

**ASSESSING THE CAPABILITIES OF CONTRACTORS IN MONITORING
AND CONTROLLING CONSTRUCTION CASH FLOW IN NIGERIA.**

BY

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AND CONTROLLING OF CONSTRUCTION CASH FLOW IN NIGERIA.**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF POST GRADUATE
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**DEPARTMENT OF QUANTITY SURVEYING, FACULTY OF
ENVIRONMENTAL DESIGN, AHMADU BELLO UNIVERSITY, ZARIA.**

JANUARY, 2018.

DECLARATION

I hereby declare that the research work in this dissertation titled ‘Assessing the Capabilities of Contractors in Monitoring and Controlling of Construction Cash Flows in Nigeria’ was carried out by me in the Department of Quantity Surveying, Faculty of Environmental Design, Ahmadu Bello University, Zaria.

The information derived from literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at this or any other Institution.

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Name of Student

Signature

Date

CERTIFICATION

This research work titled ‘ASSESSING THE CAPABILITIES OF CONTRACTORS IN MONITORING AND CONTROLLING OF CONSTRUCTION CASH FLOWS IN NIGERIA’ by Aliyu Danjuma ABUBAKAR meets the regulations governing the award of the degree of M.Sc Quantity Surveying of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

Dr. M. Abdulrazaq Chairman, Supervisory Committee	Signature	Date
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Dr. P.G. Chindo Member, Supervisory Committee	Signature	Date
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Dr. K.J Adogbo Head of Department	Signature	Date
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Prof. S.Z. Abubakar Dean, School of Postgraduate Studies	Signature	Date
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DEDICATION

This research work is dedicated to the memory of my late mother, May Allah (S.W.T) forgive her and have mercy on her.

ACKNOWLEDGEMENT

All praises be to Almighty Allah (S.W.T) the entirely merciful, the especially merciful who has made it possible for me to successfully complete my pursuit for a Master of Science Degree.

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ABSTRACT

The construction sector experiences the highest number of bankruptcies compared to any sector of the economy, with many companies failing because of poor cash flow management. This study assessed the capabilities of Nigeria contracting firms in monitoring and controlling of construction cash flow. Quantitative approach was used to administered questionnaire survey to 246 contracting firms involved in building and civil engineering works in Nigeria. A total number of 112 questionnaires were filled and returned and the results were analysed using the arithmetic mean values and ranking of variables in Statistical Package for Social Sciences (SPSS). Essentially, the survey evaluates the extent of usage of some identified construction cash flow monitoring and controlling key practices. The findings show that; the Nigerian construction sector is currently at a low capability level and usage of the key practices in construction cash flow monitoring and controlling, the large size firms have high capability level and usage of the key practices in construction cash flow monitoring and controlling. Medium and small size firms which are the predominant category of firms in the construction sector in Nigeria have low capability level and usage of the key practices in construction cash flow monitoring and controlling and in dire need for improvement. The research work recommends that; for an effective cash flow monitoring and controlling practice, an assessment frame work should be developed by the contractors for use in contract administration, continuous education and training of the entire staff responsible for cash flow management through workshops and seminars in order to improve their skills in cash flow management and Contractors should involve the Quantity Surveyors, who are disciplined as cost managers to be responsible and accountable for cash flow management.

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CHAPTER ONE

1.0

INTRODUCTION

1.1 Background to the Study

Cash flow is a series of income and expenditure over the life of an investment or project. The difference between the income (revenue) and expenditure (disbursement) at any point of time is term as net cash flow which could be either positive or negative (Hoseini, Andalib and Gatmiri, 2015). A negative net cash flow means disbursements are exceeding income which is a usual situation on even a highly profitable project during the greater part of its duration (Al-Mohsin, Alnuaimi and Al-Tobi, 2014). 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 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).

Cash flow management is a general process of planning, forecasting, manipulating and controlling of cash flows either at the project or corporate level (Ross and Williams, 2013). Cash flow monitoring and controlling entails adequate planning of fund utilisations, efficient monitoring of budget implementation and effective evaluation of results (Richter and Cantoria, 2011).

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, 2015). The Nigerian construction sector which contributes about 70% of the country's gross domestic product (GDP) is one of the highest employer of labour, labour cost are indeed a huge outlay for the contractors due to volume of manpower required to execute and delivered construction projects. Poor cash flow management can result in; financial improprieties, failure of the projects and business bankruptcy (Chukwudi and Tobeckukwu, 2014). Contractors operating in developing countries including Nigeria were hugely affected by unprecedented financial difficulties in the wake of dwindling economy. These difficulties are compounded by the time lag between contractor's expenses and payment collection, which impact negatively on the contractor's cash flow and in many cases result in failure of a project and business insolvency (Emidafe, 2015).

In an attempt to mitigate or alleviate the excessive rate of business failure within the construction sector, several researches were carried out to improve cash flow management of construction projects. And some of these researchers are; Mutti and Hughes (2002) explored the cash flow issues associated with company failures. The study revealed how cash flows are managed by various construction firms at the project level in United Kingdom (UK).

Odeyinka, Kaka and Morledge (2003) identified and examined the various approaches in resolving deficit cash flow. The study concluded that the Nigerian construction industry has not embraced the use of developed software to aid cash flow forecasting.

Odeyinka, Lowe and Kaka (2008) identified and assessed the extent of occurrence and impact of risk factors responsible for the variation between the forecast and actual construction cash flow. Aomar and Bashir (2012) investigated the negative cash flow trends, patterns and their impact on construction performance in various contracting organisations in United Arab Emirate (UBE) and the study revealed how contractors can efficiently and effectively plan cash inflows in all phases of projects to ensure a successful and profitable project. Kim and Grobler (2013) produced a prototype demonstrating how automated Cash Flow Forecasting (CFF) is possible based on the information from a Building Information Modelling (BIM) which is useful for business development strategies.

Hoseini, Andalib and Gatmiri (2015) developed a new stochastic simulation-based framework for forecasting construction projects cash flow at the tender stage, considering the effect of late payments from clients. Purnus and Bodea (2015) developed Cash Flow Analysis Model, which can be applied by the contractors at the Project portfolio level to avoid high financial exposure and loses during the construction phase.

In Nigeria, Famakin (2010) assessed forecasting techniques used by contractors. The study identified the primary issues in cash flow forecasting process and the most widely used forecasting techniques by Nigerian contractors. Aliyu (2012) investigated the application of cash flow forecasting models by Nigerian construction consultants (clients). The study revealed that the usages of CFF models by the consultants in the sector were on the average and in dire need for improvement. AbdulRazaq, Ibrahim and Ibrahim (2013) investigated cash flow forecasting practices by construction contractors in Nigeria. The study revealed that the practice of cash flow forecasting by contractors

in Nigeria was not consistent or not in conformity with existing literature and there is need for improvement. Abdullahi (2014) assessed the capabilities of Nigerian contracting firms in CFF processes. The study revealed that the sector has high capability level in CFF processes but weak in term of advisory and management capabilities.

It is possible to mitigate the rate of failure in construction sector, since, the major causes are known. Cunningham (2013) reported that planning, forecasting, monitoring and controlling cash flow is a vital aspect of operating a successful construction business.

1.2 Statement of the Problem

The capabilities of Nigerian contractors in planning and forecasting construction cash flow have been explored in literature but this is not sufficient enough to understand cash flow. The capabilities of these contractors in monitoring and controlling construction cash flow have not been investigated and should be closely examined to shed more light on the Cash Flow Management (CFM) issues, hence the need for the study.

1.3 Justification for the Study

Contractors operating in developing countries including Nigeria were hugely affected by unprecedented financial difficulties in the wake of the dwindling economy. These difficulties are compounded by the widespread practice of delay and underpayments by the clients which impacts negatively on the Contractors cash flow resulting in CFM issues (Emidafe, 2015; Hoseini et al., 2015).

However, the inability of many construction firms to effectively and efficiently monitor and control cash flow forecasts (Ansah and Agyei, 2012; Tom and Paul, 2013; Abdullahi, 2014; Purnus and Bodea, 2015; Usman, Sani and Tukur, 2016). The capabilities of these contractors in monitoring and controlling construction cash flow need to be closely investigated.

1.4 Aim and Objectives

1.4.1 Aim

The aim of this research is to assess and evaluate the cash flow monitoring and controlling capabilities of construction Contractors in Nigeria.

1.4.2 Objectives

The specific research objectives are to:

- i. Identify Cash Flow Monitoring and Controlling (CFMC) best practices in construction.
- ii. Assess the knowledge capabilities of contracting firms in CFMC.
- iii. Assess the practical capabilities of contracting firms in CFMC.
- iv. Assess the advisory capabilities of contracting firms in CFMC.

1.5 Scope and Limitations

1.5.1 Scope

The emphasis of this research work is on assessing the capabilities of Nigerian contracting firms in construction cash flow monitoring and controlling. The research work covered contractors operating in Abuja, Kaduna and Niger. Different categories of contractors of small, medium and large size firms as categorised by the Corporate Affairs Commission (CAC) of Nigeria were considered in the study.

1.5.2 Limitations

Difficulties in accessing some of these contractors due to their tight schedules and attitude of some of their employees. Furthermore, the researcher did not have control over the possible subjectivity of the information supplied by the respondents.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

The literature reviews of the related studies form the bases for the research work. However, efforts are being made to provide strategies that will enhance the capability of construction firms on effective cash flow management in order to avert or mitigate high rate of business failure or bankruptcy inherent in the construction sector.

Cash is a vital component of any business. However, several business organisations lack effective cash flow management policy. Even profitable business can go bankrupt due to failure to effectively and efficiently manage its cash flow, particularly if they operate in rapid-growth or seasonal industries (Business Development Bank of Canada (BDC), 2014). Cash flow management is a general process that requires several significant ingredients such as people and mind-set, support network, key performance indicators (KPIs), tools and techniques (BDC, 2014).

Cash flow management is the general process of planning, forecasting, manipulating and controlling of cash flow (Ross and Williams, 2013). The capabilities of Nigerian contracting firms in monitoring and controlling of construction cash flows is yet to be investigated. And, it forms the basis for this research.

2.2 Cash Flow Management

Cash flow management is a general process of organising, planning, forecasting and controlling the income, expenditure and investment (Belobo and Pelsler, 2014). In the

construction sector, it is crucial to effectively and efficiently manage company's overall cash flow, as well as the cash flow of individual projects. Acquiring a comprehensive knowledge of this process is essential to successfully managing a contracting firm (Purnus and Bodea, 2015). Cash flow management is a complex and important issue faced by companies of different sizes usually requiring distinct approaches and proper tools according to the nature and complexity of the operations. Overdraft, retention fees, financing, payment and billing policies constitute the most important financial issues that contractors must adequately plan, forecast, monitor and control for the successful completion of construction projects (Hoseini, Andalib and Gatmiri, 2015).

The aim of cash flow management is to maintain adequate control over cash balance held by the firm at a particular point of time in order to keep the firm sufficiently liquid and to use excess fund in some profitable way (Pandey, 2010). Cash flow management cycle is illustrated in figure 2.1.

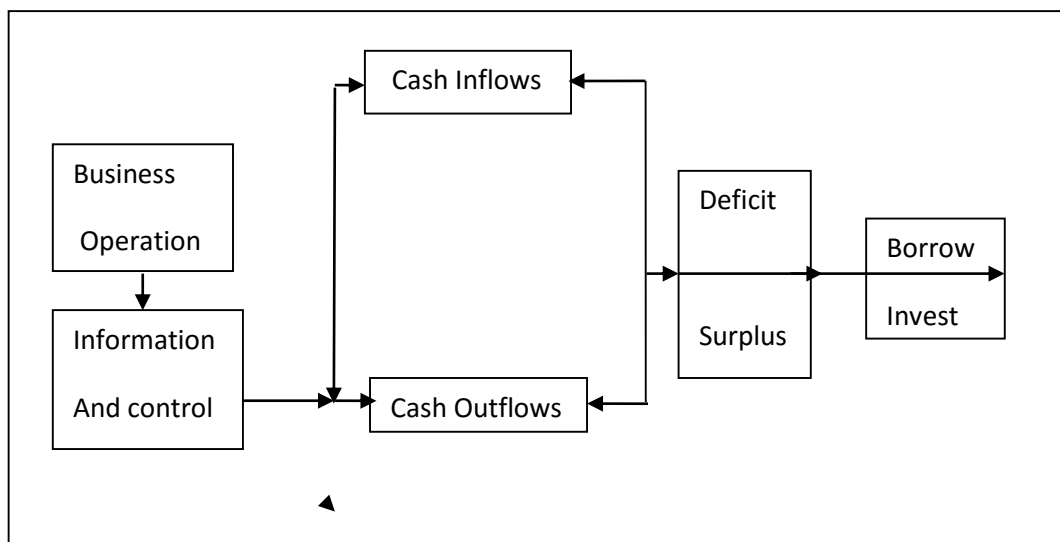


Fig. 2.1: Cash Flow Management Cycle

Source: Pandey, (2010).

2.2.1 The Elements of Cash Flow Management

The elements that contractors have to consider in order to successfully implementing cash flow management are: (BDC, 2014).

- i. People and mind-set (the professionals involved and responsible),
- ii. Tools and Techniques,
- iii. Supporting network (Influencers and Business Professionals),
- iv. Key performance Indicators (KPIs)

These elements to be considered in cash flow management are illustrated in figure

2.2.

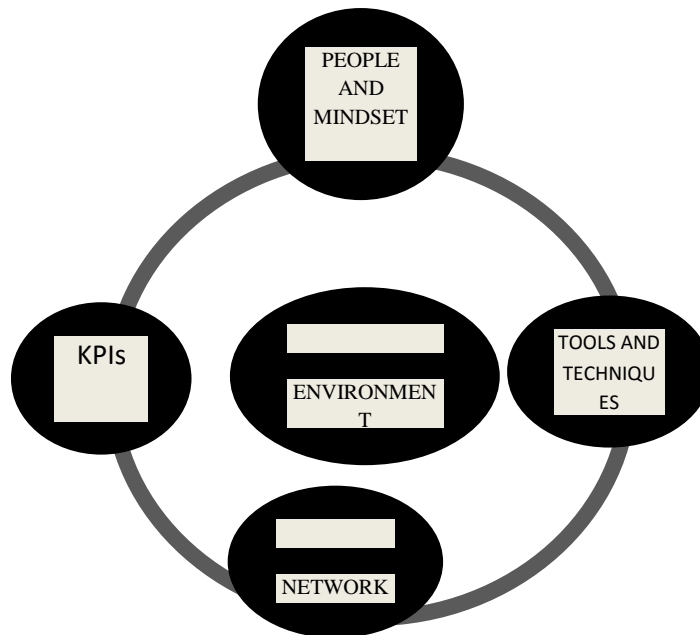


Fig. 2.2: Key Ingredients for Cash Flow Management

Source: Business Development Bank of Canada, (2014).

The literature reveals some key elements, business organizations need to be considered in order to successfully implement cash flow management include people and mind set (clients, senior executive managers and employees), supporting network (influencers and business professionals), Key Performance Indicators (KPI), and tools and techniques. To implement cash flow management successfully, a company must ensure

that these elements evolve in an environment that fosters learning and improvement (BDC, 2014).

The absent of appropriate CFM procedures has exposed many un- prepared contracting firms to financial impropriety and misapplication of funds (Usman et al., 2016). Cash flow management is a complex problem faced by companies of different sizes and usually it required distinct approaches and proper tools according to the nature and complexity of the operations

Cash flow management requires time, practice and adjustments, as well as engagement and willingness to learn among all parties involved. Ultimately, effective cash flow management can help a business to measure and monitor metrics, manage priorities, decrease costs, ensure financial stability, anticipate problems and maximize results (Usman et al., 2016)

2.3 Key Best Practices in Cash Flow Management

Effective cash flow management process required efficient planning of fund utilisation, monitoring of budget implementation and evaluation of results. (Richter and Cantoria, 2011).

2.3.1 Cash Flow Planning

Planning is the ultimate starting point in cash flow management which requires adequate consideration of cash inflows and outflows. It is a guide in preparing accurate forecasting and management of surplus funds (which lower the firm's profitability) and cash flow deficits (which can cause the firm's failure) (Belobo and Pelser, 2014).

Project cash flow planning is a significant tool that aids contractors in managing their financial status. Considering the complexity and various factors involved in the project cash flow planning process (Professional Project Management Education (PPME), 2010).

Cash flow to a general Contractor is composed of two flows: cash-in and cash out. Cash inflows are affected by billing procedure, payment timing, client retention and other factors which are specified in contract conditions. While cash-outflows are determined by contract conditions with sub-contractors with regard to trade financing and retention, payment procedures for materials cost and legal requirements for labour-costs payment. The amount of funds required to be borrow or invest can be determine when all of these factors are adequately consider and analyse through cash flow planning (Heaps and Domingo, 2010).

Cash flow planning may be carried out on daily, weekly or monthly basis. The period and frequency of cash flow planning generally depends upon the size of the firm and philosophy of the management. Large firms prepare daily and weekly and monthly forecasts. Small firms may not prepare formal cash flow forecasts because of the non-availability of information and small-scale operations. But, if the small firms prepare cash flow projections, it is done on monthly basis. As a firm grows and business operations become complex, cash flow planning becomes inevitable for its continuing success (Pandey, 2010).

2.3.2 Cash Flow Forecasting

Ross and Williams (2013) refer to Cash Flow Forecasting (CFF) as the revise of the flow of fund into the business and the flow of fund out during the day-to-day trading

activities, considering the timing of income and expenditure as well as consequent balance after the transactions. Accurate CFF provides contractors with information regarding the amount of capital required, the amount of interest needed to support overdrafts and the evaluation of different tendering strategies (Odeyinka, Lowe and Kaka, 2003). Cash flow forecasting can be used to plan and control the financial resources of projects (Blyth and Kaka, 2006).

The significances of cash flow forecasting are:

- i. As the construction project progress, it provide managers with an alert on the likely impacts of various risk factors on the financial position of the company
- ii. It serve as a cost control tool during the construction phase
- iii. It enables the contractor to determine the actual profits at the end of the contract or fiscal year (Odeyinka et al, 2003).

Cash flow forecasting may be carried out on short or long-term basis. Generally, forecast covering periods of one year or less are considered short-term; while, those extending beyond one year are considered long-term (Pandey, 2010).

2.3.2.1 Short-term Cash flow Forecasts

It is conveniently easy to project short-term cash flow forecasts. The significant of carefully projected short-term cash flow forecasts are:

- i. To determine operating cash requirements
- ii. To anticipate short-term financing

iii. To manage investment of surplus cash.

The short-term forecast aids corporate organisations to determine cash requirements for a predetermined period to run a business. If the fund requirements are not determined, it would not be possible for the management to know how much cash balance is to be kept in hand, to what extent bank financing be depended upon and whether surplus funds would be available to invest in marketable securities (Pandey, 2010).

However, for the construction firm's to finance the deficit, most firms depend upon borrowing from financial institutions or other sources. One of the significant roles of the short-term projections is to provide the contractor with the adequate information regarding when the fund will be needed and when it can be repaid. With such forecasts in hand, it will not be difficult for the financial manager to negotiate short-term financing arrangements with financial institutions or other sources. This in fact convinces financial institutions about the ability of the organisation to run its business (Odeyinka et al., 2003).

Short-term forecasts assist contractors in managing the investment of surplus fund in marketable securities. Accurate cash flow projection support a firm to: (i) select securities with appropriate maturities and reasonable risk, (ii) avoid over and under-investing and (iii) maximise profits by investing surplus fund (Pandey, 2010).

2.3.2.2 Short-term Forecasting Methods

There are two distinct methods of short-term cash flow forecasting which are: (i) The cash inflows and outflows method and (ii) The adjusted net income method (Pandey, 2010).

- i. The Cash inflows and outflows Method* is generally employed to project for limited periods, such as weekly or monthly. The cash flows can be compared with budgeted income and expense items if the cash inflows and outflows approach is adhered to. The fundamental aim of cash inflows and outflows projections is to summarize these flows during a predetermined period. In the case of organisational cash flow where each item of incomes and expenses involves flow of cash, this method is favoured to keep a close control over cash flow.

There are three major sources of cash inflows such as: (i) operating, (ii) non-operating, and (iii) financial (Pandey, 2010).

Operating Cash inflows: Monthly or stage payment receive from clients forms the most significant part of the operating cash inflows.

Non-operating Cash inflows: includes sales of old assets, dividend and interest income accrue to a firm. The magnitude of these items is generally mega.

Financial Cash inflows: When there is cash deficit may be due delay payment from clients, the firm resorts to external sources. Borrowings and issuance of securities are external financial resources. These constitute financial cash inflows.

- ii. The Adjusted net income Method* is usually applicable for a longer duration ranging from few months to a year. The adjusted income approach provides a firm with adequate information regarding the company's working capital and future financing needs. There are two basic objectives of adjusted net income approach such as to: (i) forecast the company's fund requirement at a future date and (ii) depict whether the company can generate the required

funds internally, if not, how much will have to be borrowed from financial institutions or raised from the capital market. It generally has three (3) components such as: (i) sources of funds (ii) uses of funds and (iii) the adjusted cash balance. The procedure helps in adjusting estimated incomes on an accrual basis to a cash flow basis. It also aids in anticipating the working capital movements.

In preparing the adjusted net income forecasts items such as net income, depreciation, taxes, dividends etc can easily be determined from the company's annual operating budget (Pandey, 2010).

2.3.2.3 Long-term Cash Flow Forecasting

Long-term cash flow projection is usually prepared to give an idea of the company's financial requirements in the distant future. Long-term forecast are not detailed as the short-term forecasts are. Once a company has developed long-term cash forecast, it can be used to assess the impact of developments or plant acquisitions on the firm's financial position, for three, five or more years in the future (Pandey, 2010). The major uses of the long-term cash flow projection are to:

- i. Assess proposed capital projects. It provides adequate information regarding the amount required to finance the projects as well as the funds to be generated by the company to support them.
- ii. Improve corporate planning. Long-term cash flow projections coerce each division of the organisation to plan for the future and to formulate projects carefully.

- iii. Indicates the company's future financial requirements, especially its working capital requirements (Pandey, 2010).

Long-term cash flow projection can be made for at least two to five years. While, short-term cash flow projection can be made for a short period, maximum of a year, the company's practices may differ on the duration of long-term forecasts to suit its particular needs.

The short-term projection methods: cash inflows and outflows method and the adjusted net income method, can also be applicable in long-term cash flow forecasting. Long-term cash flow forecasting depicts the impact of growth, expansion or acquisitions, it also indicates financing issues arising from these developments (Pandey, 2010).

2.3.3 Cash Flow Budgeting

Budget is the most important device to plan for and control in order to effectively manage cash flow. Budget is a summary statement of the firm's expected cash inflows and outflows over a projected period. It gives information on the timing and magnitude of expected cash flows and cash balances over the projected period. This information helps the quantity surveyors to determine the future cash requirements of the firm, plan for the financing of these cash requirements and exercise control over the cash flow and liquidity of the firm (Olabosipo and James, 2014).

The time horizon of a cash flow budget may differ from firm to firm. A firm whose business is affected by seasonal variations may prepare monthly cash flow budgets. Daily or weekly cash flow budgets should be prepared to determine the cash requirements if cash flows show extreme fluctuations. Cash flow budgets for a longer

duration may be projected if cash flows are relatively stable (Oladiran and Adenuga, 2007).

Construction projects are expense-oriented undertakings; hence, the importance of having a project budget should never be underrated. There may be cost estimates, but the manner by which such estimates have been established should be thoroughly planned and laid out (Olabosipo and James, 2014).

The project budget and the project cash flow are essential because the final estimates shall serve as the baseline reference against which actual expenses are monitored. It aids the Quantity surveyor to recognise cost overruns and their potential for becoming cost control issues and the extent by which they can affect the on-going construction projects (Cantoria and Richter, 2011).

The significance considerations of a cash flow budget are:

2.3.3.1 Identifying the cost Accounts

Estimating the cost of a construction project involves the preparation of a checklist containing all the transactions, scheduled or listed according to the project's plans. Cost accounts are identified and are segregated according to the types of activity where the materials are needed, the equipment required, the manpower costs and such other similar aspects whether physical or non-physical accounts. Examples of non-physical accounts are interest charges, rental expenses, taxes, consultation fees (Cantoria and Richter, 2011).

2.3.3.2. Developing a Schedule of Cost Accounts

Identifying the cost is one thing; the matter of communicating these costs to all parties involved in carrying out the project plan is another thing else. What may be clearly defined to the designer could be vague or a grey matter to the site foreman or to the procurement manager (Oladiran and Adenuga, 2007).

A coding system that assigns a specific number to a particular cost account should always be a point of reference for communicating information. This ensures that the communicator and the recipient of the information or instructions are referring to the same cost item (Oladiran and Adenuga, 2007).

2.3.3.3 Making a Forecast Estimate

Controlling cash flow in construction projects, the deviations in projects costs are anticipated at the time of developing the budget plan. These are referred to as contingency costs, and are based on historical costs plus a reasonable estimate of price inflation based on current market conditions (Olabosipo and James, 2014).

In making a forecast for estimates, the Project manager and Quantity surveyor make use of previous reports as baseline reference. In some cases, a more up-to-date reference would be a similar project that is currently on-going; in which case, the current job status report provides the budget planner with a more accurate estimate for price inflation (Olabosipo and James, 2014).

Controlling cash flows in construction projects begins with proper identification of the cost accounts and making forecasts in order to come up with estimates. This is where

deviations and possible inflations should be taken into consideration and integrated as part of the budget (Olabosipo and James, 2014).

2.3.3.4 Converting the Cost Estimates into a Budget Plan

The cost accounts are to be segregated according to the function as they appear in the project plan. This stands opposed to financial cost accounting where segregations are based on the nature of the expenses i.e materials, labour, utilities. Nevertheless, these expenses should be provided with summary totals in case where there is need to determine their aggregate cost individually (Cantoria and Richter, 2011).

The project's budget plan integrates the materials, labour, utilities and all other related expenses to a particular function or tasks to be performed (Olabosipo and James, 2010).

2.3.4 Cash Flow Monitoring

Monitoring construction cash flow involves measuring the performance of cash flow against time, resources and schedule during execution of the project and identifying lagging areas requiring timely attention and action whereas project controlling uses data from monitor activity to bring actual performance to planned performance (Tom and Paul, 2013).

Effective monitoring of construction cash flow assists contractors to measure and compare its performance through the use of key performance indicators (KPIs). KPI play a key role in providing information to the contractors on the performance of cash flow forecast (Ali, Sulaihi and Gahtani, 2013). In monitoring construction cash flow, contractors must adhere to the procedures and rules such as:

- i. To understand cash flow as it essential to the survival of the business, the principle components of cash flow monitoring and what can be done to always improve the financial strength of the company
- ii. To analyse cash flow projection. Clarifying what are cash inflows and outflows, factors that affects cash flows and sources of income such as (sales of equity in the form of company stock or ownership of the business or borrowing from either financial institution, friends and relatives, client or conversion of assets to cash as in sales of idle or unneeded facilities or equipment or reinvesting profits)
- iii. Creating a cash flow budget. The most difficult part of cash flow management is defining a budget. Evaluating the cash out flow monthly. As in the company expenses, evaluate the needed value of cash inflows, estimating the company cash outflows and the company can specify a minimum cash inflows.
- iv. Excellent budgeting and forecasting of cash flow. Anticipated deficit cash flow and prepare against it
- v. Invest or save the surplus cash flow, allowing investment income which will improve liquidity as the company continue to budget and forecast for the future (Reider and Heyler, 2003).

2.3.5 Evaluating the Financial Reports

The budget and cash flow status report are the baseline references used for monitoring the cash flows of an on-going construction projects. Financial reports provide the financial summary of how the on-going construction activities are affecting the company's current financial position (Richter and Cantoria, 2011).

Information from the income statement and balance sheet report provides the quantity surveyor with overviews about the components that make up the company's liquid position. Understanding the ratios about liquidity and debt-to-equity ratio will give the Quantity surveyor insights about the company's financial capabilities. Ratios for account receivable and account payable turnovers reflect the collection and payment activities and their effect on liquidity (Ross and Williams, 2013).

The income and expenses relate to how much cash has been generated from construction projects and the costs incurred by the company not only for the construction activities but also for the administrative expenses (Ross and Williams, 2013).

2.3.6 Cash Flow Control

Controlling construction cash flow entails adequate planning of funds utilization, efficient monitoring of budget implementation and effective evaluation of results (Cantoria and Richter, 2011). The focus of cash flow control is to fulfil what was initially forecasted because major changes if any, have already been anticipated and covered during the cash flow projection (Al-Tabtabi and Diekman, 2002).

Cash flow is of vital to the survival of the business. Many businesses may continue to trade in the short-to-medium-term even if they are making loss. This is possible if they can delay paying creditors and or having enough fund to pay variable costs. However, no business can survive long without enough liquidity to meet its immediate needs (Radhika, Parag and Taran, 2015).

Controlling construction cash flow entails dealing with a range of cash flow issues such as:

- i. Ensuring that sufficient fund is available for investment by not tying up cash in stock unnecessarily
- ii. Putting necessary procedures in place for recovering of outstanding debts
- iii. Controlling different levels of cash outflows (expenditures) in relation to the size of the business (Reider and Heyler, 2003).

2.4 Key Best Practices in Cash Flow Monitoring and Controlling

Effective cash flow monitoring and controlling deals with measuring performance of cash flow at certain time interval and make adequate arrangement for process control. The monitoring and controlling of organisational cash flow under this study are considered under the following components, which are in line with the criteria adopted by the Royal Institute of Chartered Surveyors (RICS) guidance note (2012) as a process in the Assessment of Professional Competence (APC):

- General principles (Level 1: Knowing)
- Practical application (Level 2: Doing)

- Practical considerations (Level 3: Advising)

2.4.1 General Principles (Level 1: Knowing)

2.4.1.1 Organisational Cash Flow Monitoring and Controlling

Monitoring provides the basis for maintaining cash flow control and usually involves the utilisation of key performance indicators (KPIs). Monitoring compares what was previously planned and projected with the actual performance (Ali, Sulaihi and Gahtani, 2013).

Monitoring and controlling are universal activities indispensable to effective and efficient operation of the cash flow control cycle (Ansah and Agyei, 2012).

In the construction business the contractors needs strict monitoring and control over the cash inflows and outflows. Monitoring and controlling is a significant component in cash flow management (Belobo and Pelsler, 2014).

Contractors and developers have to plan and organise cash flows in order to manage effectively. Monitoring and controlling are universal activities indispensable to effective and efficient operation of the control cycle. According to Ansah and Agyei (2012) revealed that, in cash flow management, divergences from the original plan will occur; therefore cash flows should have a control cycle with the aim of maintaining cash balance within an acceptable time and budget as shown in figure 2.3:

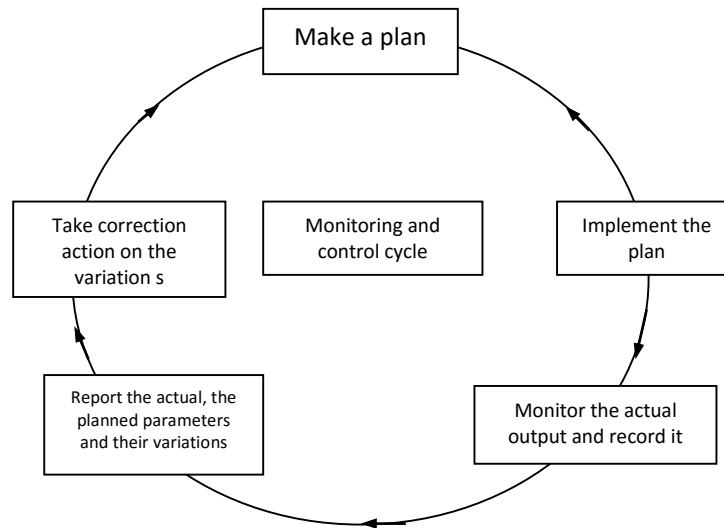


Fig. 2.3: Monitoring and Control Circle
 Source: Ansah and Agyei, (2012).

Cash flow control cycle involved; make a plan, implement the plan, monitoring the actual performance and record it, report the actual (the planned parameters and their variations) and take corrective action on the variation (Ansah and Agyei, 2012).

Procedures for cash flow monitoring and control becomes indispensable tools to manage cash flow in the construction process. These tools served the dual purpose of recording the financial transactions that occur as well as giving financial managers an indication of the progress and problems associated with cash flow. The task of cash flow monitoring and control is to give a fair indication of the existence and the extent of problems associated with cash flow. For monitoring and controlling purposes, the detail budget is typically converted to cash flow projection, and the forecast is used subsequently as a guide for management (Ansah and Agyei, 2012).

2.4.1.2 Purposes of Organisational Cash flow Monitoring and Controlling

The purpose of cash flow monitoring and controlling is to allow efficient and effective management of the approved budget. According to Ansah and Agyei (2012) noted that the primary aim of contractor's cash flow monitoring and control system is to:

- i. Ensure that expected profit is obtained to enable the contractor continue to stay in business and expand.
- ii. Ensure that projects are carried out within the approved budget to maintain the planned profit margin
- iii. Provide cash inflows and outflows information to assist in cash flow management (Ansah and Agyei, 2012).

Cash flow control refers to the effort of keeping parameters that indicate cash flow performance close to predetermined target value or within the range of the target value (Ansah and Agyei, 2012).

Al-Tabtabi and Diekmann (2002) revealed that, cash flow monitoring and control includes four (4) major elements namely:

- i. The performance standards and plans formulated and developed from the cash flow objectives, goals and strategies;
- ii. The performance-measurement techniques;
- iii. A comparison of the planned and actual performances and

- iv. The corrective action that is required to get the cash flow back on track.

2.4.1.3 Important of Cash Flow Monitoring and Controlling

Monitoring and controlling of cash flows in construction projects requires efficient planning of funds utilisation, monitoring of budget implementation and evaluation of results. Since construction projects are funded by clients or employers, delay payments or poor management of cash flows by the contractor can affect the company's cash balance, if the expenses are not carefully monitored and controlled (Richter and Cantoria, 2011).

Cash flow monitoring and control is an important aspect of cash flow management. To ensure business continuity, this should be adequately planned and implemented by a system of procedures that recognizes the existence of deviations and their extent.

The focus of cash flow monitoring and control is to fulfil what was originally planned because major changes, if any, have already been anticipated and covered during the formulation of said plan (Ansah and Agyei, 2012).

2.4.1.3.1 Reduced Risk

Effective cash flow monitoring and controlling make it possible for necessary adjustments and take corrective action to mitigate the risk of cost overruns and schedule slippage.

2.4.1.3.2 Foster Accountability

Effective cash flow monitoring and controlling improve the overall accuracy of the budget process for future effort.

2.4.1.3.3 Reduced Cycle Time to deliver a Project

Effective cash flow monitoring and controlling often addresses/prevents problems from resurfacing later in the effort that result in rework which may lead to cost or time overrun (Ansah and Agyei, 2012).

2.5 Practical Application (Level 2: Doing)

2.5.1 The Key Best Practices in Cash Flow Monitoring and Controlling

Cash flow monitoring and controlling system provides the basis for maintaining cash flows and usually involves the utilisation of key performance indicators (KPIs) (Cheng, Moris, Kevin and Tsung, 2010).

Key Performance Indicators (KPIs) are used by financial managers to evaluate cash flows performance. These evaluations typically compare the actual and forecasted performance of predetermined parameters (Ansah and Agyei, 2012).

2.5.1.1 Ratios Relating to Performance Measurement

2.5.1.1.1 Activity Based Ratios

Ansah and Agyei (2012) described activity based ratio as financial control technique that employs the ratios between the income and expenditures of the activities as measures of performance:

$$\begin{aligned}\text{Planned performance} &= \frac{\text{Planned Income}}{\text{Planned Expenditure}} \\ \text{Actual Performance} &= \frac{\text{Actual Income}}{\text{Actual Expenditure}} \\ \text{Efficiency} &= \frac{\text{Actual Performance}}{\text{Planned Performance}}\end{aligned}$$

These ratios can be calculated at any time and over any duration for which a plan is available. Both planned and actual work must be calculated using the same rates for income and the same rates for expenditure. If the income rates come from the cash projection, the performance measures calculated above give an evaluation of the performance against the budget and the efficiency gives a measure of the cash flow performance against the forecast.

2.5.1.1.2 Return on Capital Employed (ROCE)

Capital employed represents the total funds invested in the company such as shareholders' funds in addition to long term debt which equates to total assets less short term liabilities. ROCE will vary from industries but, as a guideline, a company in the UK should achieve an average ROCE OF 20% (Ross and Williams, 2013).

$$\text{ROCE} = \frac{\text{Profit before taxation and interest}}{\text{Capital employed}}$$

Or

$$\text{ROCE} = \frac{\text{Profit before taxation and interest}}{\text{Shareholders' funds} + \text{long-term loans}} \times 100$$

2.5.1.1.3 *Return on Equity (ROE)*

This ratio is related to ROCE by deducting interest and tax from profits and long term debt from capital employed. An ROE of 20% or more usually represents a very strong performance (Ross and Williams, 2013).

$$\text{ROE} = \frac{\text{Profit after tax}}{\text{Shareholders' fund}}$$

2.5.1.1.4 *Profit Performance Measurements*

Profit is the difference between incomes (revenues) and expenditures over a period of time (usually on year). Profit is the ultimate 'output' of a company, and it will have no future if it fails to make sufficient profits. Therefore, it is important for Quantity surveyors to consistently evaluate the efficiency of the company in term of profits (Pandey, 2010). The profitability ratios are calculated to measure the operating efficiency of the company.

$$\text{Profit margin} = \frac{\text{Profit before tax}}{\text{Turnover}}$$

2.5.1.1.5 *Asset Performance Measurement*

$$\text{Net asset turnover} = \frac{\text{Turnover}}{\text{Capital employed}}$$

This is simply the number of times that assets are covered by sales. The higher the net asset turnover the more sales for each one naira invested and hence the more profit generated. The efficiency of asset use can be analysed further by calculating the fixed asset turnover and working capital turnover ratios, which are components of the net assets turnover ratio (Ross and Williams, 2013).

$$\text{Fixed asset turnover} = \frac{\text{Turnover}}{\text{Fixed Assets}}$$

$$\text{Working capital ratio} = \frac{\text{Turnover}}{\text{Working capital}}$$

(Working capital is current assets less current liabilities)

The working capital ratios can be analysed in turn into stock, debtor and creditors ratios (Padey, 2010).

$$\text{Stock turnover} = \frac{\text{Turnover}}{\text{Stock}}$$

$$\text{Debtor turnover} = \frac{\text{Turnover}}{\text{Debtors}}$$

2.5.1.2 Ratios relating to Financial Standing Measurement

2.5.1.2.1 Short term Liquidity Measurement

Liquidity ratios measure the ability of the firm to meet its current liabilities (obligations). The most common ratios, which indicate the extent of liquidity or lack of

it, are: (i) current ratio, quick ratios, cash ratios and interval measure and networking capital ratios (Pandey, 2010).

$$\text{Current Ratios} = \frac{\text{Current assets}}{\text{Current Liabilities}}$$

As a conventional rule, a current ratio of 2 to 1 or more is considered satisfactory. Therefore, it may be interpreted to be insufficiently liquid.

Current assets include cash and those assets that can be converted into cash within a year, such as marketable securities, debtors and inventories. All obligations maturing within a year are included in current liabilities, which include creditors, bill payable, accrued expenses, short-term bank loan, income-tax liability and long-term debt maturing in the current year (Ross and Williams, 2013).

2.5.1.2.2 *Quick/Acid Test Ratio*

Quick ratio establishes a relationship between quick or liquid, assets and current liabilities. An asset is liquid if it can be converted into cash immediately or reasonably soon without a loss of value (Pandey, 2010).

Cash is the most liquid asset. Other assets that are considered to be relatively liquid and included in quick assets are debtors and bill receivable and marketable securities (Pandey, 2010)).

$$\text{Quick Ratio} = \frac{\text{Current assets} - \text{Stocks}}{\text{Current Liabilities}}$$

Generally, a quick ratio of 1 to 1 is considered to represent a satisfactory current financial condition (Ross and Williams, 2013).

2.5.1.2.3 *Cash Ratio*

Cash is the most liquid asset; a financial analyst may examine cash ratio and its equivalent to current liabilities. Trade investment or marketable securities are equivalent of cash.

$$\text{Cash ratio} = \frac{\text{Cash + Marketable Securities}}{\text{Current Liabilities}}$$

There is nothing to worry about if the company has reserve borrowing power (Ross and Williams, 2013).

2.5.1.2.4 *Interval Measure*

Interval measure assesses a firm's ability to meet its regular cash expenses. It relates liquid assets to average daily operating cash flows (Ross and Williams, 2013).

$$\text{Interval measure} = \frac{\text{Current assets - Inventory}}{\text{Average daily operating expenses}}$$

Instead of computing only the daily operating expenditures, which also include expenditures required for paying interest, acquiring assets and repaying debt (Ross and Williams, 2013)..

2.5.1.2.5 *Net Working Capital Ratio*

Net working capital (NWC) ratio or net current assets (NCA) is the difference between current assets and current liabilities excluding short-term bank borrowing. NWC is sometimes used as a measure of a firm's liquidity. It measures the firm's potential reservoir of funds. It can be related to net assets or capital employed (Ross and Williams, 2013).

$$\text{NWC ratio} = \frac{\text{Net working capital (NWC)}}{\text{Net assets (NA)}}$$

In the case of seasonal businesses, liquidity ratios from quarterly or monthly financial data would be more appropriate (Ross and Williams, 2013).

2.5.1.2.6 *Long term Solvency Measurement*

$$\text{Gearing ratio} = \frac{\text{Interest bearing debt}}{\text{Shareholders funds'}}$$

A ratio in excess of 1:1 is normally considered excessive. A high gearing ratio implies a high financial risk, but can be tolerated if profitability is high and relatively consistent (Pandey, 2010).

$$\text{Interest cover} = \frac{\text{Profit before interest and tax}}{\text{Interest payment}}$$

This ratio demonstrates the amount of cover available before interest payments are jeopardised (Pandey, 2010).

2.5.1.3 Ratios related to Investment Measurement

This type of ratio is mainly of interest to prospective or actual investors, the contractor must bear in mind that the investment performance of a business can have an impact on all other aspects of the business. They are mainly to be used for comparing the profitability of investments with other investments (Ross and Williams, 2013).

The investment ratios are:

2.5.1.3.1 Return on Investment (ROI)

$$\text{ROI} = \text{ROTA} = \frac{\text{EBIT (1-T)}}{\text{Total Assets (TA)}}$$

$$\text{ROI} = \text{RONA} = \frac{\text{EBIT (1-T)}}{\text{Net Assets (NA)}}$$

Where ROTA and RONA are, respectively, return on total assets and return on net assets. While, T is the corporate tax rate, EBIT is earnings before interest and taxes (Pandey, 2010).

2.5.1.3.2 Return on Equity (ROE)

$$\text{ROI} = \text{ROTA} = \frac{\text{Profit after taxes (PAT)}}{\text{Net worth NW (Equity)}}$$

2.5.1.3.3 *Dividend per Share*

This ratio provides a quick way to evaluate how investors have been rewarded over time (Pandey, 2010).

$$\text{Dividend yield} = \frac{\text{Dividend per Share}}{\text{Market price per share}}$$

2.5.1.3.4 *Dividend Cover*

This shows how much of the profit is being taken out of the organisation and whether the cost of the dividend is secured. A very low ratio (about 1:2.5) suggests that the firm may not be ploughing enough money back into the business because its earnings are low or too much is being out (Pandey, 2010).

$$\text{Dividend cover} = \frac{\text{Earnings per share}}{\text{Dividend per share}}$$

$$\text{Where Earnings per share} = \frac{\text{Net profit after taxation}}{\text{Number of ordinary share issued}}$$

2.5.1.3.5 *Price-earnings Ratio*

Price earnings ratio is calculated as:

$$\text{Price/earnings ratio} = \frac{\text{Market price per share}}{\text{Earnings per share}}$$

A very high price/earnings ratio is an indication of a popular share (Pandey, 2010).

2.5.1.4 Variance Analysis Approach

The traditional approach to cash flow monitoring and control involves a comparison of the actual expenditure with the forecast to determine the variance. In cash flow monitoring and control there are usually differences between two expenditures – the planned and actual, although the incomes or any other values could be used (Ansah and Agyei, 2012).

The use of variances to check or measure cash flow performance is perhaps the most commonly used techniques. By considering the current and final state of the actual and the forecast, it is possible basically by plotting various expenditure curves such as the budget; the forecast; expenditure and budget value of work done (Tom and Paul, 2013).

There are two main types of variances, which may indicate discrepancies between the forecast and the budget expenditure. They do not however identify the causes of these discrepancies (Ansah and Agyei, 2012).

2.5.1.4. Total Cost Review Variance

This can be broken down in to ‘Current Budget’ and ‘Future Budget’ variance. A current budget variances means that the incurred cost of work done to date (expenditure) is greater than the forecast (Tom and Paul, 2013).

Performance Variance = Budget value of work done – budget expenditure to date

Efficiency Variance = Expenditure – budget value of work done.

Therefore, the 'performance variance' indicates that progress of the project is ahead of schedule if it is positive or behind the schedule if it is negative. The 'efficiency variance' on the other hand indicates over-spending if it is negative (Ansah and Agyei, 2012).

2.5.1.5 Earn Value Analysis System

Earn Value Analysis (EVA) is an integrated monitoring technique for the complex interaction of time and forecast parameters to provide the performance measurement of an organisational cash flow management (Radhika, Parag and Taran, 2015).

In construction sector, EVA is being used as a time and cost control tool. It has an ability to bring together forecasting and management functions (Radhika et al., 2015).

The element of earn value management system which helps to track the status of forecast are (Radhika et al., 2015):

2.5.1.5.1 Planned Value (PV)

Planned value is the authorized budget assigned to the scheduled work to be accomplished for a schedule activity or work breakdown structure elements (Radhika et al., 2015). The planned value can be computed by using following formula,

$$P.V = \% \text{ Planned work completed} \times \text{BAC (Budget cost at completion).}$$

2.5.1.5.2 *Earned Value (EV)*

Earned value is the value of work executed expressed in terms of the budget assigned to that work for a schedule activity or work breakdown structure element. 'Earned value is total cost of work completed / performed as of reporting time. Earned value can be calculated as:

$E.V = \% \text{ complete work} \times \text{BAC (Budget at completion)}$.

2.5.1.5.3 *Actual Cost (AC)*

Actual cost is the total costs actually incurred and recorded in accomplishing work performed for a schedule activity or work breakdown structure element. Actual cost is the total cost taken to complete the work as of reporting date.

$A.C = \text{Hourly Rate} \times \text{Total hour spent}$

2.5.1.5.4 *Cost Variance (CV)*

Cost variance is the algebraic difference between the worth of the work that has been carried out and to the amount of money that was spent to do it.

$CV = EV - AC$

A positive value of CV indicate that the project is spending less than the planned budget means it is favourable while the negative value shows that actual cost exceeded the budgeted amount which is unfavourable condition.

2.5.1.5.5 *Schedule Variance (SV)*

Schedule Variance is the algebraic difference between the worth of the work that has been carried out and to the amount of money that has to be spent according to the budget.

$$SV = EV - PV$$

It determines whether the project is ahead or behind the schedule. Positive value of SV shows the project is ahead of the planned schedule which is a favourable condition and negative value shows it is behind which is an unfavourable condition.

2.5.1.5.6 *Cost Performance Index (CPI)*

Cost performance index is the ratio of earned value (EV) to actual costs (AC). It indicates the efficiency of resource use and measures the worth of the work that is achieved by spending every single unit cost.

$$CPI = EV/AC$$

A ratio less than 1 is an unfavourable and suggests the value of the work that has been accomplished is less than the amount of money spent and the cost is overrun. Whereas, the ratio more than 1 indicates favourable condition which indicate more amount of work is achieved as that of the corresponding cost.

2.5.1.5.7 *Schedule Performance Index (SPI)*

Schedule Performance Index is the ratio of earned value (EV) to planned value (PV). It indicates the efficiency of time use and measures the worth of the work that is achieved by spending every single unit time.

$$SPI = EV/PV$$

A ratio less than 1 is an unfavourable and suggests the value of the work that has been accomplished is less than the amount of time spent and the cost is overrun. Whereas, the ratio more than 1 indicates favourable condition and indicate more amount of work is achieved as that of the corresponding time (Radhika et al., 2015).

2.5.1.6 Strategies for addressing Deficit Cash Flow

In the event of a cash flow deficit, companies have a number of finance options to work through difficult time (Odeyinka, Kaka and Morledge, 2003). The following practices are quite common among business of all sizes:

- i. overvaluation (front-end-loading)
- ii. company's cash reserves
- iii. tender unbalancing
- iv. delayed payment to sub-contractors
- v. delayed payments to supplier's
- vi. use of company's assets (liquidate assets)

vii. Borrowing. Applying for loan from financial institutions or individuals (Odeyinka et al., 2003).

The risk perception seems to dictate contractor's preference to the kind of strategy adopted for resolving deficit cash flow (Odeyinka et al., 2003).

2.5.1.7 Strategies for addressing Surplus Cash Flow

Organisations cannot always accumulate debts before revenue is generated. In some cases, an organisation may expect a revenue surplus in a cash flow projection. What the organisation does with that money can affect future opportunities such as short-term investments opportunities like treasury bonds and money market funds (paying off debts like loans earlier). And this will manifest its use through generated interest or shorter loan terms (Pandey, 2010).

2.5.1.7.1 Marketable Securities

There is a close relationship between cash and money market securities or other short-term investment alternatives. Investment in these alternatives should be properly managed (Pandey, 2010). Surplus cash flow can be invested in marketable securities. Surplus cash balance may be held by the firm for two reasons. First, the working capital requirements of the firm fluctuate because of the elements of seasonality and business cycles. The excess cash may build up during slack seasons but it would be needed when the demand picks up. Thus, excess cash may be held as a cushion or buffer to meet unpredictable financial needs. A firm holds extra cash because cash flows cannot be predicted with certainty. Cash balance held to cover the future exigencies is called the precautionary balance and is usually invested in the short-term money market

investments (Mauchi, Nzaro, Njanike, Nyaradzai, Karambakuwa, Damiyano, Gopo, Gombarume, Mangwende and Manomano, 2011).

The excess amount of cash held by the firm to meet its variable cash requirements and future contingencies should be temporarily invested in marketable securities, which can be regarded as near moneys. A number of marketable securities may be available in the market. The financial manager must decide about the portfolio of marketable securities in which the firm's surplus cash should be invested (Mauchi et al., 2011).

2.5.1.7.2 *Investment Opportunities (Security)*

A firm can invest its surplus funds in many types of securities or short-term investment opportunities. As the firm invests its temporary cash balance, its primary criteria in selecting a security or investment opportunity will be its quickest convertibility into cash, when the need for cash arises. However, the firm would also be interested in the fact that when it sells the security or liquidates investment, at least, gets the amount of cash equal to the investment outlay. Thus, in choosing among alternative investments, the firm should examine three basic features of security: safety, maturity and marketability (Francis and Kenley, 2003).

- i. Safety* usually, a firm would be interested in receiving as high a return on its investment as is possible. But the higher returns-yielding securities or investment alternatives are relatively more risky. The firm would invest in very safe securities as the cash balance invested in them is needed in near future. Thus, the firm would tend to invest in the highest yielding marketable securities subject to the constraint that the securities have acceptable level of

risk means the possibility of default risk. The default risk means the possibility of default in the payment of interest or principal on time and in the amount promised. The default in payment may mean more than one thing. In an extreme case, the security may not be redeemed at all. In a less severe case, the security may be sold at a loss, when the firm needs cash. To minimize the chances of default risk and to ensure safety of principal or interest, the firm should invest in safe securities. Other things remaining constant, higher the default risks, higher the return from security. Low-risk securities will earn low return.

- ii. Maturity* refers to the time period over which interest and principal are to be made. The price of long-term security fluctuates more widely with the interest rate changes than the price of short-term security. Over time, interest rates have a tendency to change. Because of these two factors, the long-term securities are relatively more risky. For safety reasons, therefore, the firms for the purpose of investing excess cash prefer short-term securities.
- iii. Marketability* refers to convenience and speed with which a security or an investment can be converted in to cash. The two important aspects of marketability are price and time. If the security can be sold quickly without loss of price, it is highly liquid or marketable. The government treasury bills fall under this category. If the security needs time to sell without loss, it is considered liquid. However, as the funds invested in marketable securities will be needed by the firm in near future, it would be invest in the securities that are readily marketable. The securities that have low marketability usually have higher yields in order to attract investment. Thus, differences in

marketability also cause differences in the security yields (Francis and Kenley, 2003).

2.5.1.7.3 *Types of Short-term Investment Opportunities (Securities)*

The following short-term investment opportunities are available to companies to invest their temporary cash surplus (Francis and Kenley, 2003):

- i. Treasury Bills (TBs)* are short-term government securities. The usual practice is to buy treasury bills at a discount and redeem them at par on maturity. The difference between the issue price and the redemption price, adjusted for the time value of money, is return on treasury bills. They can be bought and sold any time; thus, they have liquidity and lack default risk.
- ii. Commercial Papers (CPs)* are short-term, unsecured securities issued by highly creditworthy large companies. They are issued with a maturity of three months to one year. CPs is marketable securities, and therefore, liquidity is not a problem.
- iii. Bank Deposits* A firm can deposit its temporary cash in a bank for a fixed period of time; the interest rate depends on the maturity period. The default risk in most of the bank deposits is quite low.
- iv. Inter-corporate Deposits* lending/borrowing or deposits (ICDs) is a popular short-term investment alternative for companies. Generally a cash surplus company will deposit (lend) its funds in a sister or associate company or with outside companies with high credit standing. In practice, companies can

negotiate inter-corporate borrowing or lending for very short periods. The risk of default is high, but returns are quite attractive.

2.5.1.8 Motives for Holding Cash

The contractor's need to hold cash may be attributed to the following three (3) motives: The transactions motives, the precautionary motive and the speculative motive (Mauchi et al., 2011).

According to Mauchi et al. (2011) revealed that, many business organisations lack the techniques for holding cash which includes transaction, precautionary and speculative motives which is very significant in controlling cash flow projections.

2.5.1.8.1 Transaction Motive

The motive by the firm to hold cash in order to meet with its day to day transactions in order to make payments for suppliers, subcontractors, wages and salaries, other operating expenses, taxes, dividends etc. the need to hold cash would not arise if there were perfect synchronization between cash inflows and cash outflows (Mauchi et al., 2011).

Mauch et al (2011) revealed that many contracting organisations lack the capacity to hold cash to satisfy their transactionary motive such as paying supplies and sub-contractors, meeting payroll demands and paying of taxes etc. holding inadequate amount of cash or cash equivalent interrupted the normal flow of most business activities.

When the contractor's expenditure exceeds the income, the contractor has to maintain some cash balance to be able to meet up with its liabilities. For transactions purpose, the contractor may invest its cash in marketable securities. Usually, the contractor will purchase securities whose maturity will correspond with some anticipated expenditures, such as dividends or taxes in the future. The transactions motive ultimately refers to holding of cash in order to meet the anticipated payments whose timing was not perfectly matched with the incomes (Cheng et al., 2010).

2.5.1.8.2 *Precautionary Motive*

The precautionary motive is the need to hold cash to meet contingencies in the future. It provides a buffer or cushion to withstand some unexpected emergency. The precautionary amount of cash to be hold by the firm depends upon the accuracy of cash flows projection. If cash flows can be predicted with accuracy, less cash will be maintained for an emergency (Mauchi et al., 2011).

Holding cash for precautionary motive, assumes a contractor, needs cash for emergency purposes when the cash flows are less than what was forecasted. Contracting organisation usually make inadequate provision for any unexpected needs of cash to act as preventive balance. The amount of precautionary cash is always influenced by the firm's ability to borrow at short notice when the need arises. The higher capacity of the contracting organisation's to borrow at short notice, the less will be the need for precautionary balance. The precautionary balance may be kept in cash and marketable securities. The amount of cash set aside for precautionary reasons is not expected to earn anything; therefore, the firm should attempt to earn some profit on it. Such funds should be invested in high-liquid and low-risk marketable securities. Precautionary

balance should, thus, be held more in marketable securities and relatively less in cash (Mauchi et al., 2011).

2.5.1.8.3 Speculative Motive

Speculative motive entails holding of cash for investment in profit-making opportunities as and when they arise. The opportunities to make profit may arise when the security prices change. The firm will hold cash, when it is expected that interest rates will rise and security prices will fall. Securities can be purchased when the interest rate is expected to fall; the firm will benefit by the subsequent fall in interest rates and increase in security prices (Cheng et al., 2010).

Speculative motive is a strategy in which business firms hold cash to take advantage of additional opportunities such as offering certain incentive for early payment from the clients and bargaining for reduction from suppliers and vendors. Many business organisations lack the intentions or techniques to practice speculations motives (Cheng et al., 2010).

2.5.1.9 Determination of the Optimum Cash Balance

One of the ultimate responsibilities of the Quantity Surveyors is to maintain a sound liquidity position of the firm so that the dues are settled in time. The firm needs cash to pay wages and salaries, suppliers, subcontractors and other expenses, as well as for paying dividend, interest and taxes (Pandey, 2010). The test of liquidity is the availability of cash to meet the firm's obligations when they become due. A firm maintains the operating cash balance for transaction purposes. It may also carry additional cash as a safety stock. The amount of cash balance will depend on the risk-

return trade-off. If the firm maintains small cash balance, its liquidity position weakens, but its profitability improves as the released funds can be invested in profitable opportunities (marketable securities). When the firm needs cash, it can sell its marketable securities or borrow (Pandey, 2010).

Moreover, if the firm keeps high cash balance, it will have a strong liquidity position but its profitability will be low. The potential profit forgone on holding large cash balance is an opportunity cost to the firm. The firm should maintain optimum-just enough, neither too much nor too little of cash balance (Pandey, 2010).

2.5.1.9.1 Optimum Cash Balance under Certainty: Baumol's Model

Baumol's Model as illustrated in figure 2.4 provides a formal approach for determining a firm's optimum cash balance under certainty. The aim of this model is to calculate the optimal amount of securities to be liquidated whenever the company requires cash (Cheng et al., 2010). The level of securities will maximize interest received on marketable securities while minimize the cost of selling marketable securities. The model makes the following assumptions (Pandey, 2010):

- i. The firm is able to forecast its cash requires with certainty.
- ii. The firm's cash payments occur concurrently over a period of time.
- iii. The opportunity cost of holding cash is known and it does not change over time.
- iv. The firm will incur the same transaction cost whenever it converts securities to cash.

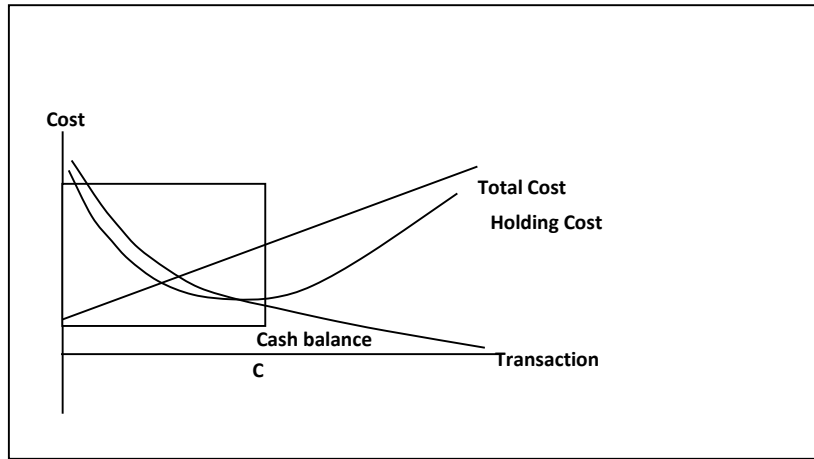


Fig. 2.4: Cost Trade-Off: Baumol's Model

Source: Pandey, (2010).

2.5.1.9.2 *Optimum Cash Balance under Uncertainty: The Miller-Orr Model*

The limitation of the Baumol Model is that it does not allow the cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflow and outflows. The Miller-Orr Model overcomes this shortcoming and allows for daily cash flow variation (Cheng et al., 2010). Miller-Orr Model is a stochastic model that aims at determining the amount of marketable securities to be sold or purchased whenever the company is in need for cash. The model indicated that the firm sells marketable securities when a lower limit of cash is reached. Marketable securities are purchased when the upper limit of cash is reached as it becomes necessary to reduce cash. When there is no attempt to manage cash balances clearly the cash balance is likely to 'meander' upwards or downwards. The Miller-Orr Model imposes limits to this meandering. If the cash balances reach an upper limit the firm buys sufficient securities to return the cash balance to a normal level (Cheng et al., 2010).

The Miller-Orr Model can be used to help construction firms maintain a balance, as illustrated in figure 2.5. The model argues that adjustment for irregular cash flow patterns that occur at various times and is best handled through the use of duals control limits. In other words, a firm sets its cash limits based upon both operating

characteristics and credit conditions. The upper cash limit ‘U’ and target cash balance C^* can be set based on transaction costs, variance of cash flow and the opportunity cost of holding cash. Once the upper and lower thresholds have been identified, a firm can determine their own best timing for investing cash in marketable securities or trading notes for cash. The Miller – Orr Model simplifies the task of working capital management by finding the target cash balance and the associated limits (Mauchi et al., 2011).

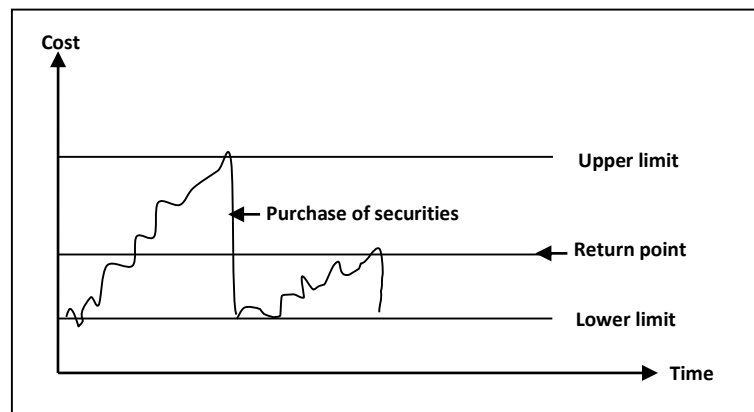


Fig 2.5: Miller - Orr Cash Management Model
Source: Mauchi et al. (2011).

2.6 Practical Considerations (Level 3: Doing/Advising)

The practical considerations that the contractors have to be analysed and considered when applying cash flow monitoring and controlling system. The Quantity surveyor should consider the following when advising on the uses of a cash flow monitoring and controlling system, in particular, when using the cash flow monitoring and controlling to foster accountability (to ensure that the projects are delivered within the approved budget in order to maintain the planned profit margin) or reduced risk (to ensure that the expected profit is obtained to enable the contractor continue to stay in business and expand) (Ansah and Agyei, 2012).

2.6.1 Items for Consideration when Analysing Cash Flow Monitoring and Controlling

Effective cash flow monitoring and controlling is the key to business viability and enterprise value. The Quantity Surveyors and project managers have to examine the details to really understand the activities that required carefully planning, monitoring and matched against the projects plans and the budgets. The basic principles to consider when monitoring and controlling Organisational cash flow are (Ansah and Agyei, 2012):

- i. Understanding the principles of cash flow monitoring and controlling
- ii. Involve those who will be accountable, accountability is one of the best, but most misapplied tools of business. Delegating authority and holding managers accountable for results allowed corporations to become global in scope and allowed for effective management.
- iii. Identify and communicate key performance measures
- iv. The plan for utilization wherein the budget plans should be strictly implemented because estimates have already taken into consideration the variable
- v. The cash flow status report, which provides a summary for monitoring the cash inflows and outflows. Through this report, the Quantity surveyor or the project manager will be able to perceive at a glance if the budget is being closely implemented and if the cash inflows from the client is timely and sufficient

- vi. The company's financial statement will show that the process of managing the cash flow control in an organisation has implemented the cost controls as planned. It will also disclose fund adequacy or inadequacy – where negative results would prompt the management to thresh-out the matter with the clients before proceeding with the projects.

- vii. Communicate thoroughly, in healthy organisations, the discipline of meeting or exceeding expectations becomes part of the culture and communication is effective.

2.6.2 General considerations

2.6.2.1 The used of Diagrams

Advising on the use of diagrams such as S-curves which can be used to accurately show current cash flow status and predict future progress. They are widely used in the industry for project management. S-curve regression model is used in predictions of cash flow amount and calculation of target cash balance (Ross and Williams, 2013).

2.6.2.2 Bookkeeping System

Bookkeeping system is an effective means of monitoring and controlling cash flow during the contract. Keeping of books of account for each contract enable profit to be easily determined after final account is settled and relative effectiveness of site administration (Ross and Williams, 2013)..

2.6.2.3 Checking Costs with Interim Certificate (Cost Value Reconciliation)

Cost value reconciliation deals with comparison of value with cost with the objective to identify the profit to date on individual contracts. It therefore provide adequate information on which contract require management attention (Ross and Williams, 2013)..

2.6.2.4 Schedule Control

The cost and project managers must give considerable attention to monitoring schedules. Construction contract typically involves a deadline for work completion, so contractual agreements will force attention to schedules. More generally, delays in construction represent additional costs due to late facility occupancy or other factors. Just as costs incurred are compared to budgeted costs, actual activity durations may be compared to expected durations (Ross and Williams, 2013).

2.6.2.5 Shortening the Billing Cycle

If an organisation does not have a standard procedures to issue invoices on a timely basis when a project – or portion of project is completed, there can be issues. For example, some public agencies pay within a 45 days remittance period, and if it takes a contractor 30 days to issue an invoice, that mean it will takes the contractors 75 days or more in some cases to battle cash crunch. The time from project completion to billing is squarely under the contractor's control. Shorten the billing cycle as much as possible improve cash flow. Avoid over-billing, which can result in 'borrowing' from one job to pay another, or under-billing as a result of poor forecasting (Pandey, 2010).

2.6.2.6 Revamping Payment Terms and Conditions

It is appropriate for contractors to consider making arrangement with the clients to agree on front-loaded contracts. And it will assist the contractor to avoid paying employees' salaries and wages, payment of suppliers and contractors out of its own pockets or being forced to delay the next phase in a project, while the contractor wait for payment. Front-loaded contracts allow the contractor to get the cash needed to complete the projects to the best of his/her ability (Ross and Williams, 2013).

2.6.2.7 Improve Stakeholders Financial Skills or Get an Expert Advice

It is proper for the contractor to consider on improving the financial skills of financial managers in order to improve organisational cash flow. Encourage attending workshop to improve business knowledge. However, contractors should seek timely advice from relevant professional if necessary to assess their organization capacity on effective cash flow monitoring and control (Cantoria and Richter, 2011).

2.6.2.8 Create a Tax Planning Strategy

Engage a good tax planning professional and educate the management about the tax planning process, including the tax impact of various business activities, such as buying equipment. Engaging the accounting professional about depreciation methods for tax purposes that accelerate deductions and decrease tax liabilities. Understanding these strategies and having a solid plan in place is a key factor to improving cash flow and to the long-term success of the business (Cunningham, 2013).

2.7 Organisational Portfolio of Projects Cash Flows

The portfolio view of a contractor considers the cash flow of the organisation to be projected from a series of overlapping individual net cash flow. Where they overlap, they accumulate, the net inward cash flow on a project countering the net outward cash flow on another. This is an important concept in traditional construction management. It is very common for the early phases of a project to require subsidy funding. This can be offset by the positive balance of another project reaching completion, thus maintaining corporate liquidity. The concept of overlaying individual net cash flow profiles to form an organisational cash flow profile is the key. The ability of the organisation to take on new projects, to fund those projects and to continue to fund its normal operations, becomes paramount (Kenley, 2003).

Portfolios of individual projects combine to form the organisational cash flow. This means that each project cannot be considered individually, but must be considered from the organisational perspective (Kenley, 2003).

2.8 Cash Flow and Construction Company Failure

Construction sector is vulnerable to economic changes, especially during recession periods due to the high capital outlays, cost flexibility and high competition limiting the price. The changes of the business environment, often associated with cash deficits, exchange rate fluctuation and political instability are increasing the construction projects financial risks (Koksal and Arditi, 2004). The actual economical context in Nigeria and other developing countries is characterised by an aggressive competition and lack of investments in construction area. The common behaviour of construction companies during these days is to accept a large number of risks beyond their power to

allow them to remain in the business. In order to win the tender, they are bidding lower prices which make them vulnerable to the unexpected events during the projects implementation, especially from financial aspects. But the cash deficit during the project implementation both at the client level but mostly at the contractor level leads to delays, penalties and loss of opportunities which are reflected in the health of projects and organizations (Ismail, 2014).

The construction firms are using a limited number of project financial management methods and even fewer methods at project portfolio level (Kenley, 2003).

Construction companies are generally viewed as high-risk businesses, particularly vulnerable due to both internal and external challenges. These challenges include the 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).

Considering the company liquidation and receiving orders for the self-employed, the construction industry accounts for high percentage. In the case of self-employed, over the past 25 years, the share of bankruptcy in the construction industry varied from 21% to 30%. Similarly for company liquidations, over the same period, construction varied from 12% to 22% (Mutti and Hughes, 2002). Construction industry recorded high rate of business failure with 20.1% globally and more than 80% of these failure were attributed to lack of financial control (Emidafe, 2015).

2.8.1 Causes of Construction Company Failure

Business failure mostly appears in a critical situation as a consequence of a complex process and is rarely dependent on a single factor. Koksai and Ardit (2004) found budgetary and macroeconomic issue as the main reasons for construction business failure in the US, over 80% of the failure were caused by five factors, namely Cash flow issues (27%) industry weakness (23%), heavy operating expenses (18%), insufficient capital (8%) and burdensome institutional debt (6%). All these factors, except for industry weakness, are budgetary issues and should therefore be handled by companies that are cognisant of the effects of these factors on their survivability (James and Thomas, 2010).

Enshassi, Hallaq and Mohamed (2006) examined the critical factors causing the failure of construction companies through a survey conducted among 40 small to medium-sized construction companies revealed that; lack of business experience and country's economic were found to be the most influential factors to company failure. A scrutiny of the sub- factors related to the lack of business experience confirms that difficulties with cash flow and poor relationship with the client drove the contractors' failure. In addition, preparing an accurate and realistic bid proposal with the profit margin being carefully determined is highly critical (Enshassi et al., 2006). However, due to high competition, companies are usually forced to reduce their profit in order to win the bid and this would increase the default risk substantially. James and Thomas (2010) found that more than half of business failures in construction industry were due to unrealistic profit margin.

Scharffenberger (2003) studies business failure at the subcontractor level and found that the primary causes of subcontractor business failure were insufficient capital/excessive debt, lack of managerial maturity, lack of early warning measures, increase in project scope, poor billing procedures, failure to evaluate project profitability, unfamiliarity with new geographical areas and poor use of accounting systems. James and Thomas (2010) identified ten most common cause for construction business failures: (i) growing too fast; (ii) obtaining work in a new geographic region; (iii) dramatic increase in single job size; (iv) obtaining new types of work; (v) high employee turnover; (vi) inadequate capitalization; (vii) poor estimating and job costing; (viii) poor accounting system and (ix) poor cash flow. Osama (1997) on the other hand, presented a study of the factors that contribute to the failure of construction contractors in Saudi Arabia and found that the most important factors were: difficulty in acquiring work, bad judgment and lack of experience in the firm's line of work, difficulty with cash flow, lack of managerial experience and low profit margins. The causes of business failure in construction industry are summarized and portrayed in figure 2.6

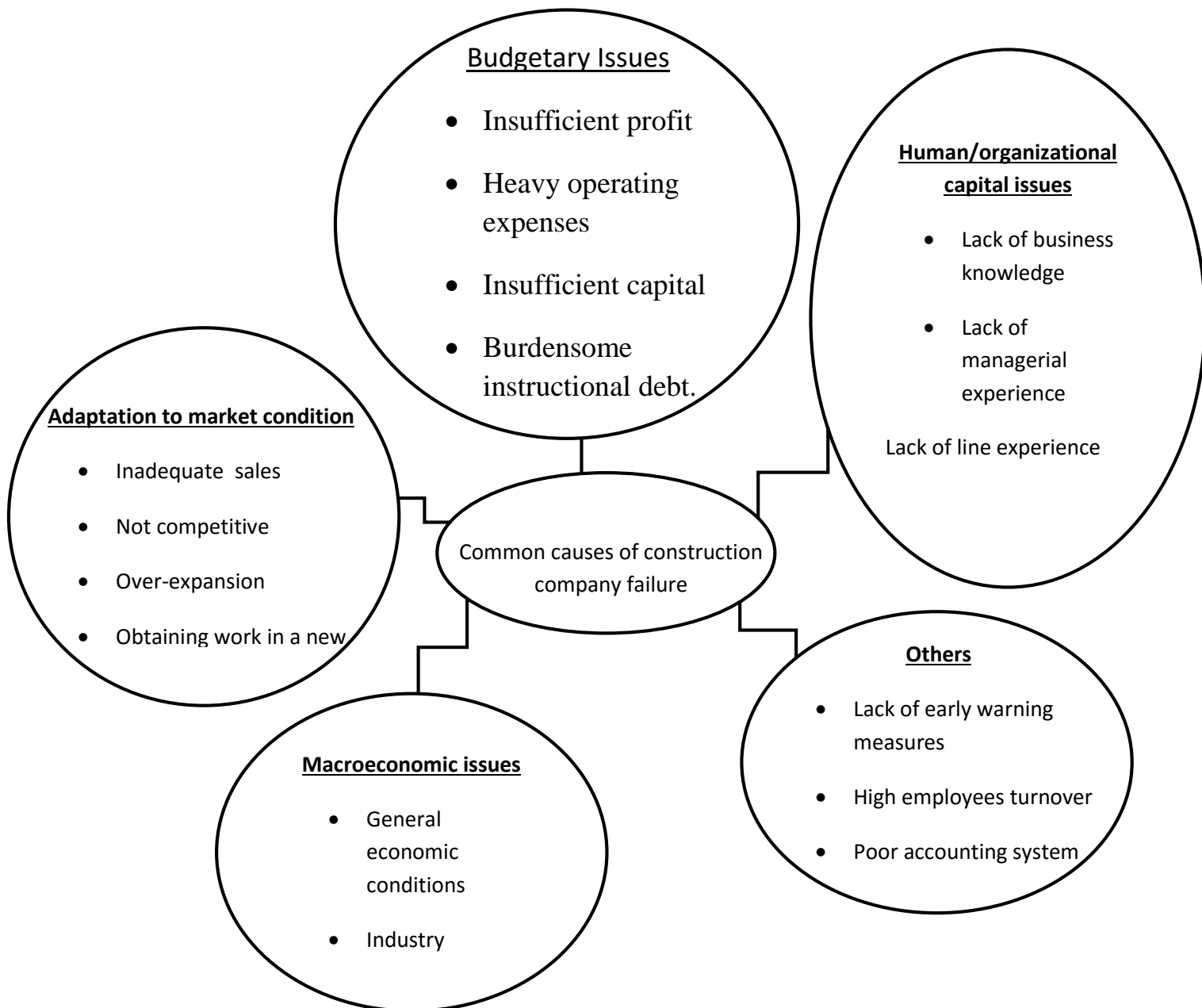


Fig. 2.6: Common Causes of Construction Company Failure
 Source: James and Thomas, (2010).

2.8.2 The Rates of Failure

The construction business has the second highest failure rate of any business, exceeded only by restaurants (James and Thomas, 2010). A contractor is at far more risk than his counterpart in almost any other industry (Mahamid, 2012). Also, compared to other industries, the client is subjected to a greater degree of risk for a longer period of time during the construction process. Although, many firms that experience business failure

are small in regard to other owned assets. There is evidence of business failures among large firms (Mutti and Hughes, 2002; Cheng et al., 2010). Nigeria is not exception, the increasing number of business failure in the local construction market warranted this research study.

A number of researchers have studies this failure at project level, rather than company level (Cheng et al., 2010; Olabosipo and James, 2014).

2.9 Capability

According to oxford dictionary define capability as the power or ability to do something. Capability is a measure of the ability of an entity (department, organization, person and system) to achieve its objectives, especially in relation to its overall mission (Kelchner, 2008).

2.9.1 Business Capability

Business capability is the expression or the articulation of the capacity, materials and expertise an organisation needs in order to perform core functions. (Garengo and Bernardi, 2004). Business capabilities are sometimes confused with other concepts in business process management such as business processes and businesses functions (Kelchner, 2008).

Business processes describe the methods an organisation employs in order to provide and leverage business capabilities. Business functions describe the role that individuals and units within the business play in regards to meeting business objectives. While functions and roles tend to change rapidly as new employees enter the business,

business capabilities remain relatively stable (Kelchner, 2008). High-level business capabilities include concepts such as demand and supply chain management that can be met by a number of various business processes, which in turn can incorporate a variety of business roles. Business capabilities can also be broken down into more granular levels. Supply chain management, for example could be split into service flow, information flow and finances flow (Top, 2008).

2.9.2 Organisational Capability

Organisational capability is the ability and capacity of an organisation expressed in terms of its (1) Human resources: their number, quality, skills and experience, (2) Physical and Material resources: machines, land, building (3) Financial resources: money and credit, (4) Information resources: pool of knowledge, databases and (5) Intellectual resources: copy rights, designs, patents (Garengo and Bernardi, 2004)

2.9.3 The Importance of Organisational Capability

An organisational capability is a company's ability to manage resources, such as employees, effectively to gain an advantage over competitors. The company's organisational capabilities must focus on the business ability to meet client or customer demand. Organisational capabilities are anything a company does well that improves business and differentiates the business in the market (Davidson and Maguire, 2003).

2.9.3.1 Competitive Advantage

Organisational capabilities provide a company with an advantage in the marketplace. When an organisation continues to create new capabilities and develop existing ones, it will maintain the advantage over its competitors (Garengo and Bernardi, 2004).

2.9.3.2 Flexibility and Responsiveness

Organisational capabilities of an organisation are its ability to change in response to clients demand. Knowledge and skilled employee are organisational capabilities that provide a company with the ability to respond to clients demands and remain flexible to changes in the business environment (Kelchner, 2008).

2.9.3.3 Knowledgeable Workforce

The skills and knowledge of a company's workforce allow the organisation to direct those skills to achieve the business's goals. Training programs, education assistance and effective recruiting and hiring programs are organisational capabilities that ensure a knowledgeable workforce. To maintain the capability, companies should ensure the workforce has the resources available to improve continuously; managing a talented workforce is an organisational capability that provides a competitive advantage in the marketplace (Rouse and Daellenbach, 2002).

2.9.3.4 Improve Customer Relationships

Good customer relationships ensure the continued growth and competitiveness in the market. The relationship between the organisation and its clients is an organisational capability that affects productivity reputation and loyalty for future business.

Maintaining existing relationships with clients as well as developing new ones to ensure the growth and thrive in the future (Kelchner, 2008).

2.10 Review of Related Studies

2.10.1 Author's on Cash Flow Forecasting (CFF)

Odeyinka et al. (2008) '*An Evaluation of Risk factors Impacting Construction Cash Flow Forecasting*'. The study was undertaken to identify and assesses the extent of occurrence and impact of risk factors responsible for the variation between the forecast and actual construction cash flow. The data for the study was obtained through a structured questionnaire administered to contracting organisations. The knowledge of the identified significant risk factors will assist in providing invaluable information to the contracting firms as regards what risk variables to focus attention on in CFF.

Aomar and Bahir (2012) '*Analysing the Impact of Negative Cash Flow on Construction Performance*'. The study investigates the negative cash flow trends, patterns and their impact on construction performance in contracting organisations in UAE. The data for the study was elicited through literature review and project files. The study revealed how contractors can mitigate the extent and amount of negative cash flow by efficiently and effectively planning for cash inflows in all phases of projects to ensure a successful and profitable project.

AbdulRazaq et al. (2012) '*Investigating the Practice of Cash Flow Forecasting by Contractors in Nigeria*'. This study was undertaken to investigate cash flow forecasting practices by construction contractors in Nigeria. Literature review and interviewed were used for data collection. The study revealed that the practice of cash flow forecasting by

contractors in Nigeria was not in correct manner, as in complying with suggestions by researchers to streamline practice along define activities.

Kim and Grobler (2013) '*Preparing Construction Cash Flow Analysis using Building Information Modelling (BIM) Software*'. The study was undertaken to produce a prototype which will offer a method that can produce an accurate CFF in minutes. The study demonstrated that an automated CFF is possible based on the information from a BIM. This developed model will assist the contractors who are considering bidding on multiple projects would be able to quickly perform cash flow analysis for each project and determine which one has the best possibility to earn the highest profit margins. This model will be useful for business development strategies.

Abdullahi (2014) '*Assessing Contractors' CFF Process Capabilities in Nigeria*'. The study was undertaken to assess the processes of CFF Capabilities of Nigerian Contractors. The data for this study was elicited through literature review and structure questionnaire survey. The study revealed that the construction sector has high capability of understanding and practical application of the key CFF best practices but very weak/low in term of advisory and management capabilities.

Hoseini et al. (2015) '*Stochastic Framework for CFF considering the Client's delays in payment by use of Monte Carlo Simulation*'. The study was undertaken to developed a new stochastic simulation-based framework for forecasting construction projects cash flow at the tender stage, considering the effect of late payments from clients. The proposed model was simulation-based and was developed for the purpose of estimating maximum finance required to be procured by contractors to support daily expenses and financing cost incurred due to the risk of late payment by the clients.

Purnus and Bodea (2015) '*Financial Management of the Construction Projects: A Proposed CFF Model at Project Portfolio Level*'. The study was undertaken to develop a CFF Model, which can be applied by the contractor's at the Project portfolio level to avoid high financial exposure and losses and to predict not only when, but mostly what amount of funds should be borrowed or obtain from internal or external sources and when and what amount of funds should be return.

2.10.2 Author's on Cash Flow Management (CFM)

Mutti and Hughes (2002) '*Cash Flow Management in Construction Firms*'. The study was undertaken to explore the cash flow issues associated with company failures. Data were obtained for the study through interview and structure questionnaire. The study revealed how cash flows are manage by various construction firms at the project level, in order to provide the stakeholders in the construction sector with interesting lessons about what constitutes financial health for an organisation.

Odeyinka et al. (2003) '*An Evaluation of Construction Cash Flow Management Approaches in Contracting Organisations*'. The study was undertaken to examine the construction CFM approaches in the UK Contracting Organisations. The data for the study were gathered through literature review and questionnaire survey. The study revealed that the risk perception seems to dictate contractors' preferences to the kind of strategy adopted for resolving deficit cash flow. While the firm's size seems to influence the choice of strategies for resolving deficit cash flow.

Cheng et al. (2010) '*Application of Project Cash Flow Management and Control for Infrastructure*'. The study was undertaken to develop a model which will address the

short-term financial demands by the contractors during the project implementation stage. The study revealed how the contractors can utilize the model to preview the distribution of cash flows and amount of equity required for the project.

Mauchi et al. (2011) '*The Effectiveness of Cash Flow Management Policies: a case study of Hunyani Flexible Product in Zimbabwe*'. The study was undertaken to examine the impact of poor CFM on the overall company performance. Literature review, interviews and observation were used for data collection. From the study it was revealed that there was high deficiency in CFM most especially in term of monitoring and controlling aspect.

Attom (2012) '*Cash Flow Management Practices by Micro and Small Organisations in Ghana*'. The study was undertaken to investigate the practice of CFM by the micro and small organisations in Ghana. Literature review and structure questionnaire was used for data collection. The study revealed that the majority of the organisations have inadequate knowledge about cash flow management and control procedures in Ghana.

Usman et al. (2016) '*An Appraisal of Factors Affecting Cash Flows in Building Project Delivery In Nigeria*'. The study was undertaken to appraise the factors affecting the cash flow management in construction projects delivery in Nigeria. Literature review and structured questionnaire was used for data collection. The study revealed that delay payment, delay in settling claims, loan repayment, consultant instruction and changes in interest rate are the major factors which severely or fairly severe on cash flow management in construction project delivery in Nigeria.

2.10.3 *Author's on Cash Flow Monitoring and Control (CFMC)*

Ansah and Agyei (2012) '*Effectiveness of Monitoring System for Controlling Cash Flows in the Construction Industry*'. The study was undertaken to investigate the most effective system for monitoring and controlling cash flows in used in Ghana. Literature review and interview were adopted to retrieve data for the study. The study revealed that Earn Value Analysis System (EVAS) is the most proactive system for monitoring and controlling cash flows to optimise profit and successful project delivering.

James and Olabosipo (2014) '*Developing a realistic Budget for Construction Projects: Lessons from Nigeria*'. The study was undertaken to examine the primary issues and application of budget decisions in the construction process. Literature review and administer questionnaire was used for data collection. The study revealed that the major issues confronting the construction sector in Nigeria is inadequate managerial control in the form of sound budget planning and control.

Radhika et al. (2015) '*The Cash Flow Monitoring and Controlling of Construction Project through Earn Value Management System*'. The study was undertaken to examine the application of EVMS by the contracting organisation in India. The study revealed that the industry were still at the infant stage of adopting the system.

CHAPTER THREE

3.0 RESEARCH METHOD

3.1 Research Design

A research design constitutes the blueprint for the collection, measurement and analysis of data (Creswell, 2009). To consolidate an explicit set of objectives, literature review and structured questionnaire survey were used to assess the capabilities of Nigeria construction firms in monitoring and controlling of construction cash flow. Quantitative approach was used for the study, due to the nature of the research question “how much capable are the Nigerian contracting firms in Cash Flow Monitoring and Controlling (CFMC) practices?” The substantive variables established from the reviewed of literature are the key best practices in CFMC in construction, this was then used to design the questionnaire which was administered to contracting firms operating in FCT, Abuja, Kaduna and Niger state of Nigeria. The contracting firms were group to small, medium and large size firms in line with the classification of Nigeria Corporate Affairs Commission (CAC) so as to enable to investigate the statistical differences of opinions between different sizes of construction firms. Analysis was carried out using arithmetic mean values and raking of variables in Statistical Package for Social Sciences (SPSS). A sample survey was used since it is not practical or possible to investigate the entire population of contracting firms operating in Nigeria. And since, a sample survey uses a representative group of a given population in order to make generalisations to the whole population (Csikszentmihalyi, 2014). Convenient sampling method was used due to the accessibility and availability of these contracting firms (Rouse and Dallenbach, 2002).

3.2 Study Area

Literature suggested that there are important aspects to be considered in making selection of a particular study area (Creswell, 2009). The study covered the FCT Abuja, Kaduna and Niger state of Nigeria. FCT and Kaduna was selected because the cities are among the major cities of Nigeria where most contracting firms have their headquarters or offices while Niger state was selected because of the number of projects going on at the time of the research thus the presence of a good number of contractors.

3.3 Population, Sampling and Sampling Technique

3.3.1 Population

The population for the study consists of contracting firms operating in Nigeria with a population of 62,995 (CAC).

3.3.2 Sampling Size

Krejcie and Morgan's (1970) formula was used to drawn a sample size of 206 construction companies to effect the generality of the findings. 20% was added to sample size to cover for any short coming and the total questionnaire distributed was 246. The computation is shown in Appendix 2.

3.3.3 Sampling Technique

Convenience sampling technique was used because of the accessibility and availability to participate in the exercise or study.

3.4 Data Collection

The data used in this study was collected through literature review and questionnaire survey.

3.4.1 Data Collection Instrument

3.4.1.1 Literature review: - This research first collected secondary data from journals, conference proceedings, text books, thesis and internet materials etc. on the subject matter with a view to examine previous studies and how they can contribute to the present research work basically in addressing the current issues raised in monitoring and controlling of construction cash flow at the corporate level. Key essential variables used in this study were such as the key best practices in CFMC, which are all identified from literature and used in developing a structured questionnaire that were used in the next stage of data collection.

3.4.1.2 Questionnaire survey: - Data were elicited through structured questionnaire survey administered to 246 Nigerian construction firms operating in F.C.T, Abuja, Kaduna and Niger. In all, 112 were appropriately filled and returned for analysis representing 45.5% response rate which is typical of the norm of Thirty per cent (30%) which is generally held to be the minimum number of responses for any area of interest in quantitative approach (Sheldon, 2016). The questionnaire was developed using the best practices in CFMC established from literature. The contractors selected for the survey were then requested to score on a likert – type scale of 1 – 5, the extent of usage of the identified key best practices. The measuring scale of 1 represents No usage, 2 Poor usages, 3 Average usages, 4 High usages and 5 Very high usages. The questionnaire elicited information regarding the organisation’s annual turnover, which enabled their groupings into small, medium and large firms in accordance with the classification of Nigerian business and finance and Nigerian corporate affairs commission.

3.4.2 Data Collection Procedure

The study adopted a self-administration of questionnaire. Each organisation had the questionnaire delivered to them and subsequently collected back without then having to leave the office.

3.5 Data Analysis

Data analyses were carried out using the arithmetic mean values and ranking of the variables in statistical package for social sciences (SPSS). The CFMC best practices were ranked using mean values. The top level, middle level and low level managers responded to the questionnaire given to their various firms.

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CHAPTER FOUR

4.0 DATA PRESENTATION AND DISCUSSION OF RESULTS

4.1 Data Presentation

The first sets of data were presented in tables of frequencies and percentages, as this concern the demographic characteristics of the Respondents and the characteristic of the construction organisations. The second sets of data were meant to answer the research questions, using frequencies, percentage, mean and ranking. The mean were computed based on five Likert scale of Very High Usage (VHU), High usage (HU), Average Usage (AU), Poor Usage (PU) and No Usage (NU) caring point 5,4,3,2,1 respectively. The details of responses to research questions and summary of responses were based on two focal considerations which are on the professionals involve and responsible for Cash Flow Monitoring and Controlling (CFMC) for the responding organisations and division of the organisations according to large size, medium size and small size firms which is shown in the analysis of each research questions. This was done in order to allow for good analysis of items and proper view of the responses, better Judgment and conclusion.

4.2 Characteristics of Respondents

Table 4.1: Demographic Information of the Respondents:

Items	Frequency	Percentage (%)
DISCIPLINE		
Architecture	14	12.5
Building Engineering	12	10.7
Quantity Surveying	59	52.7
Structural Engineering	13	11.6
Estate Managers	11	9.8
URP	3	2.7
Others	0	0
Total	112	100.0
QUALIFICATION		
ND	9	8.0
HND	40	35.7
B.Sc	50	44.6
M.Sc	13	11.6
others	0	0
Total	112	100.0
YEARS OF EXPERIENCE		
1-5yrs	23	20.5
6-10yrs	39	34.8
11-15yrs	26	23.2
16-20yrs	18	16.1
21yrs and above	6	5.4
Total	112	100.0
RANK		
Top level Manager	18	16.1
Middle Level Manager	37	33.0
low Level Managers	57	50.9
Total	112	100.0

Source: Field Survey, (2016).

The Demographic Characteristics of the Respondents as shown on Table 4.1 depicted that the Quantity surveyors with 59/(52.7%), Architects 14/(12.5%), Structural Engineers 13/(11.6%) Builders 12/(10.7%), Estate Managers 11/(9.8%), while only 3/(2.7%) were Urban and regional planners.

However, on the Experience of the respondents in construction business most especially, in cash flow monitoring and controlling depicted that, 23/(20.5%) has -5 years of experience, 39/(34.8%) of the respondents has 6-10 years of experience, 26/(23.2%) of the respondents have 11-15 years of experience, 18/(16.1%) have 16-20 years of experience while 6/(5.4%) have 21 year of experience and above. Summarily, 50/(44.6) of the respondents have more than 10 years experience in the construction sector. This is an indicative of the fact that reasonable number of the respondents is well experienced in construction works.

Moreover, on the Qualification of the respondents: Majority of the respondents have basic academic qualifications, with 50/(44.6%) of them having Bachelors of science degree (BSc), and 40/(35.7%) holding Higher National Diploma (HND) in their respective professions. While 13/(11.6%) have higher degree at the level of Master of Science (MSc) and only 9/(8%) of the respondents have Ordinary National Diploma (OND) in their respective professions this implies that the respondents are well educated in cash flow monitoring and controlling.

Respondents' Position in their respective Organisations: from the table it showed that most of the respondents occupy the middle management level in their various organisations with 37/(33%), 18/(16.1%) of the respondents are part of the top management who take vital and strategic decisions for their respective organisations, while 57/(50.9%) are low level managers 23/(20.5%).

Based on the information elicited from the respondents, it is satisfactory to agree that the respondents have sufficient knowledge in monitoring and controlling of construction cash flow and are competent to provide trustworthy information.

4.3 Characteristics of Surveyed Organisations

Table 4.2: Organisational Characteristics

Item Statement	Frequency	Percentage %
SERVICES DELIVERED		
Building Works	51	45.6
Civil Engineering Works	24	21.4
Both	37	33.0
Total	112	100.0
COMPANY YEARS OF EXPERIENCE		
less than Five years	11	9.8
6-10yrs	35	31.2
11-15yrs	34	30.4
16 -25yrs	32	28.6
Greater than 25yrs	0	0
Total	112	100.0
PROCUREMENT METHOD OFTEN USED		
Traditional Method	33	29.5
Design and Build	32	28.6
Management Contracting	30	26.8
Construction Management	14	12.5
Public Private Partnership(PPP)	3	2.7
Total	112	100.0
FINANCE FUNCTION		
Centralised finance function	99	88.4
Decentralised financed function	13	11.6
Total	112	100.0

Source: Field Survey, (2016).

Table 4.2 shows the job description of the organisations: the various services offered by the organisations surveyed from the table are, 51(45.6%) of the contractors are purely into building construction, 24(21.4%) are involved in civil engineering works while, 37(33.0%) are into both building and civil engineering works. This depicts that the sample is made up of both building and civil engineering contractors, those involving in contracts which are usually, capital intensive, involving huge capital outlay and longer contract durations.

Organisations' experience in the Construction sector: From the table the survey results showed that 11(9.8%) have less than five(5) years of working experience, 35(31.2%) have 6-10 years of working experience 34(30.4) have 11-15 years of working experience while 32(28.6%) have 16 and above year of working experience. Most of the organisations are experienced with long years of working experience in the sector, with about 66(59%) of the organisations have been involved in construction business for over 10 years gaining relevant experience in the construction business. This wide range of experience can be very valuable in assessing the extent of application of the various key best practices in monitoring and controlling of cash flows at the organisational level.

4.4 Assessments of the Key Best Practices

4.4.1 Assessment criteria:

The criteria for this assessment was established and categorised into three distinct components which are indicators of best practices in Cash Flow Monitoring and Controlling (CFMC). The components are as follow:

- i. The knowledge of CFMC principles (Knowing),
- ii. Practical application of the CFMC Concepts (doing) and

iii. Practical considerations of the CFMC Concepts and Practices (Advising).

The components were used by the Royal Institute of Chartered surveyors (RICS), 2012 as an Assessment of Professional Competence (APC) in cash flow forecasting. The main purpose of the components is to ensure consistence in professional practice which will conform to internationally recognised practices in cash flow management. The components serve as a frame work for best practice. The CFMC capabilities of the contractors surveyed were therefore assessed based on these criteria.

4.4.1.1 The Knowledge of CFMC Principles (Knowing)

The opinions of the contracting organisations surveyed were scored using the five point rating scale on the Eight (8) basic concepts (questions) and the summary of the results is shown in Table 4.3 - 4.5.

Table 4.3 depicted overall/general aggregate mean score on general principles (knowing) as (2.96), this is below the bench mark signifying low usage of the key best practices. The Large Firms recorded high mean scores as (3.24) signifying high usage of the key best practices. The Medium Firms and small size firms recorded low mean scores, signifying high usage of the key best practices.

Table 4.3: Understanding (Knowing) of CFMC Principle

S/N	Key Practices	Overall		Large firm's		Medium Firm's		Small Firm's	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Manager's Evaluation and Review of CFMC	4.92	1	4.12	1	3.05	2	2.51	3
2	Knowledge on the uses and purposes of CFMC	3.32	2	3.85	2	2.86	3	2.42	4
3	Knowledge on the KPI of CFMC	3.24	3	3.76	3	3.33	1	2.81	1
4	Awareness of the impact of poor CFMC	3.24	3	2.76	7	2.81	6	2.56	2
5	Written Organisational Policy of CFMC	3.18	5	3.58	6	2.71	7	2.37	5
6	Knowledge of Strategies/Techniques of CFMC	3.18	5	3.76	3	2.86	3	2.34	6
7	Senior Managers Evaluation Capacity	3.06	7	3.76	3	2.86	3	2.15	7
8	Work Shops and Training of CFMC	2.68	8	2.76	7	2.00	8	2.07	8
	Aggregate mean score	3.35		3.54		2.81		2.40	

Source: Field Survey, (2016).

Fixed mean = 3.0 VHU= very high usage, HU= high usage, AU=average usage, PU= poor usage, NU= no usage

4.4.1.2 The Practical Application (Doing) of CFMC Concepts

Table 4.4 depicted overall aggregate mean scores on practical application (Doing) as (2.93), which is below the bench mark signifying low usage of the key best practices. The Large firms' recorded higher aggregate mean scores of (3.29), signifying high usage of the key best practices, while, the Medium and Small size firms recorded lower mean scores of (2.57 and 2.69) respectively, signifying lower usages of the key best practices.

Table 4.4: Practical Application (Doing) of CFMC

S/N	Key Practices	Overall/ Mean	General Rank	Large Firm's Mean	Firm's Rank	Medium Firm's Mean	Firm's Rank	Small Firm's Mean	Firm's Rank
1	Usage of Book Keeping System	3.56	1	3.76	2	3.13	1	2.95	1
2	Financial Standing Ratio	3.24	2	3.85	1	2.71	5	2.71	5
3	Performance Measurement Ratio	3.18	3	3.56	4	2.76	3	2.46	10
4	Strategies for Addressing Deficit CF	3.13	4	3.41	6	2.87	2	2.51	8
5	Developing Annual Budget Plan	3.05	5	3.59	3	2.70	7	2.76	3
6	Conversion of Contract Cost Estimates	3.04	6	3.44	5	2.76	3	2.83	2
7	Earn Value Analysis System	2.79	7	3.29	7	2.57	10	2.54	6
8	Strategies for Addressing Surplus CF	2.75	8	3.29	7	2.71	5	2.47	9
9	Investment Opportunity Ratio	2.67	9	3.09	9	2.45	11	2.53	7
10	Variance Analysis System	2.64	10	2.85	12	2.59	9	2.73	4
11	Usage of Diagrams	2.56	11	2.91	10	2.63	8	2.37	11
12	Usage of Models	2.33	12	2.88	11	2.32	12	2.37	12
Aggregate mean scores		2.91		3.33		2.68		2.60	

Fixed mean= 3.0

Source: Field Survey, (2016).

4.4.1.3 The Practical Consideration (Advising) of CFMC Concepts Practices

Table 4.5 depicted that, the overall aggregate mean score on practical consideration as (2.97) which is below the bench mark, signifying low application/usage of the key best practices. The Large firms recorded high mean score of (3.24), signifying high usage/application of the key best practices, while the Medium and Small size firms recorded low mean scores of (2.75 and 2.85) respectively, signifying low usage/application of the key best practices.

TABLE: 4.5 PRACTICAL CONSIDERATIONS (ADVISING) OF CFMC

S/N	Key practices	Overall Mean	R	Large Firm's	R	Medium Firm's	R	Small Firm's	R
1	Advising on the Choice of Procurement Route	3.65	1	3.88	1	3.57	1	2.98	1
2	Analysing the Program of Works	3.48	2	3.79	2	3.48	2	2.86	4
3	Advising on Front Loaded Contract	3.23	3	3.47	4	3.10	3	2.59	8
4	Advising Actual Payment Against Forecast	3.04	4	3.56	3	2.95	5	2.85	5
5	Advising on Short time Borrowing	3.01	5	3.47	4	2.90	6	2.92	3
6	Negotiating Retention Percentage and Period	3.00	6	3.26	6	3.05	4	2.93	2
7	Analysing Reasons for Variation	2.83	7	3.03	9	2.67	7	2.81	6
8	Advising on the Merit of Leasing Plants	2.73	8	3.09	7	2.29	9	2.76	7
9	Advising on Tax Planning Policy	2.71	9	2.85	10	2.14	10	2.58	9
10	Advising on Shortening Billing Cycle	2.64	10	3.06	8	2.52	8	2.37	11
11	Analysing on Marking on the Limit of Equipment/Plant down Time	2.38	11	2.56	11	1.81	11	2.40	10
Aggregate mean score		2.97		3.27		2.77		2.73	

Fixed mean = 3.0 VHU= very high usage, HU= high usage, AU=average usage, PU= poor usage, NU= no usage
Source: Field Survey, (2016).

4.6 Discussion of the Results

An analysis was carried out to assess the extent of application of the key best practices in cash flow monitoring and controlling (CFMC). Table 4.3 – 4.5 summarises the result of the analysis.

4.6.1 Understanding the General Principles (Knowing) of CFMC Concepts

Table 4.3 depicted low overall aggregate mean score indicating low understanding of the key best practices. The medium and small size firms also recorded low aggregate mean scores, indicating low level of understanding of the key best practices. The large size firms recorded high aggregate mean scores, indicating high understanding of the key best practices of CFMC concepts.

4.6.2 Practical Application (Doing) of CFMC Principles

Table 4.4 depicted low overall aggregate mean score indicating low level of usage/application of the key best practices. The medium and small size firms recorded low aggregate mean scores, indicating low level of usage/application of the key best practices. The large size firms recorded high aggregate mean score indicating high level of usage/application of the key best practices.

4.6.3 Practical Consideration (Advising) of the CFMC Principles

Table 4.5 depicted low overall aggregate mean score indicating low level of usage/application of the key best practices. The medium and small size firms recorded low aggregate mean scores indicating low level of usage/application of the key best practices. The large size firms recorded high aggregate mean score indicating high level of usage/application of the key best practices.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

- i. The Nigerian construction sector is currently at a low capability level and usage of the key practices in construction cash flow monitoring and control (CFMC).
- ii. Large firms have higher capabilities level and usage of the key best practices in construction CFMC.
- iii. Medium and Small firms which are the predominant category of firms in the construction sector in Nigeria have lower level and usage of the key best practices in construction CFMC and in dire needs for improvement.
- iv. The Nigerian construction sector on the overall assessment, have weak capabilities in the key practices.
- v. The large firms have higher capabilities in all the key CFMC practices.
- vi. Medium and Small size firms have poor capabilities in the practices. The practice in these firms is not in line with the standard best of practice and in dire need for improvement.

5.2 Conclusion

The research findings indicate that the industry's level of usage/application of the key best practices in monitoring and controlling of construction cash flows are imperfect and not practiced as recommended in the literature and in dire need for improvement. Optimising the project portfolio cash flow monitoring and control is one of the most

significant tasks in achieving the company financial health. The present environment demands for an effective and efficient planning, forecasting, monitoring and controlling of cash inflows and outflows to keep the business running and profitable.

5.3 Recommendations

Based on the findings and conclusions above, the following recommendations are put forward to mitigate high rate of construction business failure;

- i. For an effective CFMC practice, an assessment frame work for evaluating CFMC practice should be developed by the construction firms for use in contract administration. This will serve as a basis for identifying specific areas of strengths and weaknesses in order to accommodate the necessary improvement.
- ii. Construction firms should involve the quantity surveyors, who are discipline as cost managers to be responsible and accountable for CFMC practices.
- iii. Continue education and training of the entire staff's involve and responsible for CFMC in those new or revised policies through workshops and seminars in order to improve their management and financial skills.
- iv. The construction sector require the special banks not really commercial banks in term of borrowing funds to finance deficit in order to avoid high interest rate which keep accumulating as the payment delays from client's or employers continue beyond the anticipated period.

5.4 Recommended Area for Further Studies

- i. A study to develop CFMC assessment framework in the Nigeria construction sector needs to be carried out. This would provide contractors with a tool that will aid Quantity Surveyors (cost managers) in the strategic monitoring and controlling of new or revised policies.
- ii. There is need to develop a cash flow analysis model which will incorporate both the risk factors and uncertainties in order to make feasible tool for decision making.
- iii. The impacts of varying risk factors on construction cash flow management need to be adequately investigated.

5.5 Contribution to knowledge

The research's work will contribute to the on-going effort in addressing some of the fundamental issues leading to high rate of construction business failure.

Other than the research's contributions to the monitoring and controlling knowledge, it will also contribute to the cash flow management theory and its application in construction project management.

The research adapted a cash flow monitoring and controlling framework to the construction sector and outlined effective measures capable of measuring and comparing the strength and efficiency of contracting firms in cash flow monitoring and controlling practices.

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Appendix 1: Survey Questionnaire

Questionnaire for Assessing Cash Flow Monitoring and Controlling (CFMC) Capabilities of Construction Organisations in Nigeria.

I am undertaking a research as part of my M.Sc program in the Department of Quantity Surveying, Ahamadu Bello University – Zaria.

Dear Participant, thank you for taking out time to fill this questionnaire. The information you provide is essential to the researcher and other stakeholders in other to reveal the current position regarding the capability of Nigerian Construction firms on cash flow monitoring and controlling. Kindly append your signature as a mark of consent..... Date

SECTION A (Respondent Background): Kindly tick (√) against the appropriate response

DISCIPLINE: Architecture Building QS Structural Engineering Estate/S URP

QUALIFICATION: ND HND B.Sc M.Sc others

YEARS OF EXPERIENCE: 1-5yrs 6-10yrs 11-15yrs 16-20yrs 21yrs and above

RANK: Top Level Manager Middle Level Manager Low Level Manager

SECTION B (Organisational Characteristics) Kindly tick (√) against the appropriate response

SERVICES DELIVERED: Building Works Civil Engineering works Both Estate Developer

COMPANY YEARS OF EXPERIENCE: Less than 5 years 6-10yrs 11-15yrs 21-25yrs

COMPANY ANNUAL TURNOVER: UP to #10M #10-100M #100-300M Over #300M

SECTION C (Application of Key Practices on Cash flow Monitoring and Controlling CFMC): Kindly rate the following statements on a scale of 1-5

5 (Very High Usage) 4 (High Usage) 3 (Average Usage) 2 (Poor Usage) 1 (No Usage)

GENERAL PRINCIPLES

1. Written organisational policy on CFMC: how would you rate your organisation capability? 5 4 3 2 1 0

2. Managers evaluate and review the effectiveness of the CFMC process 5 4 3 2 1 0

3. Work shops and Training on CFMC: how would you rate your organisation on capacity building? 5 4 3 2 1 0

4. Knowledge on the uses and purposes of CFMC: how would you rate your organisation? 5 4 3 2 1 0

5. Knowledge on strategies/techniques of CFMC: how would you rate your organisation? 5 4 3 2 1 0

6. Knowledge on the key performance indicators of CFMC: how would you rate your organisation? 5 4 3 2 1 0

7. Senior managers check whether monitoring and controlling are carried out based on org. written policy 5 4 3 2 1 0

8. Awareness of the impact of poor CFMC in a business: how would you rate your organisation? 5 4 3 2 1 0

PRACTICAL APPLICATION

9. Performance measurement ratios: how would you rate the usage in your organisation? 5 4 3 2 1 0

10. Financial standing ratios: how would you rate the usage in your organisation?	5 4 3 2 1 0
11. Investment opportunities ratios: how would you rate the usage in your organisation?	5 4 3 2 1 0
12. Variance analysis system: how would you rate the usage in your organisation?	5 4 3 2 1 0
13. Earn value analysis system: how would you rate the usage in your organisation?	5 4 3 2 1 0
14. Strategies for addressing deficit cash flow: how would you rate the usage in your organisation?	5 4 3 2 1 0
15. Strategies for addressing surplus cash flow: how would you rate the usage in your organisation?	5 4 3 2 1 0
16. Usage of models (BAT and Miller-Orr Models): how would you rate the usage in your organisation?	5 4 3 2 1 0
17. Developing an annual budget plan for utilization control: how would you rate the usage in your org.?	5 4 3 2 1 0
18. Conversion of various contracts cost estimates to an organisation annual budget plan	5 4 3 2 1 0
19. Usage of diagrams i.e S-curves etc for CFMC: how would you rate the usage in your organisation?	5 4 3 2 1 0
20. Usage of Book keeping system: how would you rate the usage in your org.?	5 4 3 2 1 0

PRACTICAL CONSIDERATION

21. Considering and advising on front-loaded contracts: how would you rate the application in your org.?	5 4 3 2 1 0
22. Considering and advising on the merit of leasing plants and equipments over purchasing of new ones	5 4 3 2 1 0
23. Considering and advising on shortening the billing cycle: how would you rate the usage in your org.?	5 4 3 2 1 0
24. Advising on establishing effective tax planning policy and the effects of local taxation issues	5 4 3 2 1 0
25. Considering and advising on the choice of procurement methods	5 4 3 2 1 0
26. Advising and analysing the programs of work of various contracts for effective CFMC	5 4 3 2 1 0
27. Advising and considering negotiating retention percentage and period with clients	5 4 3 2 1 0
28. Considering and advising on arranging a line of credit with reputable financial institutions	5 4 3 2 1 0
29. Advising on marking the limit of plant and equipment down time	5 4 3 2 1 0
30. Identifying and analysing reasons for variances to cash flow projections for effective CFMC	5 4 3 2 1 0
31. Advising and analysing actual payments against the forecast (performance monitoring and control)	5 4 3 2 1 0

The information provided will be treated with absolute confidentiality and used for academic appraisal only.

I would be glad to share the summary of my findings with you, if you provide your contact details at the end of the questionnaire exercise to the address below.

Thanks you very much for your time.

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Appendix 2: Calculating Study Sample Size

$$S = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$

Where S = required sample size = (206),

X = Confidence level (80%), 1.44,

N = Population size (62,955),

P = Population proportion (0.5, 50%) and

D = Degree of accuracy (0.05, 5%) margin of error

$$\begin{aligned} S &= \frac{1.44 \times 62,955 \times 0.5 (1 - 0.5)}{0.05^2 (62,955 - 1) + 1.44^2 \times 0.5 (1 - 0.5)} \\ S &= 206 \end{aligned}$$