall within the range of 3.53 to3.92**.**However, some variables were ranked fairly severe factors by their mean falling within the range of 2.67 to 3.40, such asChange in progress payment duration, Inclement weather, Receiving front payment, Extent of float contract schedule, Lack of adequate insurance, Weather condition, Materials delay, Worker attitude, Estimating error, Renting/buying equipment and Delay in agreeing variation.While Provision for phased handover was ranked inadequate as the mean score fall within the range of 1.5 to 2.49**.**

From the data analysis in table 2 shows the mean values were above the midpoint of 3 in the likert scale of five points. This revealed that all the respondents agreed and assessed that the identified variables factors with the exception of Change in progress payment duration, Inclement weather, Archaeological remain and Provision for phased handoverare severe in affecting the cash flows in project delivery. The implication of this finding is that, unless contractors' pays attention in minimizing the occurrence of such severe factors the issues of inadequate cash flows in projects delivery would not be control and prevented.

Table 2.0: Factor that affects the project cash flow in construction projects

SN	FACTORS	∑FXi	∑F	Mean scored	Level of severity
1	Problem with foundation	212	60	3.53	Severe
2	Change in progress payment duration	160	60	2.67	Fairly severe
3	Inclement weather	167	60	2.78	Fairly severe
4	Receiving front payment	192	60	3.20	Fairly severe
5	Archaeological remain	86	60	1.43	Not severe
6	Accident and theft	215	60	3.58	Severe
7	Extent of float contract schedule	202	60	3.37	Fairly severe
8	Retention	220	60	3.67	Severe
9	Delay in payment from client	235	60	3.92	Severe
10	Lack of adequate insurance	181	60	3.02	Fairly severe
11	Loan repayment	232	60	3.87	Severe
12	Weather condition	187	60	3.12	Fairly severe
13	Disputes between contract and chart	215	60	3.58	Severe
14	Consultant instruction	229	60	3.82	Severe
15	Delay in settling of claims	233	60	3.88	Severe
16	Materials delay	198	60	3.30	Fairly severe
17	Worker attitude	181	60	3.02	Fairly severe
18	Estimating error	196	60	3.27	Fairly severe
19	Renting/buying equipment	204	60	3.40	Fairly severe
20	Delay in agreeing variation	189	60	3.15	Fairly severe
21	Provision for phased handover	127	60	2.12	Least severe
22	Strikes	219	60	3.65	Severe
23	Level of inflation	212	60	3.53	Severe
24	Fluctuation	224	60	3.73	Severe
25	Change in interest rate	226	60	3.77	Severe

Source: field study, 2015

Conclusion and Recommendation

Cash flow described as the flow of money payment to or from a firm;this study sought to appraise the factors affecting the cash flow management in constructions projects in Nigeria, through explorative and questionnaire survey. The research result reveals that all the respondents' agree that all the identified factors are either severe orfairly severe on cash flow management in theconstruction project of Nigeria.To summarize the result, the top five severe factors that are affecting cash flow in construction projects revealed as delay payment (AMS, 3.92) followed by delay in settling of claims (AMS, 3.88) then loan repayment (AMS, 3.87), consultant instruction (AMS, 3.82) and change in interest rate (AMS, 3.77). The respondents agreethat provision of phase handover and archeological remain are all not severe factors affecting cash flow in construction projects in Nigeria.

The study recommends that prompt payment of the completed work should pay in appropriate time. Claim from the contractors should be guinea and in accordance with contract document so that the client consultants' settle it within a reasonable time. Finally, the study recommendsa further research on the impacts and mitigating measures against the top five identified severe factors affecting cash flow in construction projects in Nigeria.

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