

# Effect Of Capital Expenditure On Working Capital Management Of Listed Cement Companies In Nigeria

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*Abstract: This work investigates the effect of capital expenditure on working capital management of listed cement companies in Nigeria. Previous studies were deviant of the relevance of time and how it is influenced by capital investment. This study evaluates the effect of capital expenditure on the Cash Conversion Cycle of listed cement companies in Nigeria. Panel data was used, and analyses were conducted using Ordinary Least Square regression model for a study period of 2001 to 2016. The results of the investigation show that there is no association between Capital Expenditure and Net Liquidity Balance; Capital Expenditure has positive effect on Working Capital Requirement; and Capital Expenditure has positive effect on Cash Conversion Cycle. The study concludes that capital expenditure has significant effect on working capital management of listed cement companies in Nigeria. The study also recommends that listed cement firms in Nigeria should consider Capital Expenditure expansion since it explains increase in receivables and other cash equivalent. The firms should acquire fixed assets for increase productivity purpose instead of tying funds on unproductive assets. There is the need to consider the best source of internally generated revenue to finance investment on stocks, capital project and other short term obligations. It is to the advantage of these firms that excessive investment in inventory should be avoided and facilitates optimum liquidity by increasing receivables and reducing Debtors' Collection Period.*

*Keywords: Capital Expenditures, Working Capital Management, Cash Conversion Cycle, Liquidity, Inventories.*

## I. INTRODUCTION

Manufacturing firms search for techniques or methods of improving financial performances, business growth, and its survival by evaluating various alternatives based on their risks and returns. Among the various financial management decisions, such as capital investment decision, capital structure decision, and working capital management decision, the working capital management decision is so important because companies need to reduce risks in the present competitive economic environment, improve savings which can be used for further investment, and handle unexpected changes in market indices like price of raw materials and interest rate.

The important elements of organization's working capital depend on the area of business or industry they are active in (Hosseini, Monireh, Shahram & Bahman, 2014), by and large, cash, debtors, receivables, inventory, negotiable securities, and

short term debts can be identified as ordinary elements of organizational working capital. The funds which are bound in working capital could be known as hidden funds and that could be utilized for further growth (Muhammad & Syed, 2015).

Capital expenditure involves cost effective fixed assets investment with lengthy lifespan and measurable monetary value with enormous sources for longer term. This study is motivated based on occurrence from the side of financial managers, frequent and inefficient decision making process in respect of working capital management components resulting in shortfalls in the firm's liquidity.

The study adopts the operational capital established by Shulman and Cox (1985), such as Net Liquidity Balance and Working Capital Requirement because of their reliability to explain company's financial crises. Most importantly, inability to identify effective factors and measurement of appropriate

values of working capital may end up in organizational bankruptcy (Ranjith, 2008). According to Bellouma (2011), Shulman and Cox (1985) argued that classic ratios (current ratio, quick ratio, and net working capital) cannot sufficiently capture the true measurement of liquidity or cannot identify the companies' debt payment power.

Muhammad and Syed (2015); Vaicondam, Anaur and Ramakrishnan (2014); Hosseini, Monireh, Shahram and Bahman (2014); Celik and Namika (2013); Bellouma (2011), and Ranjith (2008) investigated the effect of capital expenditure on working capital management. They also utilized the Shulman and Cox (1985) concepts of Net Liquidity Balance and Working Capital Requirement as the determinants of working capital management.

The above mentioned research works on the relationship between capital expenditure and working capital management have focused on the Net Liquidity Balance and Working Capital Requirement as indicators for working capital management. In addition, most of the studies on the management of working capital in Nigerian manufacturing firms' centered on the effect of working capital management on firms' liquidity/profitability or firms' value. Investigation has not been conducted regarding the effect of capital expenditure on Cash Conversion Cycle. This research work covers this gap. Since world economy is faced with frequent changes, technological development, profit maximization, liquidity management and its implication to risks and returns to the manufacturing sector of the economy, then there should be the need for the consideration of timing as an important factor for managerial decision making. The Cash Conversion Cycle was derived to measure working capital management due to the fact that time is a strong determinant of liquidity position of firms.

Therefore, this study examines the influence of capital expenditure on the number of days over the next 12 months cash are received from stocks conversion, account receivables, and number of days lagging for firms to utilize account payable. The expectation is that a negative relationship between capital expenditure and Cash Conversion Cycle should exist. As the companies increase their investment in capital expenditure, there should be reduction in the number of days inventory conversion and cash received from debtors or increase in the number of days account payable in order to take advantage of trade credit.

The primary objective of this research work is to evaluate the effect of capital expenditure on working capital management of cement companies in Nigeria. The specific objectives are to:

- ✓ Evaluate the effect of Capital Expenditure on Net Liquidity Balance of cement companies in Nigeria.
- ✓ Examine the effect of Capital Expenditure on Working Capital Requirement of cement companies in Nigeria.
- ✓ Examine the effect of capital expenditure on Cash Conversion Cycle of cement companies in Nigeria.

## II. LITERATURE REVIEW

### CONCEPTUAL FRAMEWORK

Current assets and current liabilities are the notable items for the measurement of company's working capital management components. It is pertinent to mention that the total current assets' value is half the value of the company's total assets. The basic elements of current assets are the stock of finished goods available for sale, account receivables, and cash at hand and in bank. The following concepts are discussed:

### CAPITAL EXPENDITURE

Capital Expenditure is the money invested by a firm for the purpose of acquiring or upgrading existing physical and non-consumable assets, such as buildings and equipment or for the purpose of acquiring new business. According to Ifeoma (2012), a firm acquires plant and machinery and other productive fixed assets for the purpose of generating sales. Capital expenditure also refers to as capital budget is periodically prepared by financial managers to satisfy fixed assets expansion and upgrade for the purpose of increasing production and sales, relatively. Expansion of fixed assets is a deliberate attempt of maximizing future profitability because fixed assets are subjected to use for the period above twelve calendar months.

### WORKING CAPITAL MANAGEMENT

Working capital management involves planning, controlling, and decision making concerning current assets and current liabilities in a manner that eliminates the risk of inability to meet short term obligation and avoid excessive investment in these assets. Samson, Josiah, Bosun-Funke and Imueze (2012) see working capital management as a managerial accounting strategy focusing on maintaining efficient levels of both components of working capital, current assets and current liabilities, in respect to each other.

Akinleye, Afolabi and Olowoniyi (2012) identify the composition of current assets as consisting of raw materials, work-in-progress, finished goods, bills receivables, cash, and bank balances, among others and these assets are bought for the purpose of production and sales, like raw materials into semi-finished products, semi-finished products into finished products, finished products into debtors and debtors turned over cash or bills receivables. Current liabilities are the accounts payable established by way of accepting from suppliers' trade credit, bank overdraft, deferred taxation, and commercial paper payable (for a year term). Current liabilities are financial obligations payable not exceeding twelve calendar months or a year.

### NET LIQUIDITY BALANCE

Ranjith (2008) states that Shulman and Cox (1985) opined that the traditional ratios such as current ratio, quick ratio, and net working capital do not consider the going concern of the company and the net working capital does not measure the

correct value of liquidity. Based on the reason above, they classified net working capital into Net Liquidity Balance and Working Capital Requirement in order to predict the financial crisis of a company. He further stated that their working capital management model classified Net Liquidity Balance as the financial items while non-financial items make up the Working Capital Requirement. Obviously the liquidity of the Net Liquidity Balance is different from the liquidity of the Working Capital Requirement but they are related. Therefore, reduction in the days of receivable accounts will reduce Working Capital Requirement and increase Net Liquidity Balance.

Bellouma (2011); Vaicondam, Anuar, and Ramakrishnan (2014); Mousavi and Azam (2012); and Celik and Namika (2013) approve of the Shulman and Cox (1985) determinants of working capital. According to these authors, Net Liquidity Balance is the difference between financial current assets and financial current liabilities. The Net Liquidity Balance measures the change in liquid assets or liabilities generated during the period under consideration. It represents the surplus from the sum of cash, cash equivalent and short term investment over the sum values of trade payments, short term and long term debts a year term. It can show a company's debt payment power through focusing on short term financial assets and debts. In other words, when determining net liquidity balance; cash, financial investments such as marketable securities, and short term debt such as commercial paper payable, overdraft and long term debt a year term are focused.

#### WORKING CAPITAL REQUIREMENT

Working capital requirement is the difference between non financial current assets and non financial current liabilities. When determining working capital requirement; receivables, inventories, and account payables are considered. In other words, working capital requirements are the total value of receivable account and inventory, after the value of payable accounts and other payables are deducted.

According to Bellouma (2008), the net liquidity balance and working capital requirements are interdependent. That by reducing the amount of accounts payable, the company reduces its cash holding simultaneously. Thus, if working capital requirement is reduced, subsequently there will be decrease in the net liquidity balance.

#### CASH CONVERSION CYCLE

Anand and Gupta (2002) as cited by Akinleye, et al. (2012) categorically state that the organizations devote so much efforts in the management of working capital for the purpose of minimizing the time between outflows and inflows of cash, Cash Conversion Cycle (CCC), while simultaneously optimizing process costs and process quality. And that the period from when you spend money to when you get money is undoubtedly the single most important period to optimize for any business. According to them, this period is technically called the Cash Conversion Period (CCP) and is mostly adopted as the most comprehensive measure of working capital management. Measurement of a firm's cash flow is by

the Cash Conversion Cycle (CCC), the net of days from the outlay of cash for raw materials, receiving payments from customers (Nwidobie, 2012).

Yeboah and Michael (2014) explain that the Cash Conversion Cycle approach was introduced by Lyroudi and Lazaridis (2000) and is employed as a dynamic liquidity measure of firms. Brigham and Houston (2003) as cited by Yeboah and Michael (2014) defined the Cash Conversion Cycle as the length of time funds are tied up in working capital, or the length of time between paying for working capital and collecting cash from the sale of the working capital.

Financial managers can efficiently manage their working capital through utilizations of Cash Conversion Cycle: Reducing the number of days inventories are converted into usable goods by their own prospective customers and sale as quickly as possible; or by reducing the number of days debtors should make payment for account receivables and collect cash for further reinvestment; or by accepting trade credit policy that will delay account payable period over inventory conversion period and debtors' collection period, so that cash can also be realized and reinvested.

#### EMPIRICAL REVIEW

Other relevant studies were conducted to investigate the extent of the effect of capital expenditure on working capital management using scientific tools. Capital expenditure decision and working capital management decisions are critical financial management decisions that management gives priority consideration since they contribute to the company's liquidity maximization. Based on these reasons, few scholars have conducted empirical investigations, evaluating the effect of capital expenditure on working capital management.

Bellouma (2011) investigated the effect of capital expenditure on working capital management using data of unlisted small and medium Tunisian companies supported by the Tunisian export center. The sample size of his study was 386 exports Tunisian Small and Medium Enterprise and the study period covers 2001 to 2008. The main source of his data was financial statement. Multiple linear regression technique was adopted for data analysis and the result of the study has shown that capital expenditure influences positively the Net Liquidity Balance. He attributed this to the fact that capital investment decisions of Tunisian exports Small and Medium Enterprises were sources of increasing cash holding. He recommends that that Tunisian export Small and Medium Enterprises may overcome the shortage of liquidity by understanding how capital investment affects Net Liquidity Balance.

Rose (2008) evaluated the relationship between capital expenditure and working capital management. The study population constituted of 55 firms listed on the floor of Nairobi Securities Exchange for the period of 2006 to 2010. According to Rose (2008) the study selected 39 firms as sample after adopting purposive sampling technique and that the main source of data was financial statements. Multiple regression tests were adopted for data analysis and the result of her investigation indicates that capital expenditure has

negative relationship with Net Liquidity Balance. This means a unit increase in capital expenditure the Net Liquidity Balance would decrease proportionately. Rose (2008) argues that the firms have lower level of liquid assets and that prevented firms from financing the growth opportunities internally, which is low cost method of financing. She further recommends that it would be beneficial if the firms improve the collection of their receivables that will lead to better Net Liquidity Balance.

Hosseini et al (2014) examine the impact of firm's capital expenditure on working capital management. Data were collected from audited financial statements of companies registered with Tehran Stock Exchange. The statistical population for their study included all companies registered with Tehran Stock Exchange over 2004 to 2008. A sample of 132 companies was selected using limited sampling technique. Ordinary least square regression technique was utilized for data analysis. The result of the findings has shown that a very weak positive relationship exists between capital expenditure and Net Liquidity Balance. They attributed this scientifically to the intervening variables which are not controlled in their study and that these variables were dependent on special conditions of companies (operational environment) and economic conditions of the society (out-of-company environment). They further recommend that corporate managers should pay more attention to management of current assets and liabilities and the application of capital expenditure.

Muhammad and Syed (2015) evaluated the impact of firm's capital expenditure on working capital management in the light of the fixed effect model on 96 listed companies in Pakistan Stock Exchange. The data utilized were relatively for the specific time period of 2007 to 2010. The result of the study has shown that capital expenditure has no significant association with Net Liquidity Balance. According to Muhammad and Syed (2015) such result help in developing the understanding that capital expenditure has no contribution in determining the amount of liquidity in companies listed in Pakistan Stock Exchange.

Muhammad (2014) investigates the impact of capital expenditure on working capital management of listed firms in Karachi Stock Exchange, Pakistan. 109 firms were selected from eight different sectors. He obtained data from balance sheet, income statement and cash flow statements of these firms from 2006 to 2010. Shulman Cox's (1985) Net Liquidity Balance also proxied working capital management. Multiple linear regression model were also adopted for data analysis and the result of his investigation has shown the existence of negative relationship between capital expenditure and Net Liquidity Balance. The study recommends that firms' managers should take calculated decision for capital expenditure and working capital management because these variables have close relationship to each other.

Vaicondam et al (2014) examine the extent of the impact of capital investment on working capital management across Malaysian technology firms from 2007 to 2011. According to Vaicondam et al (2014) prior to regression analysis, the diagnostic test was conducted on raw data set based on the Ordinary Least Square assumptions that is, linearity, multicollinearity and homoscedasticity. The result of their

investigation highlights a significant negative impact of capital investment on Net Liquidity Balance.

Ranjith (2008) studied the impact of firm's capital expenditure on working capital management across industries in Thailand. Ranjith (2008) utilized data collected from 416 sampled listed companies in the Thailand Stock Exchange. The source of data for the study was the financial statement of the listed companies for the period from 200 to 2005. The study also utilized panel data regression analysis and the result of his investigation has shown a significant positive relationship between capital expenditure and Net Liquidity Balance. Ranjith (2008) opines that the finding would enhance knowledge-base of working capital management and will help countries to manage working capital efficiently in growing situations associated with capital expenditure.

In application of manufacturing enterprises in Istanbul Stock Exchange, Celik and Namika examined the impact of fixed assets expenditures on working capital management. The source of data from a sample size of 141 listed companies was financial statement for the study period of 2007 to 2011. Fisher type, Augmented Dickey-Fuller and Philips-Perron unit root test were applied with the advantage of testing each group unit root test and stagnation. Multiple linear regression model was adopted for analysis and their findings reveals that capital expenditure has significant negative relationship with Net Liquidity Balance. They attributed this to the fact that the business's desire in Turkey to make fixed assets investment through cash and cash equivalent.

Rose (2008) investigated the relationship between capital expenditure and working capital management of 36 firms listed on the Nairobi securities exchange for a period of five years from 2006 to 2010. According to Rose (2008), the study eliminated 16 firms in banking, financial institutions and insurance sector since the definition of working capital for these firms is different from the one being investigated in her study. Regression model was adopted for analyzing the relationship between capital expenditure and working capital management for the sample firms. Working Capital Requirement was used as an indicator of working capital management. Rose (2008) argues that firms do not increase the balance of most liquid assets when faced with capital expenditure since they do not have enough internally generated funds to be used in long term fixed investments. Furthermore, the result of her investigation indicates a significant negative relationship between Working Capital Requirement and Capital Expenditure. She claimed that these firms are efficiently managing the nonfinancial components to enhance their cash.

Bellouma (2011) conducted an investigation, on the effect of capital investment on working capital management. He utilized the data of 386 of Small and Medium companies from the Tunisian Export Center over the period of 2001 to 2008. Capital expenditure was principally used to predict working capital management. The working capital management was measured by Working Capital Requirement. Multiple linear regression model and descriptive statistics were adopted as the model to evaluate level of the relationship. The result from the study indicated that Working Capital Requirement has negative relationship with companies' capital investment. Based on his findings, Bellouma (2011) argues that Small and



Medium Enterprises may overcome the shortage of liquidity by understanding how capital investment affects the component of working capital. That financial manager may generate profit from growth opportunities and avoid costly interruptions of operational activities by highlighting the effect of investment on working capital management.

Hosseini et al (2014) studied the impact of firms' capital expenditure on working capital management in the Tehran stock exchange. Data from a sample of 132 firms over the period of 5 years from 2004 to 2008 were studied. Descriptive research method was adopted through panel data and regression methods were used for analysis and testing the hypothesis. The result of their research found that firms' capital expenditure has no linear and significant relationship between Working Capital Requirement and capital expenditure. Hosseini et al (2014) recommended that corporate managers should pay more attention to the management of current assets and liabilities and the application of capital expenditure. They also explained that considering the fact that capital expenditures are used for acquiring future benefits, companies can make use of Net Liquidity Balance without spending excess costs for financing these projects and increase their profitability.

The impact of capital expenditure on working capital management was studied by Muhammad and Syed (2015). Their study aimed to analyze the effect of capital expenditure in the light of the fixed effect model on 96 listed companies across industries in Pakistan with respect to working capital management. They focused their data relative to the specific time period of 2007 to 2010. Working Capital Requirement was applied as proxy of working capital management (Muhammed & Syed, 2015). The result of their investigation has shown insignificant relationship between capital expenditure Working Capital Requirement. They argued that capital expenditure has no contribution in determining the amount of liquidity in companies listed in Pakistan stock exchange.

Celik and Namika (2013) investigated the impact of fixed assets expenditures on working capital management of listed manufacturing enterprises in Istanbul stock exchange. Panel data and regression model were used. Their work proves that capital expenditures have a negative relationship with Working Capital Requirements. Celik and Namika (2013) argued that manufacturing enterprises listed in Turkey stock exchange generally tend to finance capital expenditures with cash or cash equivalent. They concluded that in under-developed or emerging countries the working capital management policies are still established with classic methods (Net Liquidity Balance and Working Capital Requirement).

Muhammad (2014) studied the impact of capital expenditure on working capital management of listed firms (Karachi Stock Exchange) in Pakistan. For the purpose of his investigation, 109 firms were selected from eight different sectors, listed on Pakistan Karachi stock market and data were retrieved from the balance sheets, income statements, and cash flow statement of these firms from 2006 to 2010. He adopted Shulman and Cox (1985) Working Capital Requirement as proxy for working capital management. The result of his investigation has shown that capital expenditure has a positive relationship with Working Capital Requirement. Muhammad

(2014) recommended that for the firms' managers to take calculated decision for capital expenditure and working capital management because the two variables have close relationship to each other.

Vaicondam et al (2014) studied the impact of capital investment on working capital management across Malaysian technology firms from 2007 to 2011. They also measure working capital management with Working Capital Requirement, instead of using the traditional financial ratios. They used panel data analysis and robust regression analysis model for a sample of 115 firms. The results of their investigation indicated that capital investment impact positively on Working Capital Requirement. They concluded that working capital management is dependent on capital investment in Malaysian technology firms, indicating that long term investment decision does influence short term financial management.

Ranjith (2008) studied the relationship between capital expenditure and working capital management across industries in Thailand. The study was for a period of 2000 to 2005 and cut across 416 companies listed in Thailand Stock Exchange. He adopted the Shulman and Cos's (1985) working capital requirements as measure of working capital management and developed the multiple regression model to investigate the predictability of capital expenditures. The empirical research discovered that capital expenditure has a significant negative relationship with Working Capital Requirement. According to Ranjith (2008) companies tend to manage Working Capital Requirement efficiently when they tend to invest in capital expenditure with the purpose of getting profit from growth opportunities.

Mahdi (2012) also investigated the relationship between working capital management and fixed assets using a sample of 120 manufacturing companies listed in Tehran Stock Exchange for the period of 2006-2010. Pearson correlation and regression test model were employed to test the relationship. The results of his study indicated a significant relationship between working capital management and fixed assets investment where fixed assets investment was targeted as an independent variable. Mahdi (2012) concluded that long term assets changes would increase production and bring benefits because such investment would be followed by profitability and finally it will increase the total value of a company.

## THEORETICAL FRAMEWORK

Literatures on financial management have pointed out and addressed as much as possible the significance of investment on fixed assets as well as managing working capital components. Capital expenditure decision is a critical and crucial financial management decision since it impact positively on the future corporate profitability. The relationship between capital expenditure and working capital management is so significant that investigation on the extent of such relationship should not be ignored.

The management of working capital components is to maximize liquidity of the firm by reducing days of account receivables and secure delay in days account payables. These firm's operational planning strategies improve internally

generated funds for further re-investment and profit maximization, since profit is equally responsible for firm's growth and survival.

Additionally, the firm can use liquid assets to finance its operations and invest if other medium funding are not available or unnecessary exorbitant. There are series of theories on financing decisions but this research work explores the following three theories where one of the theories explains the management ability to gather and examine vital information concerning decisions for the overall corporate responsibilities while the remaining two theories explain management decision to prefer an alternative as the main source of capital for the purpose of financing projects, settlement of day to day business operations, and settlement of debts obligation.

#### RATIONAL CHOICE THEORY

Investment in fixed assets and working capital management according to the Rational Choice Theory (RCT) managers will gather and evaluate all the information available before making decisions. Before making their decision they will calculate the net benefits of all the different options and choose that option that maximizes their desired outcome based on their evaluation of return and associated risks.

The neoclassical economist also expressed that people have rational preferences between outcomes that can be identified and associated with values; individual corporate organization maximize utility and firms maximize profits; and that people act independently on the basis of full and relevant information (Boschker, 2011). Normally, capital expenditure has two significant effects on allocation of funds. The management improves existing fixed assets with the intention of increasing production, customers' demands as well as improving corporate value.

The second effect is that the management acquires more non-consumable assets, and this always leads to increase in production relative to increase in sales. In some sectors, the management combines both effects on available funds, hence improves the quality and efficiency of existing fixed assets as well as purchase more fixed assets.

#### TRADE-OFF THEORY

Asian (2015) states that tradeoff theory explains that firms are financed partially by debt and partly by equity and that there is an advantage in financing with debt, the tax benefit of debt, the cost of financing distress including bankruptcy cost. According to Johanzeb, Norkhairul, Meisam and Aiyoub (2013) the trade off theory was seriously taken under consideration after the debate on the theorem of Modigliani and Miller (1963). Since Modigliani and Miller (1963) introduced taxes into the model proposed, further research led to the emerging of trade off theory of capital structure, in which states that it exist a tradeoff between tax benefits of debt and the expected costs of bankruptcy, where firms should maximize their debt levels as much as they can when seeking an optimal level (Filipe, 2013). The optimal capital structure is acquired by firms by trading off the costs of debt and equity

against their benefit (Johanzeb, Norkhairul, Meisam & Aiyoub, 2013). However, Johansson and Lundblad (2011) state that Modigliani-Miller theorem was criticized for not taking into account any financial distress costs and as a result the static tradeoff theory was developed.

The tradeoff theory claims that firms have an incentive to turn to debt as the generation of annual profit allows benefiting from the debt tax shield (Serrasqueiro & Ana, 2013; Johanzeb, Norkhairul, Meisam & Aiyoub, 2013). Johanzeb, Norkhairul, Meisam and Aiyoub (2013) state that tax deductibility of interest payment is the main benefit of debt; this promotes the application of debt. The managers of several firms evaluate the benefit and costs of identified alternative of leverage plans. Filipe (2013) claimed that probably the first statement about the theory came from empirical evidence from Kraus and Litzenberger (1973) where the researchers found that optimal leverage reflects a tradeoff between tax benefits of debt and bankruptcy costs; that according to the authors, this effect is created because when adding leverage this causes an increase in expected bankruptcy costs that could offset the tax effect.

According to Frank and Goyal (2005) as quoted by Filipe (2013) there are two versions of this theory which are the static tradeoff theory and dynamic tradeoff theory. They further explained that the static tradeoff theory affirms that firm's optimal capital structure is defined by the tradeoff between the tax shield effect and the costs of bankruptcy.

Asian (2015) explains that the tradeoff theory suggests that firms target an optimal level of liquidity to balance the benefit and cost of holding cash, besides, the cost of holding cash include low rate of return of those assets because of liquidity premium and possible tax disadvantage. He also claimed that the advantage of holding cash is that the firms save transaction costs to raise funds and does not need to liquidate assets to make payment. The static tradeoff theory focuses on the benefits and costs of issuing debt; and predicts that there is optimal debt ratio that maximizes the value of a firm due to tax shields, financial distress costs, and the agency costs (Johansson & Lundblad, 2011). The financial distress is the unfavorable aspect of debt financing, especially when firms obtain too much debt. While on the other hand, the dynamic tradeoff theory affirms that the companies seek a target debt ratio and have an adjustment behavior that tries to accomplish.

#### PECKING ORDER THEORY

This research work is anchored by the pecking order theory considering the fact that internal source of funding is the best alternative for fund generation that could finance capital investment, maximize liquidity, service short term debt obligation and enhance payment for day to day business operations. According to this theory, capital project financing increases internally generated revenue (Chen, 2004 as quoted by Nathalie & Wison, 2012). Capital project financing is considered by the management for a single reason of increasing production, effectively and efficiently. Production is increased with a corresponding increase in the volume of sales. Sales revenue is generally retained in account receivables or debtors. Cash is generated from debtors when

managers reduce debtors' collection periods. The funds received from debtors are ploughed back into the business to handle investment opportunities.

According to Filipe (2013) the pecking order theory is another theory of corporate capital structure that was developed by Myers and Majluf (1984). Firms may be financially constrained due to the information asymmetry between managers/owners and investors and so firms adopt a hierarchy in selecting sources of finance (Serrasqueiro & Ana, 2013; Johanzeb, Norkhairul, Meisam & Aiyoub, 2013). The information asymmetry affects the choice between internal and external financing (Nathalle & Wilson, 2012). The theory implies that internal financing is used first; when it is depleted, then debt is issued and when it is no longer sensible to issue debt, equity is issued (Asian, 2015).

Short term debt in this theory includes the account payable. According to Nakamura (2007) as quoted by Nathalle and Wilson (2012) this order is based on the assumption that resources generated internally do not have transaction costs, and issuing new bonds tends to signal positive information about company, while issuing new shares, on the contrary tends to signal negative information. Also citing Chen (2004), the theory explains why companies choose to keep reserves in cash or other forms of financial slack (the result of large withholdings of cash or marketable securities, or the ability to issue default risk-free debt, such as account payable, beyond what is necessary to meet current operating and debt serving needs) to avoid both lack of resources and the need for external sources. Firms also prefer to finance their projects using retained earnings and low risk debt, instead of equity issue (Filipe, 2013).

Serrasqueiro and Ana (2013) claimed that in the first place, firms used retained profits, if it is necessary to turn to external finance, firms use debt with little or no risk, which usually corresponds to short term debt, and in the last place, and firms will select external equity. Myers (1984) as quoted by Asian (2015) argues that equity is less preferred means to raise capital because when managers (who are assumed to know better about the condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this overvaluation. As a result, investors will attach lower value to the new issued equity.

Myers and Majluf (1984) state that companies stay undervalued because firm managers have prior information about new and existing investment opportunities; and being aware of the asymmetric information problem, they discount the firms new and existing risky securities when stock issues are revealed (Filipe, 2013). He further states that the cost of issuing risky debt or equity has greater impact when comparing with optimal leverage in tradeoff theory and that firms prefer to finance first by retained earnings, then with reckless debt, then with risky debt, and finally with equity.

Serrasqueiro and Ana (2013) argued that a negative relationship is expected between profitability and debt, in accordance with the pecking order theory. This is because the more profitable is the firm, the greater is its capacity to accumulate retained profit, and so there is less need to turn to external finance. Companies tend to rely on internal funds to finance themselves, preferring to issue debt to equity when

external financing is required (Nathalle, & Wilson). The theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required (equity implies issuing more shares which meant bring external ownership into the firm) (Asian, 2015).

### III. METHODOLOGY

The type of research design for this study is ex post facto. As such the design of the study consists of systematic arrangement of what the work ought to look like from the problem of the study, research purpose, hypothesis, down to the methods of data collection and analysis. In this research, capital expenditure (independent variable) has already occurred, through which the relationship and its effect on working capital management (dependent) was observed. In other words, the independent variable was used to predict changes in dependent variables.

Panel data regression analysis is adopted mainly for processing available data. The research work relies on historic accounting data obtained from financial statement and account of cement companies listed in the Nigeria stock exchange. Previous studies of the effect of capital expenditure on working capital management influenced the choice of the variables that measure working capital management in this study such as Ranjith (2008), Celik and Namika (2013), Bollouma (2011), Muhammad (2014), Muhammad and Syed (2015), Rose (2008), and Vaicondam et al (2014). The research design is to be influenced by the choice of ordinary least square regression analysis for the test of hypothesis.

The population and sample of the study are four (4) cement companies listed in the Nigeria Stock Exchange. These are Ashaka Cement Company Plc, Cement Company of Northern Nigeria, Dongote Cement Company Plc, and Lafarge Wapco Cement Company Plc. The choice of this industry was influenced by factors such as high cost of constructing a cement plant making it capital intensive, standardization of the product because of its homogeneity status, that is, all kinds of cement are considered to be homogenous when they are perfect substitute and consumers do not perceived differences between the products offered by different firms, high energy requirement, heavy material input and output, and high value of current assets.

Nigerian cement market has Dangote Cement Company as the largest cement manufacturer with two cement plants in Kogi and Ogun and setting up more in Ogun and Edo State. Ashaka Cement Plc controls North Easter Nigeria, and Lafarge Wapco Cement Company which is the second largest controls South West, South East and South-South.

The source of data for the research work is secondary. Data were sourced from annual reports and accounts of four cement companies listed in the Nigeria stock exchange for the study period of 2001 to 2016. The study is mainly based on financial data, as a result, balance sheet, and cash-flow statements were utilized. Confidence in the financial statement is established because annual statement of accounts of



registered corporate organizations are required to be verified by legally recognized accounting firms.

The study utilized Ordinary Least Square (OLS) regression model and the estimation was performed using Statistical Package for the Social Science version 20.0. Obiamaka (2010) defines Ordinary Least Square as the technique for estimating the unknown parameters in a linear model. According to Obiamaka (2010) Ordinary Least Square was prepared by Carl Freidrich Gaus (1821) and that it has subsequently evolved to become the classical linear regression model.

However, the procedure for the estimation involves the identification of the independent variable, in this case, the capital expenditure, and the dependent variables, which are the proxies of working capital management, such as Net Liquidity Balance, Working Capital Requirement, and Cash Conversion Cycle. Pearson correlation coefficient (r) is the percentage of the correlation between the dependent and independent variables. The coefficient of determination ( $r^2$ ) is the rate at which changes in the explanatory (independent) variable can explain variation in the explained (dependent) variable. The Analysis of Variance (ANOVA) at 5% level of significance means that the model is fit to explain the relationship and effect of the predictor variables on the explained variables.

The regression coefficient  $\beta$  refers to the expected change in the dependent variables resulting from one-unit change in the independent variable also refer to as the vector determinant of independent and other control variables. The Ordinary Least Square regression model is to test the null hypothesis. The null hypothesis theory does not recognize existence of effect or relationship between independent variables and the dependent variables. The null hypothesis is either accepted or rejected at 5% or 10% level of significance. This means any calculated value otherwise known as P-value less than 5% or 10%, the null hypothesis is rejected, that there is more than 95% or 90% possibility of the existence of effect or relationship between two or more variables as the case may be.

#### IV. MODEL SPECIFICATION

The general form of the linear regression equation is presented below adopted from the research work of Ranjith (2008) from his study of the impact of capital expenditure on working capital management of listed firms in Thailand stock exchange. This model explains the effect of more independent variables on the dependent variable.

##### Model 1

Capital Expenditure and Net Liquidity Balance:

$$NLB_{it} = \beta_0 + \beta_1 CaExp_{it} + \beta_2 Opex_{it} + \beta_3 GwRS_{it} + \beta_4 DRt_{it} + \varepsilon_{it}$$

##### Model 2

Capital Expenditure and Working Capital Requirement:

$$WCR_{it} = \beta_0 + \beta_1 CaExp_{it} + \beta_2 Opex_{it} + \beta_3 GwRS_{it} + \beta_4 DRt_{it} + \varepsilon_{it}$$

##### Model 3

Capital Expenditure and Cash Conversion Cycle:

$$CCC_{it} = \beta_0 + \beta_1 CaExp_{it} + \beta_2 Opex_{it} + \beta_3 GwRS_{it} + \beta_4 DRt_{it} + \varepsilon_{it}$$

Where, NLB: Net Liquidity Balance  
WCR: Working Capital Requirement  
CCC: Cash Conversion Cycle  
 $\beta_0$ : Constants coefficient  
 $\varepsilon$ : Error term  
CaExp: Capital Expenditure  
Opex: Operating Expenditure  
GwRS: Growth Rate of Sales  
DRt: Debt Rate

Furthermore, NLB = [(cash and cash equivalents + short-term investment) – (short-term + commercial paper payable + long-term debt a year term)] divided by Total Assets.

The WCR = [(accounts receivable + inventories) – (accounts payable + accrued expenses + other payable)] divided by Total Assets.

CCC= (inventories in days + account receivables in days) – (account payables in days)

$$CaExp = \frac{\text{Total Value of Tangible and Intangible Fixed Assets}}{\text{Total Assets}}$$

The NLB, WCR, ROA and CCC are the dependent variables while CaExp is the independent variable. Because of the magnitude of Capital Expenditure, other expenditures and financial performances exist and could exert influence on the dependent variables of this study (Bellouma, 2008). These are the firm's Opex, GwRS, and DRt which are the control variables. The control variables have influenced on the firms' Net Liquidity Balance, and Working capital Requirement (dependent variables) where the influence might vary over variables, companies and industries based on business strategy, economic environment, and financial environment (Ranjith, 2013)

The Control variables are defined as follows:

Opex:  $\frac{\text{Operating Expenditure}}{\text{Sales}}$

GwRS:  $\frac{\text{Current year sales} - \text{Previous year sales}}{\text{Previous year sales}}$

DRt:  $\frac{\text{Short term debts} + \text{long term debts}}{\text{Shareholders Equity}}$

The Ordinary Least Square regression model was adopted from Ranjith (2008) and it was put into use by researchers such as Celik and Namika (2013); Salehi (2012); Okwo, Okelue, and Uche (2012); Morshedur (2011); Raheman, Abdul, and Mahmood (2010); Raheman and Mahmood (2007); Lazaridis and Tryfonidis (2006); Deloof (2003); Bellouma (2008); and Vaicondam, Anuar, and Ramakrishnan (2014). It is mainly used to test the extent of the dependence of one variable on other independent variables.

The following hypotheses are also required to be tested:

Ho<sub>1</sub>: Capital expenditure has no significant effect on Net Liquidity Balance of listed cement companies in Nigeria.

Ho<sub>2</sub>: Capital expenditure has no significant effect on Working Capital Requirement of listed cement companies in Nigeria.

Ho<sub>3</sub>: Capital expenditure has no significant effect on Cash Conversion Cycle of listed cement companies in Nigeria.

#### V. DISCUSSIONS OF FINDINGS

The analysis of data and results were conducted to provide answer to the earlier research questions. The results of



the findings are tabulated below from the use of statistical tool, the Ordinary Least Square regression model.

	Mean	Std. Deviation	N
NLB	-.012	.220	64
WCR	.166	.755	64
ROA	.097	.543	64
CCC	15	50	64
CaExp	.720	.580	64
Opex	.085	.097	64
GwRS	.634	.133	64
DRt	1.557	3.758	64

Source: Computation via IBM SPSS 20.0

Table 1: Descriptive Statistics of the four cement companies listed in the Nigeria stock exchange

The descriptive statistics using panel data regression analysis indicates that all the cement companies listed in Nigerian Stock Exchange had an expected annual average rate of -0.012 Net Liquidity Balance and a standard deviation from the expected rate (mean) at 0.220. The mean of the Net Liquidity Balance is negative. It is the average at which the firms can maximize their liquidity from other forms of debts of a year term. It also indicates that the firms have excess of borrowings over their cash and cash equivalent. With a positive standard deviation, it means the cement firms have improved their cash, cash equivalent, and other forms of short term investment.

The yearly average rate of 0.167 for Working Capital Requirement was recorded, with a standard deviation from the mean at 0.755. The standard deviation indicates significant improvement in the value of the firms stocks, and receivables. However, positive mean of working capital requirement indicates that on the average, the firms have excess of account receivables, and inventories over the account payables.

The average number of days for Cash Conversion Cycle was 15 days with a standard deviation from the annual average number of days inventories and receivables were converted into cash at 50 days. The increase in days cash are realized from inventories and receivables or the reduction in the number of days creditors are paid is not the right step for the firms to maximize their liquidity. 50 days Cash Conversion Cycle means the firms pay their creditors ahead of the time they may receive payment from their debtors and likewise delay production. This shows that cash are locked up in the inventories and receivables, besides the firms may settle their creditors using other sources of short term debts.

The yearly average Capital Expenditure was at the rate of 0.720 with a standard deviation from the mean at the rate of 0.590. This means the firms need to improve on their fixed assets in order to increase their productivity and sales growth.

Other control variables have the following details:

Operating Expenditure had an average yearly result of 0.086 rate with a standard deviation from the mean of 0.097. It means cost of operations relative to the value of their sales have a record of very lower increment. But the positive result still indicates that the value of the companies' sales revenue outweigh their cost of operations, since the ratio is identifying the companies operational costs depleted by the value of sales.

Growth Rate of Sales had an average rate of 0.635 with a standard deviation from the mean of 0.133. This means the companies have recorded significant reduction in the volume

of their sales. If they are to improve the value of their revenue, they need to improve their growth rate of sales. Debt Rate had an average rate of 1.557 and a standard deviation from the mean of 3.758. This shows that the firms have been increasing their borrowings, both long term and short term.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.528 <sup>a</sup>	.279	.230	.19339	1.591

a. Predictors: (Constant), DRt, CaEXP, Opex, GwRS

b. Dependent Variable: NLB

Table 2: Model Summary<sup>b</sup>

The model summary using table 2 above proves that with 52.8% Pearson R (correlation coefficient) there is strong correlation between Capital Expenditure, Operating Expenditure, Growth Rate of Sales, and Debt Rate, and the dependent variable, Net Liquidity Balance. The R-square for the model is 27.9% which means the predictors could explain 27.9% changes in the Net Liquidity Balance. That is 27.9% variability in the Net Liquidity Balance is accounted for by the changes in the predicting variables. The adjusted R-square of 23%, it corrected the R-square to closely reflect the goodness of fit of the model in the population. The difference between Adjusted R-square and the R-square is 7% which does not portray unsatisfactory changes.

The Durbin Watson test of serial correlation is 1.591 approaching 2. This is an indication of virtually independence of error terms; meaning autocorrelation of 1.591 can be ignored because it is not a serious threat to the regression formula in this study.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.854	4	.213	5.708	.001 <sup>b</sup>
	Residual	2.207	59	.037		
	Total	3.061	63			

a. Dependent Variable: NLB

b. Predictors: (Constant), DRt, CaEXP, Opex, GwRS

Hence, through the test of Analysis of Variance (ANOVA), the P-value of 0.1% is calculated for the model, noticing that the P-value of 0.1% is below the critical value of 5%. Which means the regression model is adequately fit to explain the variation of the Net Liquidity Balance from the changes in the explanatory variables. However, the entire regression model cannot be dropped; this is because of the ability of operating expenditure and debt rate in explaining the variability in firms' Net Liquidity Balance as it is shown in the coefficient table below.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.032	.122		-.262	.795
	CaEXP	-.023	.046	-.060	-.486	.629
	Opex	.599	.258	.263	2.320	.024
	GwRS	.035	.209	.021	.166	.869
	DRt	-.024	.007	-.409	-3.611	.001

Table 4: Coefficients<sup>a</sup>

95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
-.275	.212					
-.116	.070	-.073	-.063	-.054	.790	1.267
.082	1.115	.337	.286	.256	.949	1.054
-.383	.453	-.022	.022	.018	.768	1.303
-.037	-.011	-.456	-.425	-.399	.952	1.050

a. Dependent Variable: NLB

Table 5: Coefficients<sup>a</sup>

According to the coefficient table above (Table 4), the result indicates that the operating expenditure and Debt Rate can be recognized as significant factors in predicting Net Liquidity Balance. Operating expenditure has significant positive relationship with Net Liquidity Balance with regression coefficient of 59.9% and the test of significant value stands at 2.4%. The Debt Rate has significant negative relationship with Net Liquidity Balance with regression coefficient of -2.4% and a test of significance value of 0.001 below the critical value of 5%. This indicates that a unit increase in Operating Expenditure the Net Liquidity Balance will grow by 59.9% while the issue concerning Debt Rate there is possibility of a decrease in Net Liquidity Balance by 2.4 % (multiplier effect) when other explanatory variables are kept constant.

The existence of collinearity in regression model is a potential threat; this is because it is capable of disturbing the regression formula making the interpretation of the result difficult or misleading. Collinearity occurs when correlation exists between two explanatory variables. This study increased the size of sample in order to avoid the negative effect of collinearity. The above result from collinearity statistics indicates that collinearity is absent. It is a general rule that when Tolerance result from the Collinearity Statistics is approaching 1 or 1 itself or Variance Inflation Factor (VIF) should be between 1 and 10, collinearity does not exist. The implication is that a zero Tolerance or a VIF of less than 1 or greater than 10 is an indication of the existence of collinearity. In that case, for all the explanatory variables the results from the test of collinearity indicate that collinearity is not a potential threat to the regression equation.

The ANOVA test result with P-value of  $.001 < \alpha = .05$  test of statistical significance reveals that the regression model is scientifically fit to explain variability in Net Liquidity Balance from the collected defined predicting variables which are Capital Expenditure, Operating Expenditure, Growth Rate of Sales and Debt Rate, even though the model does not consider significant number of the explanatory variables. But scientific determination of the relationship between Capital Expenditure and Net Liquidity Balance with the p-value of 62.5% greater than the critical value of 5% indicates that relationship does not exist. For this reason, the null hypothesis is accepted that Capital Expenditure has no significant effect on Net Liquidity Balance. In other words, changes in Capital Expenditure do not translate changes in Net Liquidity Balance.

The tables below indicate regression results of Working Capital Requirement with Capital expenditure and other control variables.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.879 <sup>a</sup>	.772	.756	.37278	1.666

a. Predictors: (Constant), DRt, CaEXP, Opex, GwRS

b. Dependent Variable: WCR

Table 6: Model Summary<sup>c</sup>

Table 6 proves that with 87.9% Pearson R value, there is strong correlation between Debt Rate, Capital Expenditure, Operating Expenditure, Growth Rate of Sales, and the dependent variable, Working Capital Requirement. The R-square and the adjusted R-square are 77.2% and 75.6% respectively, which is an indication of strong ability of the explanatory variables to account for changes in the firms' Working Capital Requirement within the study period.

The Durbin Watson test for serial correlation at 1.666 approximately 2, means there is no autocorrelation among the residual values. This means the model is absent of other threats that can jeopardize the interpretation of the relationship between the study explanatory variables and the single predicted variable.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	27.745	4	6.936	49.913	.000 <sup>b</sup>
	Residual	8.199	59	.139		
	Total	35.944	63			

a. Dependent Variable: WCR

b. Predictors: (Constant), DRt, CaEXP, Opex, GwRS

Table 7: ANOVA<sup>a</sup>

The scientific test results from ANOVA as shown in table 7 for the regression model has P-value of 0.000 less than the critical value of 5%, proves that there is no possibility for all the explanatory variables to get a zero regression coefficients. It means at least one or more explanatory variables have regression coefficient that can be different from zero. Hence, regression model is adequately fit to explain the variation of the Working Capital Requirement from changes in the predicting variables. Also the P-value of 0.000 less than the critical value of 5% is indicating that statistical relationship exists between explanatory variables (Debt Rate, Capital Expenditure, Operating Expenditure, and Growth Rate of Sales) and Working Capital Requirement.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.239	.235		1.019	.312
	CaEXP	.783	.090	.611	8.736	.000
	Opex	5.482	.498	.703	11.019	.000
	GwRS	-1.701	.403	-.300	-4.223	.000
	DRt	-.017	.013	-.086	-1.344	.184

Table 8: Coefficients<sup>a</sup>

95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
-.230	.708					
.604	.962	.470	.751	.543	.790	1.267
4.487	6.478	.684	.820	.685	.949	1.054
-2.507	-.895	.050	-.482	-.263	.768	1.303
-.043	.008	-.207	-.172	-.084	.952	1.050

a. Dependent Variable: WCR

Table 9: Coefficients<sup>a</sup>

According to the results from Table 4.8, Capital Expenditure is a significant factor in predicting Working Capital Requirement. Capital Expenditure has significant positive effect on working Capital Requirement with regression coefficient of 78.3%. This means a unit increase in Capital Expenditure will also increase Working Capital Requirement by 78.3% and a test of significant value of  $0.000 < \alpha = 0.05$  when other explanatory variables are kept constant.

The test of statistical significance of  $0.000 < \alpha = 5\%$  indicate relationship exists between Operating Expenditure and Working Capital Requirement with positive relationship at the rate of 5.482 times regression coefficients. Growth Rate of Sales is also recognized as a significant factor in explaining the variability of the Working Capital Requirement. Growth Rate of Sales has a negative relationship with Working Capital Requirement with regression coefficient of -1.701 times and at P-value of  $0.000 < \alpha = 0.05$ . This means a unit increase in Growth Rate of Sales there is a decrease in Working Capital Requirement by 1.701 times when other explanatory variables are kept constant.

The collinearity statistics results have shown that with Tolerance value approaching 1 and Variance Inflation Factors rating between 1 and 10, collinearity does not exist among the explanatory variables. Which means the regression model is free from any form of abnormality

The results from the test of ANOVA indicate that the regression model posses the goodness of fit to explain the predictability of the Capital Expenditure, Operating Expenditure, and Growth Rate of Sales on the variability of the corporations Working Capital Requirement, with a p-value of  $.000 < \alpha = .05$ . The null hypothesis is rejected and the alternative hypothesis is accepted Capital Expenditure has significant effect on Working Capital Requirement.

The tables below indicate regression results of Cash Conversion Cycle with Capital expenditure and other control variables.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.418 <sup>a</sup>	.175	.119	46.93642	1.848

a. Predictors: (Constant), DRt, CaExp, Opex, GwRS

b. Dependent Variable: CCC

Table 10: Model Summary<sup>e</sup>

From the model summary table 10 above, it is observed that with 41.8% Pearson R-value there is a moderate correlation between the Debt Rate, Capital Expenditure, Operating Expenditure, Growth Rate of Sales, and the dependent variable, Cash Conversion Cycle. Considering the R-square of 17.5% which means over 17.5% variation in Cash Conversion Cycle is accounted for by changes in the firms' Debt Rate, Capital Expenditure, Operating Expenditure, and Growth Rate of Sales. The R-square is adjusted at the rate of 11.9% to adequately suit the study population.

The Durbin Watson test of serial correlation among the residuals indicate that with the outcome of 1.848, approximately 2 means the independence of the error term is ascertained. That means the residuals from the model do not

have significant autocorrelation and the regression model is unaffected.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	27564.924	4	6891.231	3.128	.021 <sup>b</sup>
	Residual	129978.637	59	2203.028		
	Total	157543.561	63			

a. Dependent Variable: CCC

b. Predictors: (Constant), DRt, CaExp, Opex, GwRS

Table 11: ANOVA<sup>a</sup>

Table 11 which is the ANOVA table indicates that with P-value of 0.021 less than critical value of 5%, the regression model is statistically fit to explain the relationship between Debt Rate, Capital Expenditure, Operating Expenditure, and Growth Rate of Sales, and the single dependent variable, Cash Conversion Cycle.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.855	29.535		1.553	.126
	CaEXP	19.087	11.284	.225	1.691	.096
	Opex	21.601	62.645	.042	.345	.731
	GwRS	-84.617	50.709	-.225	-1.669	.100
	DRt	4.887	1.612	.367	3.031	.004

Table 12: Coefficient<sup>d</sup>

95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
-13.245	104.955					
-3.493	41.668	.143	.215	.200	.790	1.267
-103.752	146.954	-.047	.045	.041	.949	1.054
-186.084	16.851	-.077	-.212	-.197	.768	1.303
1.660	8.113	-.347	.367	.358	.952	1.050

a. Dependent Variable: CCC

Table 13: Coefficients<sup>a</sup>

Table 12 proves that at 9.6% significance level, which is statistically less than 10% critical level, relationship exist between Capital Expenditure and Cash Conversion Cycle. A unit increase in Capital Expenditure, the Cash Conversion Cycle will increase by 19 days.

At 10% significance level which stands at the critical value of 10%, it means there is negative statistical relationship between Growth Rate of Sales and Cash Conversion Cycle. This is further explained as a unit increase in Growth Rate of Sales, a corresponding decrease in Cash Conversion Cycle is expected.

From the coefficient table 12, proves that positive relationship exists between Debt Rate and Cash Conversion Cycle. This is because the P-value of 0.4% is less than the critical value of 5%. A unit increase in Debt Rate, the Cash Conversion Cycle will increase by 5 days.

Collinearity or multicollinearity is determined from the Collinearity Statistics results. All the results for Tolerance are approaching 1 and the results for Variance Inflation Factor (VIF) are between 1 and 10. This means there is no case of collinearity in the model.

The results from the ANOVA table reveal that with P-value of  $.021 < \alpha = .05$  there is significant relationship between Capital Expenditure, Operating Expenditure, Debt Rate, Growth Rate of Sales, and the dependent variable, Cash Conversion Cycle. At the significant level of 9.6% less than



the critical value of 10%, it means the null hypothesis can be rejected and the alternative hypothesis accepted that Capital Expenditure has significant positive effect on Cash Conversion Cycle.

Based on the results of this work, it is observed that Capital Expenditure variability does not explain changes in Net Liquidity Balance. Ranjith (2008); Vaicondam, Anuaur and Ramakrishman (2014); Celik and Namika (2013); and Bellouma (2011) discovered that Capital Expenditure is a significant predictor of Net Liquidity Balance. For instance, Ranjith (2008) conducted an investigation on the effect of capital expenditure on working capital management. The result of his investigation revealed that Capital Expenditure has a significant positive relationship with Net Liquidity Balance. Which means Net Liquidity Balance is increased by each one bath of Capital Expenditure. This was also supported by the work of Bellouma (2011).

But dissimilarity occurred from the research work of Vaicondam et al (2014); and Celik and Namika (2013). Their own work indicates a significant negative impact of Capital Expenditure on Net Liquidity Balance. Vaicondam et al (2014) attributed this to the fact that technology firms in Malaysia tend to manage Net Liquidity Balance efficiently when they intend to invest in Capital Expenditure as a whole. Celik and Namika (2013) opined that the probable reason of this was caused by the business desire in Turkey to make the fixed assets investment through cash and cash equivalent.

However, this work discovered a positive effect in terms of the association of Operating Expenditure and Net Liquidity Balance, which is in consonant with the studies of Ranjith (2008), and Celik and Namika (2013). Bellouma (2011) has a contrary result, with a negative relationship between operating expenditure and Net Liquidity Balance. Result from the research work of Vaicondam et al (2014) indicates an insignificant statistical relationship between operating expenditure and Net Liquidity Balance.

The effect of other control variables result indicate a negative significant relationship between Debt Rate and Net Liquidity Balance, which supports the outcome of the studies conducted by Vaicondam et al (2014), Celik and Namika (2013), and Bellouma (2011) with the exception of Ranjith (2008) with a positive result. The average yearly Net Liquidity Balance of the corporations under study depict a negative ratio of .0122 which indicate that cement companies in Nigeria tend to finance their business operations through borrowing financing policy. The result of the study shows that as the firms increase their Debt Rate, the financial current liabilities will also increase against the value of their financial current assets. That is too say, the rate at which the companies source funds from their creditors is in excess of the cash and cash equivalent. According to Bellouma (2011), the companies relying on debts find it difficult to generate cash from their activities.

This research work also discovered a positive relationship between Capital Expenditure and Working Capital Requirement. It is supported by the research work of Vaicondam et al (2014). Others such as Ranjith (2008); Celik and Namika (2013); and Bellouma (2011) their works indicate that Capital Expenditure change established a negative relationship with Working Capital Requirement. According to

Vaicondam et al (2014), it is an indication of technology firms in Malaysia likely to increase the return on investment and simultaneously create value from other current items.

Operating expenditure positively account for variability in the Working Capital Requirement of the cement companies. This supports the findings of Celik and Namika (2013), Bellouma (2011), and Ranjith (2008).

The regression results indicate that a negative relationship exists between Growth Rate of Sales and Working Capital Requirement which is supported by the research work of Vaicondam et al (2014). But dissimilarity occurs with the result of the study conducted by Ranjith (2008).

However, Cash Conversion Cycle is a very strong determinant of firm's liquidity since it measures the period of time stocks and receivables are converted into cash. The descriptive statistics table has shown that the cement companies listed in the Nigeria Stock Exchange have an average of 15 days cash can be realized from stocks and inventory with the standard deviation from the mean at 50 days. The positivity of the descriptive statistics indicates that the firms have more days to convert inventory into receivables and receivables into cash with fewer days to make payment to their respective creditors. Besides a negative average Cash Conversion Cycle means the firms have more days to pay their respective creditors ahead of when inventories are converted into cash and the period debtors could make payment. It is noteworthy that the cement companies in Nigeria delay their production activities and give more time before debtors are collected and their creditors are sensitive of receiving payment. The positive effect of Capital Expenditure on Cash Conversion Cycle postulate that firm's investment in fixed assets is increasing the period cash is generated from inventory and debtors.

But the regression result indicates that an increase in Growth Rate of Sales is reducing the Cash Conversion Cycle by 85 days. This is achievable when the cement companies monitor their production and sales period. The companies need to reduce their Cash Conversion Cycle so as to increase their liquidity. With maximum liquidity, the firms can reinvest on stocks for firm's growth or survival purpose and handle other day to day operational liabilities. This also indicates that the firms can maximize their liquidity by increasing their sales growth level.

Apart from explaining the size of firms, sales growth measures the revenue based of a firm. Profitability is the excess of revenue over disbursement. This means revenue has significant effect on profitability. However, other previous research works investigating the effect of working capital management on the profitability of firms, where working capital management is proxied by Cash Conversion Cycle prove that statistical relationship exist between Cash Conversion Cycle and firms profitability. Such as the study of Lazaridis and Tryfonidis (2006), Deloof (2003), Akinyele et al (2012), Sunday and Alu (2012), Nwidobie (2012), Ray (2012), and Suhail (2012).

Moving further, the regression result shows the existence of a positive effect of Debt Rate on Cash Conversion Cycle. The cement companies relied heavily on external financing based on the descriptive statistics. Since the cement companies



resort to borrowing, is increasing the number of days they could maximize liquidity.

## VI. CONCLUSION

The research work is an attempt to establish whether capital expenditure impact on working capital management using listed cement companies in Nigeria as the case study. The correlation coefficient estimate derived from the applied regression model has shown the existence of strong correlation between capital expenditure and Working Capital Requirement. On the other hand, moderate correlation exists between capital expenditure and Cash Conversion Cycle. This simply means there is significant relationship between capital expenditure and working capital management. The result of the study also shows that Capital expenditure has positive effect on Working Capital Requirement and Cash Conversion Cycle. This indicates that increasing investment in fixed assets will likewise increase the firms' number of days cash can be generated from stocks and account receivables.

In conclusion, the primary objective of the study is achieved by establishing that capital expenditure has significant effect on the working capital management of listed cement companies in Nigeria stock exchange. It has also bridged the research gap that capital investment influences the time period managers can optimize the level of the companies' liquidity.

## VII. RECOMMENDATIONS

Evidence from the negative mean of the Net Liquidity Balance of the four cement companies listed in the Nigeria stock exchange indicate that virtually the four cement companies have increased their borrowings to facilitate their trade. According to the tradeoff theory, the advantage of debt financing is the tax shield. But managers must avoid overtrading because excessive investment on inventories and account payable will increase the debt volume and may lead to financial distress.

Working Capital Requirement, indicate the difference between the value of inventories plus account receivables, and account payable. Positive working capital requirement indicate that much funds are locked up in inventory and account receivables. Since increase in capital expenditure increases Working Capital Requirement, managers can increase liquidity by reducing account receivables and stock in store through increase in the quantity of sales. This enables firms to achieve promising business growth and survival.

If capital expenditure increases the number of days cash are received from debtors and inventories, managers must establish policies that will facilitate cost effective fixed asset investment. Managers must also formulate policies that will actualize optimum liquidity through less stock conversion period and debtors' collection period, and increase number of days accounts payable. When firms have more creditors' payment period, they can take advantage of the delay in payment and acquire more funds to handle other investment opportunities and achieve growth of the business.

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