

**EFFECT OF WORKING CAPITAL MANAGEMENT ON THE  
PROFITABILITY OF SELECTED MANUFACTURING FIRMS IN  
NIGERIA: 1986-2016**

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**AUGUST, 2018**

## **DECLARATION**

This is to declare that this research work was carried out by Atsanan, Angela Ngunan; Reg. No.2013417004F. To the best of my knowledge, this work is original and has not been previously submitted to this University or other institution.

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## APPROVAL

We hereby certify that this dissertation titled “Effect of Working Capital Management on Profitability of Selected manufacturing firms in Nigeria (1986 – 2016) by Atsanan, Angela Ngunan with Registration No. 2013417004F, satisfied the standard in partial fulfillment of the requirements for the award of Doctor of Philosophy (Ph.D) in Banking and Finance.

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## **DEDICATION**

I dedicate this work to almighty God.

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## **Abstract**

This study looked at the effect of working capital management on the profitability of selected manufacturing firms in Nigeria. The deficiencies encountered by firms working capital management in Nigeria with regards to their performance and profitability prompted the need for this study. Thus, the broad objective is to examine the effect of working capital management on the profitability of manufacturing firmss in Nigeria. The specific objectives of the study are to ascertain the effect of current ratio (CR), days in account receivable (DAR), days in account payable (DAP), days in inventory turnover (DINN) and cash conversion circle (CCC) as well as creditors turnover (CT) on return on investment of Nigerian manufacturingfirmss This study is anchored on pecking order theory and used secondary data collected from companies quoted on the Nigerian stock Exchange (factbook) and statement of financial position for the various companies from 1986 to 2016. Panel data analyses were used for Generalized Least Square regression model for the variables considered for the study. The result of the panel data study show that current ratio (CR) and cash conversion cycle (CCC) has negative and insignificant effect on return on investment of manufacturing firms in Nigeria while days in account receivables (DAR), days in account payables (DAP) and days in inventory turnover (DINN) as well as creditor turnover (CT) has a positive and insignificant effect on return on investment of manufacturing firmss in Nigeria. The study conclude that working capital management have insignificant effect on return on investment in Nigeria and recommend that for manufacturing firmss to achieve growth and maintain profitability, firm's manager should strive to strike a balance between current assets (CA) and current liabilities (CL).

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the study

Corporate finance decisions generally, among others, include the management of assets (investment decisions) and management of source of funds or liabilities and equity (financing decisions) as well as dividend decisions. These decisions have both short-term and long-term implications (Pandey, 2010 & Tewodros, 2010). The management of short-term assets and related liabilities is called working capital management (WCM). Working capital is that portion of corporate capital that is available for the day-to-day activities of a firm. Day-to-day activities usually represent firms' investment in short term assets. Thus, Working capital management (WCM) deals with Current Assets and Current Liabilities. According to Vallalnathan and Joriye (2013), the Current Assets of a typical manufacturing accounts for over half of its total assets and even more for distribution firms. An excessive level of current assets can easily result in a firm's realizing a substandard return on investment. However, firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne & Wachowicz, 2000). An efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due to short term obligations on one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). Therefore, Working capital management (WCM) of a firm are concerned with two decision areas. Determination of appropriate level of investment in current assets and mix of current assets and decisions as to what methods of financing to use to obtain funds for this investment. They are parts of investment and financing decisions respectively.

Although there is no standard fixed requirement, all businesses, to one degree or another, require working capital. The actual amount required will depend on many factors such as the

age of the company, the type of business activity, credit policy, market and demand conditions, technology and manufacturing policy, operating efficiency, availability of credit from suppliers and price level changes (Pandey, 2010). It is indispensable that an appropriate amount of working capital is budgeted to meet anticipated future needs. Failure to budget correctly could result in the business being unable to meet its liabilities as they fall due. If a business finds itself in such a situation, it is said to be technically insolvent. In conditions of uncertainty, firms must hold some minimal level of cash and inventories based on expected sales plus additional safety stocks.

The management of working capital is very important to businesses of all sizes (Padachi, 2006). First, it consists of a large portion of firms' investment. It represents around 40 percent of total assets in a typical manufacturing firm and 50 percent to 60 percent of total assets in retailing and wholesales (Sebhatleab, 2002). Secondly, according to Smith (1980), the efficient management of working capital is important from the point of view of liquidity (risk) and profitability as well as firm value. Poor management of working capital results in unnecessary investment in unproductive assets or inadequate investment in current assets. Unnecessary investment in current assets will tie up funds idle and hence reduces firms' ability to invest in productive assets such as plant and machinery, thereby reducing profitability. On the other hand, inadequate investment in current assets reduces the liquidity position causing insolvency, which in turn leads to bankruptcy.

The short term financing that a company needs for conducting daily activities is working capital management (WCM). Working Capital management (WCM) is necessary to maintain the balance between profitability and liquidity of a firm (Eljelly, 2004). According to Raheman and Nasr (2007), working capital management (WCM) directly affects the profitability and liquidity of firm. Kargal and BlueManthal (1994) as cited in Igbal, Ahmad, Kanwal, Anwar and Hamad (2014) state that the profitability and liquidity trade off is

necessary for firms because it may become the cause of their bankruptcy if they are not achieved. This trade off is only showed by Working capital management (WCM), so, the significance of Working capital management (WCM) is irrefutable for firms (Filbeek & Krueger, 2005).

The ultimate objective of any firm is to maximize the profit. But, preserving liquidity of the firm is an important objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Therefore, there must be a trade-off between these two objectives of the firms. One objective should not be at cost of the other because both have their importance. If we do not care about profit, we cannot survive for a longer period. On the other hand, if we do not care about liquidity, we may face the problem of insolvency or bankruptcy. For these reasons, Working capital management (WCM) should be given proper consideration and will ultimately affect the profitability of the firm.

Manufacturing sector in an economy remains one of the most powerful engines for economic growth. It acts as a catalyst to transform the economic structure of countries from simple, slow growing and low value activities to more vibrant and productive economies. Its productive economic activities are driven by technology and therefore enjoy great margins (Amakom, 2012). Yet despite two decades of growth boosted by import substituting policies, Nigeria's manufacturing sector remains heavily import dependent. According to Opaluwa (2010), the Nigerian economy is under-industrialized and its capacity utilization is also low. They stated that the sector has become increasingly dependent on the external sector for import of non-labour input. This has been the inevitable outcome of a perverse incentive structure that accelerated the growth of import intensive consumer goods and light assembly industries contributing relatively little value-added under high protective walls while decelerating growth of local resource-based industries. The manufacturing sector encapsulates a wide range of industrial activities, from informal sector enterprises using simple technology to

heavy capital goods industries in the automotive and electrical equipment sector. Out of this, a wide spectrum of light consumer goods dominates the manufacturing profile. These have been nurtured and reinforced by regimes of “easy” import substitution, localization of assembly and final processing of relatively simple products. Manufacturing sector in Nigeria is widely acknowledged as a pool to accelerate economic growth and poverty alleviation, which are the vital goals before the country (Jahira, 2013). In the context of the limited resources, low technology and poor infrastructure which is characterized by recession. The pressure for gainful employment, diversification of the economy from oil base to other sectors, the task of designing strategy of manufacturing development capable of addressing the emerging challenges, both domestic and global has become important for future development in Nigeria.

Manufacturing industries came into being with the occurrence of technological and socio-economic transformations in the Western countries in the 18<sup>th</sup> -19<sup>th</sup> centuries (CBN, 2012). In Nigeria, the level of growth in manufacturing sector has been affected negatively by high interest on lending risk and this is responsible for high cost of production in the country’s manufacturing sector (Adebiyi, 2011) and Okafor (2012) also observed that the level of Nigeria manufacturing industries performance will continue to decline because of the low implementation of government budget and difficulties in assessing raw materials. Notwithstanding, Nigeria has employed several strategies aimed at enhancing the productivity of the manufacturing sector in order to bring about economic growth and development for example the country adopted import substitution strategy during the First National Development plan 1962-1968 aimed at reducing the volume of imports on finished goods and encouraging foreign exchange savings. The country consolidate her import substitution policy during the second National development plan period 1970-74 which actually fell within oil boom era at this time manufacturing activities were depending on

imported inputs because of the weak technology base of the economy. The Nigerian manufacturing industry is yet to become of sound growth and development and its contribution to Gross Domestic Product (GDP) is low yet with the government's policy on non oil sector diversification to agriculture there is hope of a manufacturing sector that will meet up with vision 2020, and will become engine oil for employment and will contribute positively to economic growth.

## **1.2 Statement of the Problem.**

Working capital management is important to manufacturing firms because it comprises over half of the total assets of a firm. Many manufacturing firms are said to be struggling to thrive and that some key players have been forced to move their operations to other countries. Others have shut down their operations. All these firms cite high operation costs as the main cause of the precarious financial situation. Firms are closing doors and others are operating at breakeven point. Closure of a business can only be brought about by profitability and liquidity problems. Therefore, there was a need to investigate the problem of profitability and management of working capital in the manufacturing firms in Nigeria.

In Nigeria and across the world, various studies have been done on the effect of working capital management on firm's profitability and the results revealed conflicting findings. For instance, Taghizadeh, Ghanravati and Akhari (2012) examine the effect of working capital management and corporate performance in Iranian companies and discovered that working capital variables affect corporate performance negatively. Sudi, (2016) examined short and long-term bank credits and their reflections on cash, working capital and the short-term liabilities of the business selected from all of the financial sectors for the case of Turkey in the long-run from 1996 – 2014. The study endorses the strategic relationship between bank credit usage and liquidity levels of the business. The study concluded that cash-cash equivalents and net working capital have impacts on the level of bank credits the finding was



contradicted by Zhen, Duan and Shou (2017) who studied the effects of working capital management on performance of engineering product market competition in manufacturing industry. The study showed that working capital and liquidity have positive effect on product market completion performance. Zhao and Wijewardana (2012) also investigate working capital policy practice in Sri Lanka using a sample of 155 companies listed in Colombo stock exchange, the study showed that working capital policy affects firm liquidity, efficiency, profitability and capacity. In Nigeria a study by Ikpefan and Owolabi (2014) examine the relationship between working capital management and profitability using Nestle Nigeria Plc and Cadbury Nigeria Plc as case studies and discovered that positive relationship exist between working capital management variables and liquidity, efficiency ratio and return on equity of Cadbury Nigeria Plc. However, the findings of Salman, Folajin and Oriowo (2014) in their study of the relationship between working capital management of manufacturing companies and its profitability in Nigeria looking at a sample of 20 manufacturing firms listed on the Nigeria Stock Exchange discovered that working capital management affects Return on Assets (ROA) and Return on Equity (ROE) negatively. Thus, a lacuna is established as to the position of effect of working capital management on profitability and performance of firms in an emerging Nigerian economy. Hence, this study determines the effect of working capital management on firm's profitability; a study of manufacturing firms in Nigeria.all available studies had centered on group of firms quoted on Nigerian Stock Exchange (Ogundipe,. & Kajola, 2015 and; Falope & Ajilore, 2009) This study focuses on the manufacturing industry in Nigeria in particular. Nigeria's business environment significantly differs from other countries where similar research has been conducted in terms of culture, technological advancement, economic development, consumption pattern etc. Doing a study of manufacturing therefore, gives the researcher the opportunity of focusing on circumstances peculiar to the firms. This is the gap that this study fills in the existing literature, which is also

what makes this research relevant. It is against this backdrop that this study seeks to examine the effect of working capital management on firm profitability of manufacturing firms in Nigeria from 1986 to 2016.

### **1.3 Objectives of the Study**

The main objective of the study is to examine the effect of working capital management on profitability of selected manufacturing firms in Nigeria.

The specific objectives are:

1. To ascertain the effect of Current ratio on return on investment of the Nigerian manufacturing firms.
2. To determine the effects of account receivable on return on investment of the Nigerian manufacturing firms.
3. To evaluate the effects of account payable on return on investment of the Nigerian manufacturing firms.
4. To ascertain the effects of inventory turnover on return on investment of the Nigerian manufacturing firms.
5. To assess the effects of cash Conversion cycle on return on investment of the Nigerian manufacturing firms.
6. To determine the effects of creditors turnover on return on investment of the Nigerian manufacturing firms.

### **1.4 Research Questions**

Based on the specific objectives of this study, the researcher formulated the following questions.

1. To what extent is the effect of current ratio on return on investment of the Nigerian manufacturing firms?

2. What is the effect of account receivables on return on investment of the Nigerian manufacturing firms?
3. How far is the effect of account payable on return on investment of the Nigerian manufacturing firms?
4. To what extent can the effect of inventory turnover on return on Investment be determined in the Nigerian manufacturing firms?
5. How is the effect of cash conversion cycle on return on investment of the Nigerian manufacturing firms?
6. What is the effect on creditor's turnover on return on investment of the Nigerian manufacturing firms?

### **1.5 Research Hypotheses**

The following null hypotheses are posed for the study;

- Ho<sub>1</sub>: Current ratio have no significant effect on return on investment of the Nigerian manufacturing firms.
- Ho<sub>2</sub>: Account Receivables have no significant effect on Return on Investment of the Nigerian manufacturing firms.
- Ho<sub>3</sub>: Account Payables have no significant effects on Return on Investment of the Nigerian manufacturing firms.
- Ho<sub>4</sub>: InventoryTurnover have no significant effects on Return on Investment of the Nigerian manufacturing firms.
- Ho<sub>5</sub>: Cash Conversion Cycle have no significant effect on Return on Investment of the Nigerian manufacturing firms.
- Ho<sub>6</sub>: Creditors Turnover have no significant effects on Return on Investment of the Nigerian manufacturing firms.

### **1.6 Significances of the Study**

A study of this kind will prove to be beneficial to the various stakeholders

**The Corporate Nigeria:** The result of this study will enlighten the corporate decision makers of Nigeria on the benefits/costs of working capital management in manufacturing firms. The study is aimed at bringing a lot of transformation in the manufacturing sectors this is because manufacturing contributes so much to Gross Domestic Product (GDP) and growth (NBS, 2017). This study intends offering the corporate decision makers the transformation and restructuring process that is desired by manufacturing sectors in Nigeria.

**The Academia:** this study is geared towards being a trailblazer in the study of corporate profitability of firms. This study contributes to the literature on the relationship between the working capital management and the firm's profitability in at least two ways; first it focuses on Nigerian manufacturing firms where limited researches have been conducted. This study adds substance to the existing theory developed by previous authors.

**Managers of Firms:** A good number of groups will benefit from this study. They include the management and staff of manufacturing firms, the regulators and other manufacturing industries. For management and staff of firms, the findings of this study is useful in understanding the dynamics of working capital in firms in Nigeria and help in improving working capital management practices for maximising profitability of their firms. This could guide financial managers towards more specialized handling of day to day operations and achieving optimal level for increased efficiency. With this knowledge available; investors can study patterns of working capital management in a given firm and try to predict productivity.

**For further researchers,** this study will reveal the best policies for applications. This will improve on the existing theory and knowledge on the changes that manufacturing companies are going through in relation to working capital management. With this knowledge available

The study would be helpful also to further researchers this work would serve as reference materials for further work along this line.

**Regulatory bodies** like the Manufacturers Association of Nigeria (MAN), Central Bank of Nigeria (CBN) Security and Exchange Commission (SEC) can use this study to improve on the framework for regulation of manufacturing companies in Nigeria. The results of this study will also assist policy makers and regulators to implement new set of policies and regulations regarding working capital management in the manufacturing firms like Capital Markets Authority. This study will be of use to security analysts, financial analysts, stock brokers and other parties whose knowledge of the relationship between working capital management and the financial performance is important input into investment analysis and portfolio construction.

### **1.7 Scope of the Study**

The scope of the study covered a number of listed manufacturing firms gotten on the Nigerian Stock Exchange while the variable of interest are returns on investment (ROI) days in account payable (DAP) days in account receivable (DAR).days in inventory turnover (DINN), creditors turnover (CT), cash conversion cycle (CCC) and current ratio(CR) and the time period of the study is between 1986 to 2016. Twenty one quoted Nigerian firms from different manufacturing firms in Nigeria are selected basis on availability of data.

### **1.8 Limitations of the study**

The analysis of working capital management and firm profitability in a study of selected manufacturing firms is a topical issue with strong research interest. The following are deemed the major limitations of this study.

**Data Sourcing:** the issue of sources of data cannot be overemphasized. Some relevant data for the study are not easily available, and where they are it is at a cost (pay and procure). A study from 1986 to 2016 requires data for a period of about thirty years. The availability of

the respective 30 years statement of financial position of the sampled manufacturing firms data were difficult the researcher persisted and with vehemence the work got most of the required data.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.1 Conceptual Review**

##### **2.1.1 The Concept of Working Capital**

The core concepts that need explanations in this study are the concept of working capital, working capital management, liquidity and profitability tradeoff and operating cycle (account receivables, account payables, inventory, cash conversion cycle, creditor turnover and current ratios as well as return on investment. In chapter two, these concepts are explained here under:

Working Capital refers to the current assets and current liabilities of a company that can easily be converted to cash. They can also be referred to as circulating assets. They consist of stocks, accounts payables and receivable, cash and short-term securities. Stocks of raw materials acquired through purchases. The raw materials are converted into finished goods. The finished goods are then converted into cash, which is used to settle creditors from whom raw materials were purchased (Meginson, Smart & Gitman, 2008). Working capital is the excess of current assets over current liabilities. Current asset are the circulating assets of the company and are usually inform of cash in hand, cash at bank, account receivable (Debtors), inventories (Stock) and short-term or temporary investment while current liabilities on the other hand represent the indebtedness of the business to its supplier and other third parties

(creditors) that fall due for the payment within the accounting period and are in these form: trade payable (creditors).Tax payable and other accrued expenses such as electricity bills, telephone bill and salaries.

According to Pandey (2010), there are two concepts of working capital namely, Gross Working Capital and Net working Capital. Gross Working Capital consists of accounts receivable (debtors), stocks of raw materials work-in-progress, and finished goods), cash and short-term securities. The net Working Capital refers to current assets minus current liabilities, which represent claims of outsiders that are expected to mature within one accounting year.

According to Brigham and Ehrhardt (2004), the term working capital originated with the old Yankee peddler, who would load up his wagon with goods and then go off on his route to peddle his wares. The merchandise was called working capital because it was what he actually sold or “turned over” to produce his profits. The wagon and horse were his fixed assets. He generally owned the horse and wagon, so they were financed with “equity capital”, but he borrowed the funds to buy the merchandise. These borrowings were called working capital loans, and they had to be repaid after each trip to demonstrate to the bank that the credit was sound”. Working capital is arrived at only through the process of management. You cannot have working capital and not manage it. That is why much of the review in this study is around working capital management.

### **2.1.2 Working Capital Management**

The existence of a firm depends on the ability of its management to manage the firm’s working capital (Ross, 2009). Working capital management involves the process of converting investment in inventories and accounts receivables into cash for the firm to use in paying its operational bills. As such, working capital management is therefore at the heart of the firm’s day-to-day operating environment, and improving corporate performance, as

measured by its profitability. It involves managing the firm's inventory, receivables and payables in order to achieve a balance between risk and returns and thereby contribute positively to the creation of a firm value. Excessive investment in inventory and receivables reduces the profit, whereas too little investment increases the risk of not being able to meet commitments as and when they become due. The working capital includes all the items shown on a company's balance sheet as short term or current assets, while net working capital excludes current liabilities. These measures are considered useful tools in assessing the availability of funds to meet current operations of companies. Therefore, the importance of maintaining an appropriate level of working capital and its contribution to business survival is a concept that should be understood by every company (Harris, 2005). Working capital is the amount of funds that a business has made available to meet the day to day cash requirements of the operation (Pandey, 2008). It is the difference between current assets and current liabilities, current assets are the resources in cash that can be readily converted into cash, current assets include all those assets that in the normal course of business return in the form of cash within a short period of time ordinarily within a year and such temporary investment may readily be converted into cash upon need. They include bank balance, cash marketable securities, inventories and account receivables. A business must maintain an appropriate level of current asset over investment in current asset. Excessive level of current asset can easily result in a company realizing a sub-standard return on investment (Horne and Wachowitz, 2004) current liabilities are organization commitments for which cash will soon be required they include bank overdraft, account payables and unpaid bills (Pandey, 2008).

Working capital is considered as the life-blood of any business and its performance has significant impact on the overall performance of the concerned firms. Hampton (1989) stated that working capital policy is a function of two decisions: the appropriate level of investment



in current assets and the chosen methods, working capital management deals with the administration of current assets (cash, marketable securities, debts and stock or inventories) and current liabilities (Pandey, 2004 and Sagner, 2011) it involves the setting up of working capital policy and carrying out that policy in day-to-day operation. It concerns the determination of levels and compositions of current assets and ensuring that right sources of funds are tapped to finance current assets and those current liabilities are paid in time. Thus working capital management revolves around two basic issues of (1) the appropriate amount of current assets for the firm to carry and (2) how current assets should be financed.

According to Lorenzo and Virginia (2010), there are three alternative policies regarding the total amount of current assets to support any given level of sales. There are:

1. Conservative policy: It is a relaxed current assets investment policy, which Brigham and Ehrhardt (2004) refers to as fat-cat policy. Large amount of cash, marketable securities and inventories are carried. A credit policy that provides liberal financing to customers is used to stimulate sales. This results in high level of receivable. This policy implies greater liquidity and lower risk of insolvency
2. Aggressive policy: It is a restricted current assets investment policy that is referred to by Brigham and Ehrhardt (2004) as the lean-and –mean policy. The stock of current assets held is minimized and turnover is so frequent such that each dollar of current assets is forced to “work harder”. This policy indicates poor liquidity and higher risk of insolvency.
3. Moderate policy: This involves average investment in current assets. The policy is somewhere between the two above.

A conservative policy means lower profitability and lower risk of insolvency, while the aggressive policy results to higher profitability and correspondingly, a higher risk of insolvency (Hofman, 2011).

Working capital is considered as the life-wire of any business and its performance has significant impact on the overall performance of the concerned firms. Hampton (1989) stated that working capital policy is a function of two decisions: the appropriate level of investment in current assets and the chosen methods of financing the investment. In many organizations today, liquidity position is thus a major issue that must be put into consideration by financial managers. This liquidity state can be identified by their risk-return characteristics (Ibenta, 2005). Therefore, risk and return trade-offs are inherent in alternative working capital policies. High risk, high return working capital investment and financing strategies are referred to as aggressive; lower risk and return strategies are called moderate or matching; still lower risk and return is called conservative (Moyer, 2005 and Brigham & Gapenski, 2004). A firm may choose an aggressive working capital management policy with a low level of current assets as percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as percentage of total liabilities.

Management of working capital which aims at maintaining an optimal balance between each of the working capital components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses. Keeping an optimal balance among each of the working capital components is the main objective of working capital management. Business success heavily depends on the ability of the financial managers to effectively manage receivables, inventory, and payables.

### **2.1.3 Importance of Working Capital Management**

In the present day of rising capital cost and scarce funds, the importance of working capital needs special emphasis. It has been widely accepted that the profitability of a business concern likely depends upon the manner in which working capital is managed (Kaur, 2010).

Both excessive and inadequate working capital positions are dangerous from the firm's point of view (Islam & Mili, 2012). Excessive working capital leads to unproductive use of scarce funds. Excessive working capital means holding costs and idle funds which earn no profits for the firm (Islam & Miii, 2012). This leads to reduced profits although it guarantees a low liquidity risk.

The inefficient management of working capital impairs profitability and interrupts normal operations of a business as well (Kaur, 2010). This may ultimately lead to a financial crisis and bankruptcy. On the other hand, proper management of working capital leads to material savings and ensures financial return at the optimum level even on the minimum level of capital employed (Kaur, 2010). Both excessive and inadequate working capital is harmful for a business. Working capital and its importance is unquestionable. It directly influences the liquidity and profitability of firms. Just as circulation of blood is very necessary in the human body to maintain life, the flow of funds is very necessary to maintain business. If it becomes weak, the business can hardly survive.

Working capital management is important to manufacturing firms because it comprises over half of the total assets of a firm. Many manufacturing firms are said to be struggling to thrive and that some key players have been forced to move their operations to other countries. Others have shut down their operations. All these firms cite high operation costs as the main cause of the precarious financial situation. Firms are closing doors and others are operating at breakeven point. Closure of a business can only be brought about by profitability and liquidity problems. Therefore, there is a need to investigate the problem of profitability and management of working capital in the manufacturing firms in Nigeria.

It is not an exaggeration to suggest that working capital is the life-wire of a business (Brealey, 1996). Working capital is of importance in the finance functions of an organization for many reasons. Working capital has considerable effect on the firm's profitability. The

amount of investment in working capital and the manner in which it is managed has considerable impact on the profitability of firms. Firms that invest heavily in receivables and inventory can suffer reduced profitability. The greater the investment in current assets, the lower the profitability. The day-to-day activities of a company are run with resources employed from the working capital. The activities of production and sales of goods purchase of raw materials, payment of expenses of administration, selling and distribution and financial expenses are all financed out of working capital. Therefore, the crucial decisions of how to optimize investment in current assets and how current asset should be financed are of utmost importance to the finance manager. Empirical observations have revealed that financial managers spend much of their time attending to daily internal operations relating to current assets and current liabilities of the firm (Pandey, 2010). Brigham and Ehrhardt (2004) said about 60% of a typical financial manager's time is devoted to working capital management. The largest portion of the financial manager's time is devoted to solving working capital problems. This underscores the importance of working capital in the life of a firm.

There is no precise way of determining the exact amount of gross or net working capital for any company. There are no rules or formulae for doing that. The data and problems of each company should be analyzed to determine the amount of working capital (Pandey, 2004). Factors to take into consideration in determining the working capital requirement of a firm include nature of business, sales and demand condition, technology and manufacturing policies, credit policy, operating efficiency price level changes and availability of credit.

Working capital needs of a company may fluctuate with changing business activity i.e. whether it is growing or declining. Whatever the case may be, the consideration of the level of the investment in current assets should avoid two dangers: excessive and inadequate investment in current assets (Michalski, 2014). Excessive investment in current assets

impairs profitability, as idle investment earns nothing. Unnecessary accumulation of investment will only increase the chances of inventory mishandling, waste, theft, and losses will increase. It is an indication of a defective credit policy and slack collection period, which leads to higher incidence of bad debt and adversely affects profit. The warning signs of excessive working capital would be poor accounting ratios. Return on capital employed (ROCE) would be lower than it should be. Current assets and liquidity ratios would be in excess of 2:1 and 1:1 respectively. Excessive turnover periods in stocks and debtors would indicate whether the volume of stocks or debtors is unnecessarily high.

Inadequate working capital on the other hand, makes it difficult for firms to undertake profitability investment opportunities, thereby stagnating growth. It makes it difficult to meet day-to-day commitments and renders the firm's operations ineffective. It cannot efficiently utilize fixed assets. It is unable to put in place attractive credit policies. Interrupted production and sales lead to frequent stock-outs and consequently, lower profitability. It is unable to honor its obligations and it loses its reputation. Therefore, a company that has inadequate working capital will grind to a halt, interruption in production and bankruptcy (Michalski, 2014). How then do firms arrive at the volumes of working capital they hold? The volume of working capital held by firms is determined by the operating cycle of the firms.

### **2.1.5 Operating Cycle**

The most important method of calculating working capital need of a company is the concept of operating cycle, also known as the working capital cycle. How much a firm will invest in current assets is determined by its operating cycle. It estimates the working capital requirement on the basis of average holding period of current assets and relates them to cost based on the firm's experience in the previous year. A shorter operating cycle would mean a smaller amount of working capital needed by the firm (Remi, 2005). The operating cycle also

known as the trading cycle is the period between the acquisition of inventory and the collection of cash from receivables (Ross, 1996).

#### **2.1.5.1 Account Receivable**

Gill (2011) asserts that the main objective of accounts receivable is to reach an optimal balance between cash flow management components. Efficient accounts receivable management affords a firm to improve on its profitability by reducing the transaction costs of raising funds in case of liquidity crisis (Ahmet, 2012).

Accounts receivable management is a dynamic financial management process and its effectiveness is directly correlated with a firm's ability to realize its mission, goals and objectives (Sherman, 2010). these category of current asset include all credit sale where the customer is expected to pay a future date specified on the invoice (Michalski, 2014) When a company sells its product or services on credit and does not collect cash immediately, then there will arise trade debtors (credits). Firm grant trade credits for many reasons such as giving incentives to customers to acquire goods at times of low demand (Emery, 1978), to protect sales from competitors and attract potential customers, build and strengthen long-term relationship with dealers (Smith & Smith, 1999), and to conform to past or industrial practice. Also trade credits are a marketing tool particularly when a new product is launched or when a company wants to push its weak product. Trade credit may stimulate sales because it allows customers to access product quality before paying. To arrive at an optimal credit policy, the important decision variables (credit standard, credit terms and collection efforts) that determine investment in account receivables must be considered. Efficient account receivables management affords a firms to improve on its profitability by reducing the transaction costs of raising funds in cash of liquidity, .account receiveable is a dynamic financial management process and its effectiveness is directly correlated with a firm's ability to realize its missing goals and objectives (Sherman,2010)

$$\text{DAR} = \frac{\text{Annual Sales}}{\text{Average Receivables Balance}}$$

### 2.1.5.2 Accounts Payables

Account payable is one of the major sources of secured short term financing (Gitman, 2008), utilizing the value of relationship with payee is a sound objective that account payable is to suppliers whose invoice for goods or services have been processed but who have not yet been achieved, organization often regards the amount owing to the creditors as a source of free credit. Account payable is calculated as Payables by purchases. The longer the value, the longer firms take to settle their payment commitment to their supplier.

$$\frac{\text{Debtors for Goods or services}}{\text{purch ase}} \times 365$$

### 2.1.5.3 Inventory Management

Inventory management therefore has been defined in many ways by many authors. Sharma (2003) defines inventory as the quantity of goods, raw materials, or other resources that are idle at any given point in time. From the definition above, inventories consist of raw materials, component parts, supplies or finished assemblies etc which are purchased from an outside source, and goods manufactured in the enterprise itself. In simple words, inventory refers to stocks held by a firm. Nwandu, (2006) defines inventory management as a form of administration control that is particularly essential in all manufacturing, wholesale and retail organizations. The essence of inventory according to Nwandu is, “to have the right goods quality and quantity, at the right place and time” Ohno (2008), defines inventory control as a process of ensuring that the right quality of the relevant stock is available at the right time and in the right place.

Ondiek (2009, on his own part defines inventory control as the means of ensuring that actual flow of inventory in an organization. Inventory management is a systematic control of stock

through establishment of inventory control models, physical control, accurate and up –to – date record(Jamodu,1998).it covers the range of management techniques for controlling the level of stock holding so that profitability /competitiveness can be maximized .inventories are stocks of the product of a company manufacturing for sale and components that make up the product (Pandey.2010) inventories exist principally in the form of raw materials , work-in –progress and finished goods ,the level of inventory a company will hold depends on the nature of its manufacturing firms companies hold stocks of materials to prevent interruptions in production, reduces supply cost and protects against price fluctuation(Blunder and Manccini,1991) .However when a company over invests in inventories the firm suffers the following consequences :

- \* Inventories are tied up which cannot be used for any purposes.
- \* Excessive carrying costs as storage. Handling. Insurance, recording and inspection
- \* Costs which tend to increase in the inventory these cost impair corporate profitability (Jegade.1992)
- \* The risk of illiquidity due to holding excessive volume of investment for long time
- \* .Raw materials and work –in –progress are difficult to sell finished goods standing for a long timealso it become difficult to be sold.
- \* Large volumes of inventory held for a long may physically deteriorate due to passage of time ,mishandling and improve storage facilities
- \* Excessive inventories held for a long time could lead to pilferage or outright stealing by the work force and these losses affect the firms profitability

Inventories must be well managed to ensure continuous supply of raw materials to avoid interruptions in maintaining sufficient stock of raw materials in period of scarcity and anticipated price changes. Minimize carrying costs and time and keep investment in inventories at optimal level To achieve this answers must be provided to the questions of:



what quantity should be order (i.e) economic order quantity and when should order be made or placed, an inventory management model was developed by Wilson (1934) known as Economic Order Quantity(EOQ) to solve the question of how much should be ordered the economic order quantity is that inventory level, which minimize the totals of carrying costs, ordering costs comprises clerical and administrative costs, transportation costs and tooling costs (when goods manufactured are transferred as inputs internally increases with the number of orders and decreases with increasing size of inventory as large inventory levels require only few orders.Ordering cost decreases with size of inventory carrying cost comprises of interest or working capital invested in stocks, storage charges (rent, heating, handling charges,insurance and security pilferage, damages and obsolesces, carrying cost on the hand increases an inventory sizes). The economic order quantity will then depend on trade off between carrying and ordering costs.The economic order quantity is determined by the formula

$$EOQ = \sqrt{2AO/C}$$

Where;

A= Total annual requirement

O=Ordering cost

C=Carrying cost

The question of when to order is the question of what is the order point or re-order level to solve it we need the lead time (time normally taken to replenish inventory been order)average usage and lead –time do not fluctuate, the reorder point is simply the inventory level that will be maintained for consumption during the lead –time (Pandey,2010).it is calculated as follows

Re-order point =Lead average usage

Where it is difficult to predict lead time (i.e under uncertainty) the firm may maintain some safety stock known as buffer, it is the minimum stock required to guard against stock outs which can be costly to a firm thus, re-order under certainty is  $\text{Re-order point} = \text{lead average usage}$  where it is difficult to predict lead time i.e under uncertainty) the firm maintain some safety stock also known as buffer stock It is the minimum stock required to guard against stock outs which can be very costly to the firm. Thus re –order point under uncertainty is  $\text{Re-order point} = \text{lead average usage} + \text{safety stock}$ . The financial manager should always analyze investment in inventories in order to evaluate profitability of such investment (Firth,1976) the management has to maintain the optimum level of inventory. Arroe,& Harry (1995) explore that firms have to develop different policies to formulate techniques for managing inventory like ABC inventory system. Two-bin method and economic order quantity (EOQ) model just in time (JIT) system. According to Blackstone (1985), Lanconi (1993) and Jones (1993) the best approach to manage the optimal level of inventory is EOQ.

$$= \frac{\text{Costs of Goods Sold}}{\text{Average Inventory}} \times 365$$

#### **2.1.5.4 Cash Conversion management**

Cash management refers to the management of an entity’s cash to ensure sufficient cash to sustain the entity’s daily operations maintain growth and provide for unexpected payments while not unduly forfeiting profit owing to excess cash holdings (Bartlett, 2014).

According to Pandey (2004), cash management is defined as a practice of the ability of controlling the cash inflows and outflows in a business. It also entails the ability to establish the cash balances that are held in a business at all times.

Uwuigbe, Uwalomwa and Egbiide (2011) indicated that cash management entails taking the needed precautionary measures to ensure that adequate cash levels are maintained in the business so that the operational requirements could be met. According to Aliet (2012), cash

management is the management of cash to maximize the cash held in the business that is not invested in buying inventory or fixed assets. It essentially is the management of cash to avoid the risk of the business becoming insolvent.

Nyabwanga (2011) asserts that cash management is the process of planning and controlling cash flows into and out of the business, cash flows within the business, and cash balances held by a business at a point in time. These categories include cash in hand, at bank and any short-term transactions that are expected to be turned into cash within one year (Sagner, 2011). It represents the interaction between the components of working capital and the flow of cash within a company and can be used to determine the amount of cash needed for any sales level (Gitman, 2008) Brealey and Brigham (2005) describes cash cycle as a length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable (Steward, 1995). Cash conversion cycle is a composition metric describing the average days required to turn naira invested in raw materials into cash. The formula to calculate the cash conversion cycle (CCC) is 
$$\text{Cash conversion cycle (CCC)} = \text{Account receivable period (ARP)} + \text{inventory period (IP)} - \text{Account payable period (APP)}.$$

Cash is the ultimate output to be realized by the selling of goods and services. It is the money that a firm can readily disburse without any restriction. It includes coins, notes and account balances held in the bank. Near cash items like marketable securities term deposits can also be included as cash (Pandey, 2004). Firms hold cash for various reasons, some of which are transactional, speculative and precautionary motives (Keynes, 1936). Whatever may be the reason for holding cash, the firm should keep only what is sufficient, no more, no less. Cash shortages will disrupt the firm's day-to-day operation. Cash deficits are funded through borrowing at the firms cost of capital. Excess cash will simply remain idle. Idle funds do not contribute anything to the firms' profitability. The active and effective financial manager will ensure that such surpluses does not lie idle (Brokington, 1987). Excess cash should be

invested in marketable securities to realize profit for the firm. Because cash is not like raw materials that can be used to produce goods for sale, it is regarded as unproductive. Therefore the aim of cash management is to keep cash balances at a minimum level and invest the surplus in profitable investment opportunities. Optimal cash balance is determined with the use of the following formula (Brealey & Stewart, 1996);

$$C = \frac{N \cdot 2CT}{K}$$

Where C = Optimal cash balance

K = Opportunity cost (holding cost)

T = Total cash needed during the year

Where fluctuation in cash flow is taken into consideration, the Miller-Orr model is used to determine the optimal cash balance to be maintained (Miller & Orr, 1960). It allows for variation in cash balance with lower and upper limits. The model determines optimal cash balance by the formula.

$$\text{Average cash balance} = \text{lower limits} + \frac{3}{4} Z$$

$$\text{Where } Z = \left(\frac{3}{4} \times C \delta^2\right)^{1/3}$$

$$\text{Where } Z = \text{Upper limit} - \text{lower limit}$$

C = Transaction cost

$\delta$  = Cash flow variance

I = Interest rate.

Talking about investing the firm's excess cash in marketable securities to earn profit, the criteria for selecting a security or investment opportunities are according to Lorenzo & Virginia (2010) are:

**Marketing:** This refers to quick convertibility of the security into cash when the need for cash arises i.e. if it can be sold quickly without loss of price, then it is highly liquid or marketable.

Examples are government securities.

**Safety:** Very high interest yielding investment opportunities are usually more risky. The firm would invest in very safe securities, as cash balances invested would be needed in the near future.

**Maturity:** Short-term securities are preferred for the purpose of investing excess cash.

CCC = Cash + Marketable Securities

Current Asset

### 2.1.5.5 Creditors Turnover

Credit terms refer to the condition or stipulations under which the firm sells on credit. They consist of credit period and cash discount. Credit period is the length of time credit is granted to the customer generally stated in terms of net date. A credit term of “net 30” means customers will repay credit obligation not later than 30 days. Extended sales period will increase sales and consequently investment in receivables will increase as existing customers take more time to repay credit obligations (Firtm.1976). The firm incurs cost of financing investment in working capital during the credit period and the risk of default increases. To alter this policy variable to increase corporate profitability, the financial manager must ensure that the cost of extended credit period is less than the incremental operating profit realized through expanded sales.

Cash discount is a reduction in payment that is offered to the customer as an inducement to make him repay his credit obligation within a stipulated period of time which is usually less than the normal credit period (Pandey, 2010). It is an allowance given for quick payment. (Alan,2013) It is usually expressed as a percentage of sales and includes the rate, the discount period and the net credit period. For example, a cash discount of “2/8 net 28” means a 2% discount if customers pay within” 8 days. Cash discount is a tool to increase sales and accelerate collection. It helps to reduce the level of receivables and associated cost but at a

cost which is discount granted to customers. The financial manager has to compare the cost of cash discount with the saving in opportunity cost of reducing investment in receivables.

$$CT = \frac{\text{Creditors}}{\text{Purchases}} \times \text{Days / Months / Weeks within a year}$$

#### **2.1.5.6 Current Ratio**

The Current ratio is a standardized measure of liquidity. In general, the higher the ratio the more protection of a company has against liquidity problems. However, the ratio can be distorted by seasonal influences and abnormal payments on accounts payable made at the end of the year (Hofmann, 2011). The ratio shows the extent to which claims of short term creditor are covered by assets that will be converted into cash within a year the higher the ratio the greater the margin of safety for short term creditors. A normal industry average for this ratio is 2:1 however, it depends on the industry concerned (Olowe, 1998) moreover the test of liquidity can be obtained from the statement of asset and liabilities and organization should have enough current assets that give a promise of cash to meet short commitments of paying off current liabilities as a general rule (ICAN, 2009) current ratio is calculated by dividing current assets by current liability

$$\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current liabilities}}$$

Current assets include cash and those assets that can be converted into cash within a year such as marketable securities, debtors and inventories, prepaid expenses are also included in current assets as they represent the payment that will not be made by the firm in the future. All obligations maturing within a year are under current liabilities such as creditor, bill payable, accrued expenses, short-term bank loan, income tax liabilities and long-term debt maturing in the current year (Pandey, 2010)

#### **2.1.5.7 Profitability**

Karuru (2005) defined profitability as the difference between the sales generated by a business and the expenses incurred during the business operations. Aliet (2012) indicated that profitability is defined as an income generated in the business which is calculated by subtracting the expenses from the revenue. Brinker (2002) agreed with Karuru (2005) by stating that the definition of profitability is the difference between the revenue and the operational expenses incurred in the business. Agha (2014) defines profitability as the ability of a company to earn profit. Profit is determined by deducting expenses from the revenue incurred in generating that revenue.

Profitability is therefore measured by incomes and expenses. Income is the revenues generated from activities of a business enterprise. The higher the profit figure the better it seen as the business is earning more money on capital invested. For a manufacturing firm, revenues are generated from sales of products produced. Expenses are the costs of the resources used up and consumed Profitability is one of the measures of financial performance of firms. Profitability measures the extent to which a business generates a profit from the factors of production: labour, management and capital. Profitability analysis focuses on the relationship between revenues and expenses and on the level of profits relative to the size of investment in the business. Four useful measures of profitability are the rate of return on assets (ROA), the rate of return on equity (ROE) ,and return on investment operating profit margin and net income (Hansen & Mowen, 2005). Repayment capacity measures the ability to repay debt from both operation and non-operation income. It evaluates the capacity of the business to service additional debt or to invest in additional capital after meeting all other cash commitments. Measures of repayment capacity are developed around an accrual net income figure. The short-term ability to generate a positive cash flow margin does not guarantee long-term survivability (Jelic & Briston, 2001) and the return on investment refers to the total asset or net assets on funds employed it is also known as capital employed it is net assets equal

net fixed assets plus current asset minus current liabilities excluding bank loans. Karuru defined profitability as the difference between the sales generated by business and expenses incurred during the business operations profitability is therefore measured by incomes and expenses .income is the revenues generated from activities of a business enterprises. The higher the profit figure the better it seen as the business is earning more capital invested for a manufacturing firm revenues are generated from sales of products. Expenses are the costs of the revenues used up and consumed in the manufacturing process together with other selling and administrative expenses

$$\text{ROI} = \frac{\text{EBIT}}{\text{TA}}$$

TA

#### **2.1.5.8 Liquidity and profitability of working capital management**

The two important aims of the working capital management are profitability and liquidity, liquidity or solvency refers to the firms continuous ability to meet maturing obligations (Sagner, 2011) to ensure liquidity, firms should hold larger investments in current assets, so a liquid firm has less risk of insolvency and hardly experience cash shortage out situation (Ibenta 2005) However, there is a cost associated with maintaining a sound liquidity position. A larger amount of the firms funds will be tied in current assets, and to the extent this investment is idle, the firms profitability will suffer; to have higher profitability the firm may sacrifice solvency and maintain a relatively low level of current assets, when a firm does so, its profitability will improve as fewer funds are tied up in idle current assets, but its solvency would be threatened (Pandey, 2010).

The concept of liquidity is defined as the ability to realize value in cash, it has two components, the conversion time of an asset and that is the time lag between deciding to sell an asset and receiving payment for it and its conversion price (Ibenta, 2005). According to Sagner, (2011) the liquidity position of the firm suggests the extent to which the working



capital needs may be financed by permanent sources of funds. Therefore current assets should be sufficient in excess of current liabilities to constitute a margin or buffer for maturing obligations within the ordinary operating cycle of business. It is conventional rule to maintain the level of current assets twice the level of current liability and the quality of current assets should be considered in determining the level of current asset vis-à-vis current liabilities, a weak liquidity position poses a threat to solvency of a company and makes it unsafe and unsound. A negative working capital means a negative liquidity and may move to be harmful for the company's reputation, excess liquidity is also bad, therefore prompt and timely activities should be taken by management to improve and correct the imbalances in the liquidity position of the firm (Olowe, 1998 and Pandey, 2010).

.The trade-off between liquidity and profitability are important concepts in working-capital management. The cardinal point in firm management is that of maintaining safety liquidity standards. However, focusing on this alone undermines the potential profitability of the company; since they have inverse relationship, but important for the survival of firms. Liquidity can lead to insolvency which could result to distress, while a firm needs to make profit in order to remain a going concern. Moyer, Mcguigan and Kretlow (1998) argue that, there is an optimal level of working capital investment, which changes with the variability of output and sales that a firm must maintain. For a given level of output or sales there is certain working capital level that results in the highest profit. Other factors that affect the optimum working capital include the variability of cash flows, the degree of financial leverage and the degree of operating leverage. The issue of profitability and liquidity risk trade-off is based on the argument that short-term investment and financing have opposing effect on liquidity and profitability. Investment in current sales though useful to achieve the objectives of liquidity, but it does not generate as much profit as investing in fixed assets and it is against this backdrop that this study is undertaken.

### **2.1.5.9 The History of Nigerian manufacturing sector**

Manufacturing: refers to the industries belonging to international standard industrial classification (ISIC) divisions 15-37 (the Library of Congress, Country Studies, 1991). While agricultural contribution to GDP was falling, manufacturing contribution rose from 4.4 percent from 1959 to 9.4 in 1970 before falling during the oil boom to 7.0 percent in 1973, increasing 11.4 percent in 1981, and declining to 10.00 percent in 1988. Whereas manufacturing increased rapidly during the 1975 tariff manipulations encouraged the expansion of assembly activities dependent on imported inputs those activities contributed little to indigenous value or to employment. The manufacturing sector produced array of goods that included milled grain, negotiated meat products, dairy products, textiles, footwear, wood paper products, soap, paint, pharmaceutical goods, ceramics, chemical products, tires, tubes, plastic cement glass, bricks tiles, metal goods, agricultural machinery, household, electrical appliances, radios, motor vehicle and jewelry. According to Library of Congress (1991), from 1980 to 1982, Nigeria value added in manufacturing fell 25 percent, partly as a result of inefficient resource allocation caused by distorted prices (especially for export and import substitutes) and prohibitive import restrictions.

Manufacturing sector in an economy remains one of the most powerful engines for economic growth. It acts as a catalyst to transform the economic structure of countries from simple, slow growing and low value activities to more vibrant and productive economies. Its productive economic activities are driven by technology and therefore enjoy great margins (Amakom, 2012).

Yet despite two decades of growth boosted by import substituting policies, Nigeria's manufacturing sector remains heavily import dependent. According to Opaluwa (2010), the Nigerian economy is under-industrialized and its capacity utilization is also low. They stated that the sector has become increasingly dependent on the external sector for import of non-

labour input. This has been the inevitable outcome of a perverse incentive structure that accelerated the growth of import intensive consumer goods and light assembly industries contributing relatively little value added under high protective walls while decelerating growth of local resource-based industries. The manufacturing sector encapsulates a wide range of industrial activities, from informal sector enterprises using simple technology to heavy capital goods industries in the automotive and electrical equipment sector. Out of this, a wide spectrum of light consumer goods dominates the manufacturing profile. These have been nurtured and reinforced by regimes of “easy” import substitution, localization of assembly and final processing of relatively simple products. The earliest attempt at manufacturing saw the establishment of agro-based industrial concerns such as vegetable-oil extracting plants, tanneries and tobacco processing units. Textiles, breweries and cement manufacturing concerns soon followed. (Ku, Mustapha, Goh, 2010)

The structure of manufacturing production has been a derivative of the various development plans. The First National Development Plan (1962-1968) emphasized light industry and assembling activities. The second plan (1970-1975) had a somewhat similar thrust and focus, but the emphasis shifted in the third plan (1975-1980) towards heavy industries. Major projects were initiated in the steel and petroleum refinery sector, for the fourth plan (1980-1985) the broad direction was in consonance with the third: it retained the stress on heavy industries. But several of the grandiose plans were short changed with the onset of profound economic crisis in the early 1980s. The ensuing balance of payments difficulties forced the authorities to reschedule or outright jettison some projects. The iron and steel sub-sector was particularly seriously hit by these developments.

Manufacturing sector today has become the main means for developing countries to benefit from globalization and bridge the income gap with the industrialized world (Amakom, 2012).

Manufacturing sector may be global, regional and local perspective one aspect that needs

investigation is the management of working capital in manufacturing firms. Working capital is the difference between current assets and current liabilities. Working capital meets the short term financial requirements of a business enterprise. It is a trading capital not retained in the business in a particular form for longer than a year (Padachi, 2006). The money invested in it changes form one form and substance during the normal course of business operations.

In Nigeria, many of the manufacturing industries are faced with working capital management deficiencies. These are evidenced in their inability to pay dividends to shareholders and having higher current liabilities to current assets. Regardless, of the governmental tax holidays granted to firms to motivate plough-back into their operations, liberal tax shield, lavish investment incentives, friendly income tax regime, availability of labour and material, market size, subsidized material provision and enabling environment to operate to their highest capacity (FIRS, 2002) the Nigerian firms have however fallen short of having a working capital management to achieve efficient productivity and performance. Though Nigeria occupies a place of pride in the West African sub-region and it is often regarded as the business hub of Africa because of its ever growing population and investment opportunities. Working capital management is a key element that determines the performance of firms in an emerging economy like Nigeria. The uniqueness of manufacturing sector is significant factors that will help determine the growth rate of an economy

## **2.2 Theoretical framework**

The theoretical background of this study is based on few finance theories which include the following:

- 1 Miller and Modigliani's (1958), Theory of Irrelevance,
- 2 Myers's (1984) theory of trade-off
- 3 Myers and Majluf's (1984) Pecking Order Theory.

**The irrelevant theory of Miller and Modigliani (1958)**the interaction between current assets and current liabilities which involves managing the balance between a firm's short-term assets and short-term liabilities with an aim of ensuring continuity of operations has remained the core of the theory of working capital management (Pandey, 2010 cited in Nyamweno & Olweny, 2014). Despite the assertion from Nakamura and Palombini (2012) that there are no robust and widely accepted theories about working capital management, it is worthy of note that theories which explains a link of working capital management and firm profitability is acceptable. The irrelevant theory of Miller and Modigliani (1958) posit that firm's value is independent irrespective of its capital structure and if firms' value depend on the capital structure then this opportunity must have to be available in the perfect market according to Megginson ,Smart and Gitman (2008)capital structure decisions cannot affect firm value. This theory thus implies that working capital management has played no role in firm's performance. This assertion seems impractical, though it provides the basic hypothetical framework for new studies.

#### **Myers's (1984) theory of trade-off**

The Risk-return trade-off theory posits that investments with higher risk may create higher returns and vice versa. As posited by Nyamweno and Olweny (2014), working capital management is part of the risk and return trade-off decisions of corporate firms. Thus, firms with high liquidity of working capital may have low risk than low profitability, and on the other hand, firms that have low liquidity of working capital may be facing high risk which results to high profitability. This supposes that net working capital is essential to the profitability of firms. According to Kamau and Ayuo (2014), increasing a firm's net working capital (current assets less current liabilities) reduces the risk of a firm not being able to pay its bills on time, and this at the same time reduces the overall profitability of the firm.

In a risk-return trade-off, therefore, firms would not want to take additional risk unless it would be compensated with additional returns. This is because minimization of investments in current assets may create many problems to the firm's operations. Deficiencies in these assets will lose the firm most opportunities to increase the liquidity and profitability. The maximizing of Working Capital leads unnecessary accumulation of inventories and other current assets leading to many problems. For instance, this will create inventory mishandling, wastage and theft; higher level of bad debts and increased operating inefficiencies (Barine, 2012). In the management of liquidity, firms must take into consideration all the items in both accounts and try to balance the risk and return, and efficiency in working capital management requires the understanding of the rudiments of trade-off between risk and returns in current assets and current liabilities of firm. Thus the trade-off theory supposes that the existence of a firm depends on the ability of its management to manage the firm's working capital (Ross, 2009)

#### **Myers and Majluf's (1984) Pecking Order Theory**

Having seen that from trade-off theory that availability or working capital vis-à-vis capital structure, can influence firm performance, pecking order propounded by Donaldson in 1961 and was later modified by Steward Myers and Nicholas Majluf in 1984 is one of the influential theories of corporate finance tries to explain that some forms of capital are better than others in enhancing firm performance. According to the Pecking Order theory, firms have preference in financing their business using retained earnings as compared to debt, short-term debt over long-term debt and debt over equity. This theory according to Asmawi and Faridah (2012) is the nearest pertinent theory explaining the company's optimal capital structure. In line with the prediction of Pecking Order Theory (Myers & Majluf, 1984), an inverse relationship is expected between profitability and working capital management of firms. Thus, leveraged companies aim to work with low level of current assets, to avoid issuing new debt and equity securities (Nakamura & Palombini, 2012). Thus, firms that have

need to increase their leverage must pay more attentions in reducing the capital that is tied to current assets, thus high leverage firm exhibit lower working capital requirements. This suggests that financial manager can practice efficient working capital management by reducing the firm's debt level so as to avoid unnecessary tying up of capital in accounts receivables and inventories. Following from these theoretical propositions of Pecking Order, firms that understand their resources, working capital and profitability level can pay attention on the Working Capital Management to get better economic results. This theory has a place in this study and can best explain the working capital management this work is therefore anchored on the pecking order theory. Any result that shows no significant effect might support the Miller and Modigliani's (1958) Theory of Irrelevance. These three theories are relevant to this study. However, the study is hinged on the Pecking Order theory because it ensures firms capital structure weigh its scale of financial preference before deciding on the exact financial engagement. The theory shows that retained earnings are the best alternatives for capital structure that can enhance firms' performance before considering other possible best alternatives. The theory further shows that appropriate capital structure will help to enhance performance of the firm. Account receivables impact or influence on firm profitability further buttressed the pecking order theory. Account receivables are expected to cause an increase in the profitability and performance of firms. Return on investment increases the profitability status and enhance performance of the firm.

## **2.3 Empirical Review**

### **2.3.1 Effect of Working Capital Management on the Profitability of Firms**

Empirical literatures on the effect of working capital management on the profitability of firms in the manufacturing firms are limited in emerging economy like Nigeria. However, most literatures have been done like Zhen, Duan and Shou (2017) who determine the effects of

working capital on engineering product market competition performance in manufacturing industry. Linear regression based on dynamic panel data was employed results shown that enterprise working capital turnover liquidity has positive effect on product market completion performance while enterprise working capital liquidity has a negative relationship with market competition performance.

In line with the above Lazarus, Kennedy and Alfred (2017) examine the influence of working capital on the performance of SMES in Ghana from 2011 – 2015 on a sample of 400 SMES, both descriptive and correlation research was adopted as well as ordinary least square regression, the study revealed that cash conversion period, account receivable days and inventory turnover days is significantly and negatively related to performance.

In Nigeria, Ajayi and Innocent (2017) examine the relationship between working capital and profit of retail companies listed on JSE Stock Exchange from 2004 – 2013, using panel data, the study found negative relationship between working capital and profitability. Joseph and John (2017) examine the effect of working capital management on performance of six listed manufacturing firms in Ghana from the period 2008 – 2014, using correlation and regression analyses, conversion period and the accounts payable period have positive effect on profitability.

Muhammad, Sohan, Zeeshan and Saif (2017) investigates the relationship between working capital management and profitability of 92 Pakistani textile firms for a period 2006 – 2014, correlation and regression analysis were used, the study found that working capital management has significant negative effects on profitability of Pakistani textiles firms Jamina (2017) studied net working capital (NWC) management strategies in enterprises operating in the construction sector quoted on the alternative exchange market new connect from 2009–2014 using the author’s calculations the result shows that in the management of current assets moderate strategies dominated in the long-term liabilities while aggressive strategies



dominated in the management of short-term liabilities. Abenet & Venkateswarlu (2016) examined the effect of working capital management on profitability of manufacturing sector in Easter Ethiopian from 2010 to 2014 using pearson's correlation analysis, the result has show a significant negative relationship between Account Receivable and Return on Assets of Firms under manufacturing sector in Eastern Ethiopia.

Othman (2016) analyse the efficiency of working capital management on selected SME companies in Malaysia 24 companies were randomly selected from the period 2010 – 2013 and the study reveal that the selected SME & companies were less efficient in managing their working capital during the study period Sumarathi (2016) explore the impact of working capital on the firm performance of cement manufacturing gulf co-operation council firms for a period of 2008 – 2014 using regression the study identifies positive relationship between inventory conversion period, average payment period with profitability and a negative relationship amid average collection period and firm profitability.

Serge (2016) assess the effects of working Capital management on the profitability of Afriland First Bank Cameroon, a time series study from 2002 to 2013 extracted from the financial statement of the bank, correlation analysis and ordinary least square regression was used, the analysis show that customer deposits, the size of the bank, outstanding expenditures and return on asset have positive and statistically significant effect on bank profitability. In India, Swaranjani & Kishori (2016) investigate the relationship between the firm's working capital operating cycle and profitability of the firm. The study is based on five India steel company listed on Indian Exchange from 2011 to 2015 using correlation regression and chi-square; the study reveals that operating cycle are increasing the profitability of the company and that both operating cycle and profitability have a linear relationship. Cristea and Cristea (2016) examine the relationship between the working capital management and corporate profitability for seventeen (17) companies from manufacturing industry listed on the

Bucharest Stock Exchange for a period of five years from 2011 to 2015. The paper reveals a negative relationship between profitability, measured through return of assets, cash conversion cycles. Bagher, Farzad and Ali (2016) identify the difference in working capital management, real investment and capital structuring with a sample of 186 firms listed on the Tehran stock exchange from 2009 – 2014, using t-test and SPSS software., the funding of the study are among measures of working capital management, accounts payable period, accounts receivable period differ among active firms but inventory turnover period have shown a positive and significant relationship.

Sudi (2016) examined short and long-term bank credits and their reflections on the cash, working capital and the short-term liabilities of the business selected from all of the sectors for the case of Turkey in the long-run from 1996 – 2014. The study endorses the strategic relation between bank credit usage and liquidity levels of the business. The study concluded that cash equivalents and net working capital have impacts on the level of bank credits in the long-term. In Turkey, Resit (2015) examine the impacts of changes in macro-economic data on net working capital; a case of Turkey's industrial sector from 1996 – 2014, using descriptive tools, the findings of the study shown that the increase in inflation and exchange rate decreases real networking capital of medium and large-scale enterprises, on the other hand a change in interest rates does not create a negative or positive effect over working capital; increase in dollar exchange rate decrease networking capital than foreign exchange debts to its foreign exchange receivable. In another study, Shamsadin & Hossein (2015) examined the relationship between the efficiency of working capital management companies and corporate rule in Tehran Stock Exchange for the period of 2008 – 2013 using a sample of 115 companies variables used for measuring the working capital management include accounts payable, cash conversion cycle, cash holding, current ratio and management efficiency. Multiple regressions to test the influence of efficiency on factors that determine

working capital practice the study confirmed the impact of different type of working capital policy that affect firm liquidity, efficiency, profitability and capacity as well as the receivables collection period. The findings of this study indicate that corporate governance mechanism plays an important role in proving the efficiency of working capital. Working capital management on profitability of Nigerian 46 listed companies from 2008–2009. The study utilized panel data, pooled OLS regression and the results indicate a strong negative relationship between working capital management and profitability; liquidity had a positive and strong significant relationship with return on assets. In the middle east of Europe Carlu, Henrique and Isabel (2015) investigate the relationship between working capital management and profitability of firms, a sample of 54 firms listed for the period of 2012 – 2013, using the ordinary least square the results of this study revealed a significant relationship between cash conversion cycle measurement and profitability of firms.

Francis (2015) establish the relationship between working capital management and profitability in cement companies spearman's rank correlation analysis was employed the results of the study indicates a negative relationship between the measures of working capital management and profitability. Lawal, Abiola and Oyewale (2015) examine the effect of working capital on profitability of selected manufacturing companies, sample of six (6) selected for the period of 8 years (2002 – 2009) data from a sample of four (4) Cement Companies quoted on the Nigerian Stock Exchange (NSE), using descriptive statistics and multiple regression analysis they found an insignificant negative relationship between the profitability of Cement Companies quoted on the NSE, and number of days accounts receivable are outstanding, the study found a significant negative relationship between the profitability of these cement companies and the number of days inventory are held.

Ajayi and Innocent (2015) examine the relationship between working capital management and profitability in JSE listed from 2004 – 2013 on listed retail sector companies, the study found

negative relationship between working capital and profitability. In the work of Agrim and Rahun (2015) also examine the effect of working capital on the profitability of 364 Indian Firms listed on the Bombay Stock Exchange over the period of five years. Linear Regression Model was employed and the findings revealed average inventory, cash conversion period, days in conversion period are determinants of Working capital management. In Kenya, Leonidas, Nelson and Francis (2015) examine the impact, of working capital management on the profitability of manufacturing firms in the multi current environment in Zimbabwe using the case of Smart bags. The study employed pearson's correlation coefficient to measure the pair – wise association between dependent and independent variables. The study reveals that there is a weak negative correlation between average collection period and profitability as well as between the cash conversion cycle and profitability.

Amarjit, Nalium and Neu (2015) statistically provide a relationship between working capital management and profitability using a sample of 88 American firms listed on New York Stock Exchange for a period of 3 years from 2005 – 2007. A statistically and significant relationship between the cash conversion cycle and profitability was found. Kioko and Sitienei (2015) examine the effect of working capital management on profitability of 3 cements manufacturing companies listed at the Nairobi securities exchange using the Karl pearson correlation and multiple linear regression, the study established that inventory conversion period had positively and insignificant relationship with profit and that average receivables period had a positive and insignificant relationship between profitability. Akindele and Odunina (2015) study the relationship between working capital management and firm's profitability of Twenty five Nigerian quoted companies for the seven year period from 2005 – 2011 using multiple regressive analysis, results shows a negative relationship between working capital management and firm profitability.

Salman, Folajin and Oriowo (2014) investigated the relationship between working capital management and manufacturing companies profitability in Nigeria using a sample of 20 manufacturing firms listed on the Nigeria Stock Exchange from 2005 – 2013 the method of analysis is that of Pearson correlation moment coefficient and multiple regression and the method of estimation is ordinary least square and the result shows that working capital management has a negative and significant relationship with the Return on Assets (ROA) and Return on Equity (ROE). In Nigerian study, Ikpefan & Owolabi (2014) present an empirical investigation of the relationship between working capital management and profitability using Nestle Nigeria Plc and Cadbury Nigeria Plc as case studies. The study used correlation and regression analysis, the study found a negative relationship between the liquidity of the efficiency ratios and return on equity for Nestle Plc while it found a positive relationship between the liquidity, efficiency ratio and return on equity of Cadbury Angahar and Agbo (2014) examine the impact of working capital management (measured by the number of accounts receivable outstanding, the number of days inventory are held and the cash conversion cycle) on profitability of Nigerian Cement Industry for the number of days inventories, cash conversion cycle and net cycle Walter (2014) examines the impact of working capital management on the profitability of 39 non financial firms listed on the Zimbabwe Stock Exchange from 2009 to 2013, using period data methodology. It was found that a positive relationship exists between debtor's days and firm's profitability, a negative relationship between creditors days and profitability.

Asaduzzaman and Tabassum (2014) examined the effect of working capital on profitability of Bangladesh Textiles companies using 21 Bangladesh textiles companies listed at the Hochittagong Stock Exchange from 2008 to 2012, using regression analysis the results reveal that working capital management and profitability are positively correlated in Bangladesh. Soyemi and Solawole (2014) examine the cost of working capital and the effect on firm

performance on Nigerian Brewery Companies quoted on the Nigeria Stock Exchange Market from 2009 – 2013, ratio analysis was used result of the study shown that Guinness Nigeria possessed huge amounts of current assets for the period under study. Shagufa, Farida and Syed (2014) study the impact of working capital management on firms profitability of 45 companies listed at KSE for five years from 2008 – 2012, using regression analysis, and results indicates a significant impact on firms net profit of firms. The researchers James, Guadri and Taiwo (2014) also examined the impact of working capital management on firm profitability for the period of 2003 – 2013 on selected oil and gas companies in Nigeria Stock Exchange oil and gas companies that are quoted, using panel data analysis, the result shown that the relationship between components that is working capital management and profitability insignificant.

Soyemi and Olawale (2014) examine cost of working capital and the effect on firm performance with a view of adopting liquidity measures of selected Brewery firms, with those of ratio analysis, the result indicated Guinness Nigeria achieving huge amount of Current assets than Consolidated Breweries. Mobsin (2014) analyzes the impact of financial charges on working capital management for 8 Pharmaceutical manufacturing firms listed on Karachi Stock Exchange for the period of 2006 – 2011, results indicate that average collection period, inventory holding period, average payable period, cash conversion cycle, net trade cycle and net single significantly affect the working capital of the firms. Hampus and Hilergren (2014) examine the effect of working capital management on different company characteristics in across sectional study on the Swedish wholesale industry, covering a sample of 1,485 companies, by using correlation and regression analysis, the findings show a positive relationship between the cash conversion cycle and profitability. Snober and Velontrasina (2014) investigate the relationship between working capital management policy and firms profitability of Cement companies of Pakistan firms listed on Karachi Stock Exchange from

2006–2011 using ordinary least square regression method of research. The result showed that there is significant negative relationship between working capital policies on profitability of the firms. In the same way John and Michael (2014) examine the relationship between working capital management and profitability by investigating how it affects different company characteristics across sectional study of Swedish whole sale industry, covering a sample of 1,485 companies, using correlation and regression analysis, the result shows a positive relationship between cash conversion cycle (CCC) and profitability. Haitham and Maryam (2014) examine the relationship between cash conversion cycle and profitability for the full sample period of 1990 – 2004 in U.A.E using Generalized method of moment estimation, results shows that quick ratio is negatively associated with the firms performance. Asaduzzaman and Tabassum (2014) examine the effect of working capital on profitability of Bangladesh 21 textiles companies listed at the Chitagy Stock Exchange (CSE) from 2008 to 2012 and evaluated using multiple regressions. The results revealed that working capital management and profitability are positively correlated in Bangladesh Textiles companies, and also inventory of number of days, number of days account receivables and cash conversion period are positively correlated with a firms profitability, while the numbers of days accounts payable are negatively correlated Yusuf in Nigeria (2014) investigates the impact of working capital management on the profitability of the manufacturing companies listed on the Nigerian Stock Exchange using a sample of 55 companies over eight years from 2005 – 2013, the panel data regression analysis revealed that average collection period and inventory conversion period were significantly negatively related to profitability. Godfred (2013) investigate whether working capital management is associated with profitability of alternative investment market (AIM listed small and medium enterprise (SME) companies for the period of 2005 to 2010 using panel data regression analysis and results show that SMEs with shorter inventory

holding period, shorter accounts receivable period and shorter accounts payable period are more profitable.

Albert and Michael (2013) examine the effect of working capital movement on firms performance for non-listed Ghana firms from a sample of non-listed firms from 2004 – 2009, the paper found that profitability is negatively related to the length of the cash conversion cycle. Thomas, Rose and Kebyasi (2013) analyze working capital management and its impact on firm profitability on listed manufacturing firms quoted on the Ghana Stock Exchange from 2004 – 2011, the study employed descriptive statistics, pearson correlation and ordinary least square regression analyses, the results reveal that working capital cycle significantly affects firm profitability. Robeen and Naveed (2013) examine the impact of running assets management on the profitability of Pakistani 10 cement companies listed at KSE from 2003 – 2008, using value options empirical analysis from the energy sector show a significant relationship between variables of the working capital management and profitability of the firm.

Peter (2013) examine the relationship between working capital management practices and profitability of 13 listed manufacturing firms in Ghana covering the period from 2005- 2009, using panel data methodology, the study finds a significant and negative relationship between profitability and accounts receivable. Richard, Dadson and Peter (2013) examine the relationship between working capital management practice and profitability of listed manufacturing firms in Ghana from the period of 2005 – 2009, using panel data methodology, the study find a significantly negative relationship between profitability and accounts receivable profitability of the firm Paul (2013) analyze the effects of working capital management on the profitability of manufacturing firms listed on the Nairobi securities exchange. The multiple regression and correlation analyses were used, and results from the study revealed that gross operating profit was positively withcash conversion cycle. A study



by Makori & Jagongo (2013) analyses the effect of working capital management of firms' profitability in Kenya for the period of 2003 to 2012. Their case-study was manufacturing and construction firms listed on Nairobi Securities Exchange and they study employed Pearson's correlation and ordinary least squares regression models to analyze their data. The study finds a negative relationship between profitability and number of days' accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of days payable.

Erik (2012) examine the relationship between working capital management and corporate profitability of Finnish and Swedish public company using variables like cash conversion cycle and Net trade. The result show that there is significant evidence that by managing part of working capital a company can increase their net present value. And also there is a correlational relationship between Net trade cycle and cash conversion cycle to profitability.

Muhammad (2012) investigates the effect of working capital management and its effects on profitability and liquidity of Pakistan food sector with a sample of 18 companies listed on Karachi Stock Exchange from 2006 – 2010 using pooled least square regression and common effect model, the findings shows a positive effect of working capital management on profitability and liquidity of the firm.

In another study done by Mansavi and Surrender (2012) examine relationship between working capital management and fertilizer industry of Indian companies. The study employed Kruskal Wallish- Test and the use of Ratios, the results revealed no significant variables exist in the respective five companies. Asgher & Syed (2012) examine the impact of working capital management on the profitability of 15 companies selected at random from textile, chemical and engineering sector from 2003 to 2008. Using ordinary least square technique, the results showed positive impact of Working capital management on profitability of the firms. In Iran, Taghizadeh, Ghanravati & Akhari (2012) investigate the effect of working

capital management and corporate performance: evidence from Iranian companies from 2006 – 2009 using a multi regression model, the results showed that there is a negative and significant relationship between the variables of average collection period, inventory turnover, average payment period, net trading cycle and the performance of firms listed in Tehran stockexchange. In Sri Lanka Farrah, Noredi, Zhao & Wijewardana (2012) investigate working capital policy practice using a sample of 155 companies listed in Colombo stock exchange from 2002 – 2006, employing multiple regressions to test the influence of efficiency on factors that determine working capital practice the study confirmed the impact of different type of working capital policy that affect firm liquidity, efficiency, profitability and capacity. In Thailand, from 2007 to 2009; Kulkanya (2012) examined the effects of working capital management on profitability using a sample of 255 companies listed on the stock exchange. Regression analysis was employed and results of the study revealed a negative relationship between the gross operating profit and inventory conversion period and the receivables collection period. Ganze Ahmet and Emin (2012) investigate the relationship between working capital management components and performance of 75 manufacturing firms listed on Istanbul Stock Exchange Market for the period 2002 – 2009, using dynamic panel data analysis. The result revealed that leverage as a control variable has a significant negative relationship with the firm value and profitability of firms and profitability. Ibrahim and Datin (2012) investigate the effect of working capital management on firms profitability using panel data analysis, pooled OLS panel fixed effect estimation for a sample of Singapore firm from 2004 to 2011, result of the study show a strong negative relationship between working capital management and return on assets variables of working capital management and profitability of sugar manufacturing firms and profitability as well as between the cash conversion cycle and profitability in Mid-Textiles companies. Raheman, Qayyum and Tahat (2011) analyze working capital management performance of manufacturing sectors by using different

working capital management measures which include manufacturing cash conversion cycle (CCC), receivables turnover in days (RTD), inventory turnover in days (ITID), Payable turnover in days (PTD) and return on Total Assets (ROTA) for a period of ten years from 1998 to 2007 for 204 manufacturing and trading firms listed on Karachi Stock Exchange using ratio analysis, the result revealed that sector-wise working capital management performance exploration and refinery, cement, fertilizer and oil, and gas refinery sector are top based on both inventory turnover measure of working capital management. Meryem and Belouma (2011) provide empirical evidence on the effects of working capital management on the profitability of 386 Tunisian companies observed from 2001 to 2008. The result of fixed and random effects model showed a negative relationship between corporate profitability and different working capital components.

Juh-tay and Su (2010) investigates the relationship between profitability, cash conversion cycle and it's components for listed firms in Netnam Stock Market from 2006 – 2008. The result shows a strong negative relationship between profitability, measured through gross operating and cash conversion cycle. Jnaidu and Sanusi (2010) investigate the relationship between the variables of working capital management and company profitability with emphasis on quoted Nigerian cement producing firms from 2001 to 2010; all cement companies that are listed on Nigeria Stock Exchange using generalized least square regression, descriptive statistics and correlation. The study found that working capital variables of inventory turnover, debtor's collection period to average payment period and cash conversion cycle significantly affect the profitability of quoted cement companies in Nigeria cycle and net trade cycle.

Olufemi and Olubanjo (2009) provide empirical evidence on the effects of working capital management on profitability for a period of ten years of sample made of quoted non-financial firms for the period of 1996 – 2005, using panel data econometrics in a pooled data, the study

found a significant negative relationship between net operating profitability and the average collection period. In agreement with the above, Samiloglu and Deningine (2008) analyze the effect of working capital management on firm profitability using a sample of Istanbul Stock Exchange (ISE) listed manufacturing firms for the period of 1998 – 2007 using multiple regression model the findings of the study show that accounts receivable period inventory period and leverage affect firm profitability negatively Abdul and Muhammed (2007) studied the effect of different variables of working capital management of 94 sample of Pakistani firms listed on Karachi Stock Exchange for the period of 6 years from 1999 – 2004, pearsons correlation and regression analysis was employed, and results show a strong negative relationship between variables of the working capital management and profitability of the firm.

Chemis (2005) examine the effect of Working capital management variables including the average collection period, inventory turnover in days, average payment period, cash conversion cycle and current ratio on the operating profitability of sugar manufacturing firms in Kenya from 2008 – 2013 using pearsons correlation and regression analysis. The study finds a significant negative relationship between variables of working capital management and profitability of sugar manufacturing firms in a similar way Garcia - Truel and Martinez – Solaro (2005) provide empirical evidence about the effects of working capital management using a sample of 8,872 small and medium sized Spanish firms from 1996 – 2002, the generalized least square and correlation analysis was used. The study provides evidence that managers can create value by reducing their firm's number of days accounts receivable and inventories. Adediran (2002) investigate the impacts of working capital management on the profitability of a sample of 30 small and medium size Nigerian firms, covering the single period of 2009. Using the multiple regression analysis; the results show the presence of heterogeneity.

### **2.3.2 Relationship between Profitability and Liquidity of Working Capital Management**

Profitability and liquidity are two very important financial metrics to all businesses and should be given increased emphasis to maintain them at desirable levels. Profitability is a degree to which the company earns profits; liquidity is ability to swiftly convert assets into cash (Dili, 2017). In Pakistani Rafiq (2016) examine the relationship between two ratios of the financial statement profitability and liquidity in the banking sector on Standard Chartered Bank, using correlation and regression, the study found a weak positive relationship between liquidity and profitability.

Asian (2015) assess the impact of liquidity and profitability ratios on growth of profit in pharmaceutical firms in Nigeria and Egypt; eight ratios, acid test, current ratio, net profit ratio were regressed against the dependent variables growth of profit. Results indicate a significant contribution of all the variables to profit growth of pharmaceutical companies. Anas and Muhammad (2015) also examine the relationship between the investment in current assets and profitability as well as liquidity for industrial companies listed on Amman Stock Exchange the study found a relationship between investment in current assets and profitability,

Profitability and liquidity are the two terms which are most widely watched by both the investors and donors in order to gauge whether the business is doing good or not, liquidity means firms' ability to meet claims and obligations as and when they become due, it implies convertibility of current assets ultimately into cash, it is measured by the following ratios, current ratio and liquidity. On the other hand, profitability of a firm is represented by the rate of return on the capital employed). Shivakuma and Rabitha (2015) assess the conceptual insight into working capital management so as to determine the impact of liquidity and profitability of India coal Ltd. Correlation and Spearman rank method has been applied. The study covers the year from 2010 – 2015. The study indicates weak correlation and negative relationship between liquidity and profitability. Also a study done by Ibrahim and Fahema

(2013) provides empirical ideas on the directional effect of working capital management and liquidity as well as profitability of level manufacturing firms listed on the PEX (Palestine stock exchange) over the period 2007 – 2013, using units test, cointegration and two-step Eagle and granger method with error correction model, the findings shows that there is a bidirectional casual relationship between working capital management and profitability, and a unidirectional casual relationship running from liquidity to profitability. In Kenya, a study done by Wambui (2013) establish the relationship between profitability and the liquidity of commercial banks, taking from a sample of all 44 commercial banks in Kenya operating from 2008 – 2012, with the use of descriptive statistics and regression analysis, the study found a positive relationship between profitability and liquidity of Commercial banks in Kenya Vallalnathan and Joriye (2013) investigate the impact of working capital management on the profitability of cooperative unions in East Showa, Ethiopia. The quantitative research approach was employed to accomplish the objectives of this study. The secondary data were collected from eight sample cooperative unions in East Showa, Ethiopia that fulfil the criteria of the data availability from the financial statement of the unions during the period from 1999-2003 Ethiopian Calender (E.C.). Random effect multiple regression model was used to analyse the panel data for the standard determinants of working capital. The Generalized Least Square (GLS) estimator was used as an efficient estimator for the Breusch Pagan test. The most relevant impact of working capital management on profitability of the unions employed based on a sequential regression approach with two alternative specifications of the models. The results showed that Average Collection Period (ACP) has a negative effect on the profitability of the unions and also indicated that as the unions decreased, ACP has increased the profitability of the unions. The results from regression Inventory Turnover Period (ITP) has a positive effect on the profit of the unions and also revealed that the comprehensive measure of WCM i.e. Cash Conversion Cycle (CCC) showed a positive effect on the

profitability. This was to mean that as the union increases, a period for cash conversion leads the unions to more profit. The regression results also indicated that there was a positive relationship between liquidity, which was measured by Current Ratio (CR), and profitability of the unions. The results showed a significant positive relationship between the size of the unions and its profitability and a positive relationship between debt used by the cooperative unions and its profitability. The results also delivered some insights on the impact of WCM on profitability of the unions in East Showa zone, Ethiopia.

In Nigeria, Faris (2011) also provide the relationship between the Aggressive/Conservative working capital policies for 59 industrial companies listed at the Nigerian stock exchange for a period of 2004-2007, cross –sectional regression models was employed, the result indicates a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policy.

In another dimension, Nurazieena (2005) provide empirical evidences on how to achieve profitability and liquidity needs of company, the study found a significant negative relationship between profitability and the average collection period, average age of inventory average payment period and cash conversion cycle among Pakistani companies listed on Karachi Stock Exchange. In Saudi Arabia, Ejelly (2004) examine the relationship between profitability and liquidity on a sample of Joint Stock Companies, using correlation and regression analysis, the study found negative relationship between the firm's profitability and liquidity level.

### **2.3.3 The need for a Balanced Working Capital Management**

Working capital is a daily necessity for businesses as they require a regular amount of cash to make routine payments, cover unexpected costs and purchase basic materials used in production of goods. It is believed that the managers of working capital are to strike a balance between having too much and inadequate working capital, the two concepts should be

avoided, there are no formulae to determine the quantity and quantum of working capital that should be held by firms, we only advocate for a balanced working capital management, In Nigeria, Eva (2016) examine the impacts of working capital management on firms performance using Nestle Food PLC as a sample for the period of 2004 – 2013, the study made use of ordinary least squares, and regression the study revealed the positive relationship between current ratio, quick ratio and return on assets. In the works of Daniel and Amos (2014) they seek to investigate the relationship between working capital management and organizational performance using a sample of 13 manufacturing firms in Eldoret Municipality of Vasin Gishus Cunty in Kenya, correlation and regression analyses were used for the analysis, the results revealed that working capital management is negatively correlated with returns on assets. In Nigeria, Ukaeghu (2014) examine the relationship between working capital efficiency and corporate profitability of manufacturing firms in Egypt, Kenya, Nigeria and South Africa, for the period of 2005 – 2009, using balanced panel data and quantitative approach the study found a strong negative relationship between profitability measured through net operating profit, and cash conversion cycles across different industries measure of WCM i.e. Cash Conversion Cycle (CCC) showed a positive effect on the profitability.

#### **2.3.4 The Management of Working Capital Variables (Cash Conversion Cycle, Account Inventory Turn-over, Current Ratio and Account Payables and Account Receivables, as well as Credit Turnover)**

Wang, Min and Jan (2016) examine whether the two working capital management variables namely; the cash conversion cycle as well as the days of payable outstanding and states of sales outstanding have any significant effects on firms profitability and operating performance on 539 stocks listed on the Taiwan Stock Exchange from 2008 – 2015 The study demonstrates a significant negative relationship between the cash conversion cycle and performance indicators. In another study, Nagz (2016) investigates the relationship between the length of



cash conversion cycle, firms size, firm profitability and aggressive conservative working capital policies of twelve industrial groups, the study employed descriptive analysis, pearson correlation and analysis of variance, the sample quoted from the 157 public limited companies listed on the Karachi Stock Exchange (KSE) for the year 2009. The results shows a significant and positive relationship between firms' aggressive investing policies and conservative financing policies, and cash conservative cycle has negative relationship with sales revenue, return on equity. Seyed and Esmail (2016) examine the relationship between inventory management and company performances on inventory management on a textile chain store in Malaysia. The study also proves that there has been a significant relationship between return on assets and inventory days. In China, Junaid, Shimming and Muhammad (2016) analyse the inventory turnover's impact on the performance variables of profit margin presented and sales surprise in one of the retailing firms of Hubei province, using multiple correlation there is a negative correlation between inventory turnover on profit margin percentage, while positive correlation exists between inventory turnover and sales surprise across all categories and modes.

In Kenya, Kilonzo, Memba and Njeru (2016) determine the effect of accounts receivable management on firm's financial performance to explore the moderating effect of political environment on a firm's financial performance, with a sample of 24 ventures funded by Government capital. Both descriptive and inferential analysis was used and the results show a positive relationship between accounts receivables and financial performance of firm's founded by Government Moodley ,Ward and Muller (2016) also studied the relationship between management of payables and the return to investors, this study adopted a buy – and – hold port-folio methodology to an extensive database of Johannesburg Stock Exchange for the period 1986 to 2014, regression analysis was used and the results show positive relationship between accounts receivables and financial performance of firms funded by government

venture capital Onaolapo and Kajola (2015) examine the determinants of working capital requirements of thirty non-financial firms listed on the Nigerian Stock Exchange between 2004 and 2011. The data was analysed using the Panel data Ordinary Least Squares (OLS) estimation technique. The study adopted the working capital requirement (firm's net working capital deflated by total assets) as the dependent variable. The results indicated that five explanatory variables - leverage, size, industry classification, return on asset and operating cycle are significant factors that determine the firms' working capital requirements for the period under study. The findings support that working capital management has effect on firm profitability which is consistent with financial theory. In India, Sauraldn and Rakesh (2015) examine the determinates of inventory performance measures of trading firms across various product segments using a sample of 407 trading firms for the period 2000 – 2013, panel data regression techniques is employed for analysis, the study found that inventory turnover ratio is negatively correlated to gross margin, positively correlated with sales with capital intensity and company size. In Nigeria a similar study done by Duru and Okpe (2015) examine the effect of cash conversion cycle on the performance of Health care companies on a sample of 3 selected companies the method of generalized least square, multiple regression were used for data analysis, and the results show that cash conversion cycle and debt ratio have negative but significant effect on the profitability of Health care while sales growth rate had positive and significant effects on those companies under study.

Nyamweno and Olweny (2014) determine the effect of working capital management on performance of firms listed at the Nairobi Securities Exchange in Kenya. A sample of 27 listed firms was used for the period 2003 to 2012. The study employed a Robust GMM applied to Arellano-Bover/Blundell-Bond linear dynamic panel-data estimation analysis. The results revealed that days of accounts receivables and cash conversion cycle have an indirect effect on performance measured by gross operating profit. Days of accounts payables and

days in inventory have a significant and direct effect on performance. Inflation and size were found to have indirect and direct effect on performance respectively. Although not significant, they cannot be ignored by finance managers who wish to boost performance. ANOVA results confirm that various sectors have varying and somewhat same averages of working capital. Therefore industry averages should not be ignored when setting working capital management policies in Kenya.

Kamau and Ayuo (2014) investigate the relationship between working capital management (given by cash conversion cycle, CCC) and organizational performance (represented by profitability/returns) of manufacturing firms in Eldoret Municipality of Uasin Gishu County, Kenya. A sample of 13 manufacturing firms in the region was used in the study. Historical data on financial performance was collected from the annual financial statements of the sampled firms for a period spanning ten years. More data was also obtained from the managements of these firms through interview schedules and questionnaires. Performance was measured in terms of return on assets and return on equity while cash conversion cycle, current assets to total assets and current liabilities to total assets were used as measures of working capital management. Correlation and regression analysis were used for the analysis. The findings reveal that the working capital management is negatively correlated with return on assets (ROA) and return on equity (ROE) consisting the R values of -0.148 and -0.231 respectively. However, these figures are low, implying that there is no significant relationship between CCC and performance measures used in the study. The regression coefficients of cash conversion cycle (CCC) relating to return on assets (ROA) and return on equity (ROE) were -0.007 and -0.018 respectively. This confirms the negative relationship between working capital management and performance measures. Hamid and Zahra (2014) evaluate the effect of inventory turnover on the variables of gross profit margin and sales shocks in listed companies in Tehran Stock Exchange, a sample of 9 companies for the year indicates

significant inverse relationship between the variables of gross profits margin and inventory turnover, the result also indicates no significant relationship between variables of sales shock and inventory turnover. Onodje (2014) determine whether the internal financial activity of working capital management affects the performance of 75 manufacturing firms quoted on the Nigerian Stock Exchange using three alternative regression methods, namely; fixed effects, random effects and on-step effects (GMM), the findings of the study show that receivable conversion period, inventory conversion period are directly or positively related to manufacturing performances.

Mwangi, Makau and Kosimbei (2014) investigated the effect of working capital management on the performance of non-financial companies listed in the Nairobi Securities Exchange (NSE), Kenya. The study employed an explanatory non-experimental research design. A census of 42 non-financial companies listed in the Nairobi Securities Exchange, Kenya was taken. The study used secondary panel data contained in the annual reports and financial statements of listed non-financial companies. The data were extracted from the Nairobi Securities Exchange hand books for the period 2006-2012. The study applied panel data models (random effects). Feasible Generalised Least Square (FGLS) regression results revealed that an aggressive financing policy had a significant positive effect on return on assets and return on equity while a conservative investing policy was found to affect performance positively. The study recommended that managers of listed non-financial companies should adopt an aggressive financing policy and a conservative investing policy should be employed to enhance the performance of non-financial companies listed in Kenya. In Swed, Darush and Peter (2014) investigate the impact of cash conversion cycle on the performance of Swedish small and medium-sized enterprises (SMEs) over the period 2008 – 2011, the findings of the study show that cash conversion cycle significantly affects profitability and company size. A similar study was carried out in Kenya by Mathuva (2013)

who seek to examine the firm, time, industry and economy-level, on a sample of 341 firms (composed of a sample of 28 non-financial quoted firms) on the Nairobi security exchange for the period 1996 – 2008, results of the finding show that inventory holdings are influenced by the firm's ability and generate internal resources.

In another study from Kenya, Mwangi (2013) examined the relationship between working capital management and financial performance of manufacturing firms listed on Nairobi Stock Exchange. The study adopted both descriptive and quantitative research design on a population that constituted all manufacturing companies quoted at the NSE for the period of five years from 2007 to 2011. With the help of regression models, the study found out that inventory turnover in days has negative relationship with Return on Equity which means that companies' financial performance can be increased by reducing inventory in days. Cash Conversion period and Net payment period shows significant negative relation with Return on Equities showing that firms' financial performance can be increased with short size of both of them.

Sudia (2013) also examined the impact of cash conversion cycle on the performance of 32 manufacturing firms selected randomly from three manufacturing sectors (chemical, automobiles, construction and materials) for the period of 5 years from 2006 – 2010, the correlation and regression analysis were used to examine relationship of cash conversion cycle with performance of the firms the study found that the average collection period of accounts receivables, inventory conversion period and cash conversion cycle have negative relationship with firms performance.. Seyed & Esmail (2013) attempts were made to establish the relationship between working capital management and profitability of 147 listed companies on Tehran Stock Exchange for the period of 2005 – 2009, the variables of working capital management such as cash conversion cycle (CCC), the current ratio (CR), Current assets, Total assets ratio, current liabilities were considered, multivariate regression and

pearson correlation were used, the results review a negative significant relationship between cash conversion cycle (CCC), return on equity, and relationship between current ratio and return on equity is insignificant.

Madishetti and Kibona (2013) investigate the impact of average collection period and average payment period on SMEs profitability In Tanzania. The study is carried out using dependent variable as gross operating profit and independent variables as average collection period and average payment period employing relevant information of 38 Tanzanian SMEs, for the period from 2006 to 2011. The study employed Regression analysis to determine the impact of average collection period and average payment period on gross operating profit taking current ratio, size of the firm, financial debt ratio as control variables. The results indicate that there is a significant negative relationship between average collection period and profitability. Positive relationship is observed between average payment period and gross operating profit. The relationship between two control variables viz; current ratio, financial debt ratio and gross operating profit indicate the expected negative relationship whereas the firm size indicate unexpected negative relationship which may be due to gaps in managerial performance.

Similarly, Ogundipe, Idowu and Ogundipe (2012) conducted a study to examine the impact of working capital management on the performance and market value of companies. The study used Tobin Q, ROA, EBIT, and ROI as the dependent variables while the independent variables were cash conversion cycle; current ratio; current asset to total asset ratio; current liabilities to total asset ratio; and debt to asset ratio. The study adopted correlation and multiple regression analysis techniques for data analyses. The results showed that significant negative relationship between cash conversion cycle and market valuation and a firm's performance.

In a study conducted to determine the effect of working capital management on profitability of Indian firms, Sharma and Kumar (2011) used a sample of 263 non-financial firms listed on the Bombay Stock Exchange during 2002 to 2008. Data were analysed using OLS multiple regression. The result revealed that working capital management and profitability was positively correlated in Indian companies. The study further revealed that inventory number of days and number of day accounts receivable and cash conversion period exhibit a positive relationship with corporate profitability. Similarly conversion cycle (CCC), the current ratio (CR), Current assets, Total assets ratio, current liabilities were considered, multivariate regression and pearson correlation were used, the results review a negative significant relationship between cash conversion cycle (CCC), return on equity, and relationship between current ratio and return on equity is insignificant of working capital management on profitability of Indian firms, Chring, Novazzi and Gerah (2011) examine the relationship between working capital management and profitability in Brazilian listed companies. Their objectives were of two folds, to investigate if there was any difference between corporate groups of companies: working capital intensive and fixed capital intensive, and to identify the variables that mostly affect profitability. The profitability was measured in three different ways: return on sales (ROS), on asset (ROA) and on equity (ROE). The independent variables were cash conversion efficiency, debt ratio, days of working capital days receivable and days in inventory. Two samples were obtained consisting of 16 Brazilian listed companies in each group for the period 2005 – 2009. Multiple linear regressions have identified that, as far as ROS and ROA are concerned, to manage working capital properly is equally relevant for the two groups of companies. Relevant in the company profitability in the fixed capital group as opposed to the working capital group it was evident that days in inventory has negative relationship with ROS and ROA but has no statistical evidence in ROE improvement in working capital intensive group (positive relationship). While debt ratio was the only variable

that affects ROA (negative relationship). These results showed that regardless of the type of company, whether working capital or fixed capital intensive, managing working capital properly is equally important. Moreover, managing inventory as well as cash conversion efficiency to an optimum level will yield more profit in the working capital intensive type of company, while two other different variables create more profit in fixed capital intensive type of the company.

Muchina and Kiano (2011) in their study analyze the influence of working capital management on firms' profitability in Kenya. They used fixed panel data of 232 firms. The result indicated that the average debtor day, stock turnover period and the cash conversion cycle significantly affect the profitability of the firms. They found out also that the manufacturing firms are in general facing problems with their collection and payment policies. Moreover, the financial leverage, ratio of current asset to current liability and firm size also have significant effect on the firm profitability. The study also concluded that SMES in Kenya are following conservative working capital management policy and payment policy. They suggested that the effective policies must be formulated for the individual component of working capital and that efficient management and financing of working capital (current assets and current liabilities) can increase the operating profitability of manufacturing firms. For efficient working capital management, specialized persons in the field of finance should be hired by the firms for expert advice on working capital management in the manufacturing sector.

Samiloglu and Demirqunes (2008) analyze the effect of working capital management on firm profitability. In accordance with the aim, they considered between firm profitability and the components of statistically significant relationship between firm profitability and the components of cash conversion cycle at length, a sample consisting of Istanbul stock exchange (ISE) listed manufacturing firm for the period of 1998 – 2007 has been analyzed



under a multiple regression model. Empirical finding of the study showed that accounts receivable period inventory period and leverage affect firm profitability negatively while growth (in sales) affects profitability positively. In Greece, Lazaridis and Tryfonidis (2006) used a sample of 131 companies listed in the Athens Stock Exchange for the period of 2001-2004 to examine the relationship between corporate profitability and the cash conversion cycle variables. The independent variables employed include fixed financial assets, the natural logarithm of sales, financial debt ratio, cash conversion cycle and its components – day's inventory, days receivable and day's payable. Profitability as the dependent variable was measured by gross operating profit. The results from OLS regression analyses showed a negative relationship between cash conversion cycle, financial debt and profitability, while fixed financial assets have a positive coefficient. When cash conversion cycle was replaced with accounts receivable and inventory, it was found negative relationship exist with profitability; the opposite occurred with accounts payable. The study thus concludes that firms can create more profit by handling correctly the cash conversion cycle and keeping each different component to an optimum level. A study by Enyi (2005), examine the relationship between the operational size of the firm and the adequacy of the working capital requirements in Nigeria. A relative solvency ratio greater than one was considered to be adequate for working capital level requirements relative to the operational size of the firms. The data has been collected from the annual published reports of 25 companies listed in Nigeria Stock Exchange together with the interviews of selected officials of the firms. T-test has been applied to compare the relative solvency ratio and return on capital employed as the performance measure of firms having relative solvency ratio greater than one with those that were less than one. The results indicated that firms having relative solvency ratio greater than 1 i.e. adequate working capital relative to its operational size perform better than firms who have inadequate working capital.

The effect of Working Capital Management on firm profitability has been widely studied across countries and industries. One of the studies is Deloof (2003) who investigate the relationship between working capital management and firm profitability on 1009 large Belgian non-financial firms for the period of 1992 to 1996. The study adopted a correlation and regression tests and found a significant negative relationship between gross operating income and the number of days accounts receivables, inventories and accounts payable of Belgian firms. Based on the findings he noted that managers could create value for their shareholders by reducing the number of day's accounts receivable and inventories to a reasonable minimum.

### **2.3.5 Cash Management and Profitability**

AL-Smirat (2016) examined empirically the cash management practices and its effect on the financial performance of SMEs in Jordan. To meet the objective of the study, the researcher sampled firms operating in various sectors of economic activity. A structured questionnaire was used to collect primary data from the respondents which were analyzed to generate frequencies and percentages. The study revealed that only (32) percent from SMEs kept track of Cash Receipts and payment and the majorities (67%) of respondents have no knowledge about cash control procedures. The study concluded that cash management practices have influence on the financial performance of SMEs. The researchers recommend the need for SME managers to embrace efficient cash management practices as a strategy to improve their financial performance.

Njeru, Ondabu and Tirimba (2015) carried out a study which sought to explore the effect of cash management on financial performance of deposit taking in Mount Kenya Region. The target population was all the thirty licensed deposit taking in Mount Kenya Region, the sampling technique employed was simple random sampling and the sample size was 92 respondents. This study adopted a descriptive survey in soliciting information on effects of

liquidity management on financial performance of deposit taking in Mount Kenya region. Primary quantitative data was collected by use of self-administered structured questionnaires. The researcher also used secondary data derived from the audited financial statement and the regulator (SASRA). The data collected was analyzed, with respect to the study objectives, using both descriptive and inferential statistics. The researcher concluded that there is need to introduce cash management controls there is need to better strengthen the role of SASRA and increase its awareness, there is need to introduce credit management policy and finally increase the monitoring role of the government through its regulator in the sector since the sector plays a critical role on the achievement of vision 2030 and improved economic development of the members.

Harnza, Mutala and Antwi (2015) undertook a study to assess cash management practices and its effect on the financial performance of SMEs in the Northern Region of Ghana. The study adopted a descriptive cross-sectional survey research design which allowed the collection of primary quantitative data through structured questionnaires. The target population was 1000 owner managers of SMEs. Stratified random sampling technique was used to obtain a sample of 300 SMEs comprising 164 trading 26 manufacturing, 10 hairstyling, 62 dressmaking, and 38 carpentry enterprises. The data was analyzed using both descriptive and inferential statistics. The study revealed that SME financial performance was positively related to efficiency of cash management (ECM) at 1 per cent significance level. The study concluded that cash management practices have influence on the financial performance of SMEs, hence there was need for SME managers to embrace efficient cash management practices as a strategy to improve their financial performance and survive in the uncertain business environment.

Danjuma, Umar, Hammawa (2015) carried out a study which attempts to establish the relationship that exists between capital structure, cash management and liquidity in some

selected small and medium enterprises in Jimeta, Adamawa State, Nigeria. A total of 365 copies of questionnaire were administered to 366 small and medium scale enterprise but a total 310 copies of questionnaire were returned fully and appropriately filled. The study made use of both primary and secondary method in collecting data. A cluster sampling method was used in this study and purposive sampling was also used to choose units of analysis in all clusters. Descriptive and inferential statistic such as frequencies mean, and standard deviation including Pearson's correlation coefficient, multiple regression and OLS test were employed to obtain results. The results indicate that there is a positive significant relationship between capital structure and cash management, capital structure and liquidity, liquidity and cash management. The study recommends that financial officers exercise caution while choosing the amount of debt to use in their capital structure since a positive relationship exist between capital structure, liquidity and cash management.

Onyemaobi (2014) carried out a study to ascertain the relationship between cash management and financial performance of some selected firms in the manufacturing sector in Nigeria. The research examined the relationship between Cash conversion cycle, cash conversion efficiency of manufacturing firms' profit margin and return on investment. Four hypotheses were formulated; correlation and linear regression were conducted in testing the hypotheses. The ex-post facto and analytical research designs were employed in the study. The time series data covering a period of eleven (11) years (2000-2010) and cross sectional data of seventeen (17) firms were utilized to carry out analyses to validate the result obtained. The result confirms the negative relationship between cash conversion cycle and cash conversion efficiency of manufacturing firms. This implies that the profitability of manufacturing firms increases with shorter cash conversion cycle. A probable explanation to this finding is that when the cash conversion cycle is relatively shorter, the firm may not need external financing, which results in incurring less borrowing cost. Hence, profitability increases. It

was therefore recommended that in order to increase returns on investment, manufacturing companies in Nigeria should ensure efficient cash management both in the short term and in the long run. In addition, it was suggested that in order to increase profitability, manufacturing firms in Nigeria should avoid under capitalization and under trading.

Uwuigbe and Egbide (2012) sought to investigate empirically the relationship between cash management and profitability in listed manufacturing companies in Nigeria. Cash conversion cycle is used as the measure for cash management as used in Raheman and Nasr (2007). Current ratio, debt ratio and sales growth were used as control variables. This study utilizes secondary data while Pearson's correlation and regression analysis were used in analyzing the data for a sample of 15 listed manufacturing companies in Nigeria between 2005-2009. The results of the empirical findings show that there is a strong negative relationship between cash conversion cycle and profitability of the firms. It means that as the cash conversion cycle increases it will lead to decreasing profitability of the firms. The study therefore recommends that managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level and also accounts receivables should be kept at an optimal level. This study will also help companies in Nigeria see the need for cash management techniques.

### **2.3.6 Receivables Management and Profitability**

Mbula, Memba and Njeru (2016) sought to establish the effect of accounts receivable management on financial performance of firms funded by Government venture capital in Kenya. The study's objective was to determine the effect of accounts receivable management on firms' financial performance and explore the moderating effect of political environment on a firm's financial performance. The target population comprised all firms (24) funded by government venture capital in Kenya. The study adopted a census approach because of the small number of firms questionnaires were formulated and used to collect primary data for the

independent variables while a record survey sheet was used to collect secondary data for the dependent variable. Both descriptive and inferential analyses were done as well as regression analysis was used and the results show there is a positive relationship between accounts receivables and financial performance of firms funded by government venture capital in Kenya (0.038). Accounts receivable explain 25.7% of the financial performance of firms funded by government venture capital in Kenya while the variation of 74.3% is explained by other factors. The study recommend that managers in the firms funded by government venture capital should put in place good credit policies to enhance efficient management of accounts receivable thereby improve on their financial performance.

Okpe and Duru (2015) examined the effect of the management of accounts receivable on the profitability of building materials/chemical and paint companies in Nigeria. The data were collected from the Annual Reports of the companies under study. The hypotheses were tested using multiple regression technique. At the end of the study, the results showed that accounts receivable had positive and significant effects with the profitability ratio at 1% levels of significance. This means that unit increase in the variables shall bring about corresponding increase in the profitability ratio of the Building/Chemical and paint companies in Nigeria. Both Debt ratio and sales growth rate had negative and non-significant effect on these companies.

Madishetti and Kibona (2013) investigated the impact of average collection period and average payment period on SMEs profitability In Tanzania. The study is carried out using dependent variable as gross operating profit and independent variables as average collection period and average payment period employing relevant information of 38 Tanzanian SMEs, for the period from 2006 to 2011. The study employed Regression analysis to determine the impact of average collection period and average payment period on gross operating profit taking current ratio, size of the firm, financial debt ratio as control variables. The results

indicate that there is a significant negative relationship between average collection period and profitability. Positive relationship is observed between average payment period and gross operating profit. The relationship between two control variables viz; current ratio, financial debt ratio and gross operating profit indicate the expected negative relationship whereas the firm size indicate unexpected negative relationship which may be due to gaps in managerial performance.

Denić-Mihajlov (2013) investigated how public companies listed at the regulated market in the Republic of Serbia manage their accounts receivables during the recession times. A sample of 108 firms is used, which are the most successful Serbian firms listed at the Prime and Standard Listing as well as the Multilateral Trading Platform of the Belgrade Stock Exchange. The accounts receivables policies are examined in the crisis period of 2008-2011. In order to explore the relationship between accounts receivables and firm profitability, the short-term effects are tested. The study shows that between accounts receivables and two dependent variables on profitability, return on total asset and operating profit margin, there is a positive but no significant relationship this suggests that the impact of receivables on firm's profitability is changing in times of crisis.

### **2.3.7 Inventory management and profitability**

Prempeh (2016) investigated the Impact of Efficient Inventory Management on Profitability of selected Manufacturing Firms in Ghana .The study design was cross sectional. The study employed the use of secondary data. Cross sectional data from 2004 to 2014 was gathered for the analysis from the annual reports of four manufacturing companies listed on the Ghana Stock Exchange. Judgmental sampling was used to select the four companies and only manufacturing companies listed on the Ghana Stock Exchange (GSE) whose data was up to date were considered. Measures of profitability were examined and related to proxies for efficient inventory management by manufacturers. The Ordinary Least Squares (OLS) stated

in the form of a multiple regression model was used in the data analysis. The study revealed that there is a significantly strong correlation between the main variable, raw materials inventory management and profitability of manufacturing firms in Ghana and it is positive. Therefore, efficient management of raw material inventory is a major factor to be considered by Ghanaian manufacturers in enhancing or boosting their profitability

Etale, Paymaster and Bingilar (2016) analyzed the effect of inventory cost management on Profitability of listed brewery Companies in Nigeria. Inventory cost management proxy by raw materials cost, work in progress cost and finished goods cost was regressed against profitability proxy by gross profit margin. Secondary time series data was collected from the annual reports and accounts of selected brewery companies from the Nigeria Stock Exchange from 2005 to 2014. A multiple regression technique to analyse the data obtained from NSE. The study revealed that efficient inventory cost management have positive influence on the profitability of brewery companies in Nigeria. Based on the findings, the study recommended that brewery companies should adopt effective and efficient inventory cost management practices; deploy appropriate modern technology for effective inventory cost management; and employ capable and qualified staff who should be trained regularly on proper and efficient inventory cost management.

Mwangi and Nyambura (2015) carried out a study aimed at determining the role of inventory management on performance of food processing Companies in Kenya. This study used descriptive research design. Using stratified random sampling design, the researcher selected 110 respondents on whom he conducted the study. The study used a questionnaire to collect primary data. The data was summarized and categorized according to common themes. Descriptive statistics was employed to analyze the data. A multiple regression model was applied to determine the relative importance of each of the variables with respect to performance of food processing companies in Kenya. The findings of the study shows that a



unit increases in maintaining production will lead to an increase in the scores of the performance of food processing company. The study recommends that inventory management should be well articulated, there should be a good management on cost control such as carrying cost, ordering cost as well and maintain production should be managed to meet demand, increase production turnover and identify opportunity.

Sitienei and Memba (2015) carried out a study on the effect of Inventory Management on Profitability of Cement Manufacturing Companies in Kenya. Inventory is a vital part of current assets mainly in manufacturing concerns. Huge funds are committed to inventories as to ensure smooth flow of production and to meet consumer demand. However, maintaining inventory also involves holding or carrying costs along with opportunity cost. Inventory management, therefore, plays a crucial role in balancing the benefits and disadvantages associated with holding inventory. Efficient and effective inventory management goes a long way in successful running and survival of a business firm. Given the milestone contribution of the Cement manufacturing firms to the economy of Kenya, this research is necessary to evaluate the effects of inventory management on the profitability of the Cement manufacturing firms in Kenya. A cross sectional data from 1999 to 2014 was gathered for the analysis of the annual reports for the three sampled firms listed at Nairobi Securities Exchange (NSE). The ordinary least squares (OLS) stated in the form of a multiple regression model was applied in the data analysis to establish the relationship between inventory management and firm's profitability; The variables used include inventory turnover, inventory conversion period, Inventory levels, storage cost, size of firm, gross profit margin, Return on assets and growth of firm. The results provide a negative relationship between inventory turnover, inventory conversion period and storage cost with profitability of the company. In addition, inventory level was found to be directly related to firm's size and storage cost. The study recommends that the Cement-manufacturing firms in

Kenya should strive to ensure that the right stock is kept in their warehouses to hedge against excessive holding cost and stock-outs.

Nwosu (2014) examined the impact of materials management on the profitability of Nigeria brewing firms. The purpose of the study is to investigate whether there is effective and efficient materials management in Nigeria brewing firms and the extent to which it has contributed to their profitability. The population of this study is 4648 being the total staff strength of Nigeria Breweries and Guinness Nigeria PLCs, and a sample size of 368 was selected. Materials inventory, Materials procurement, materials storage and interdepartmental collaboration were adopted as sub variables of materials management while profit before tax, return on equity, earnings per share, tax paid and dividend paid was used as profit indicators to ascertain the profitability of organizations under study. Questionnaire and oral interviews were major instrument used in data collection and simple percentages were used in analyzing the data collected from the questionnaire the findings were made: that materials procurement has a significant effect on the profitability of brewing firms; that materials storage has significant effect on the profitability of brewing firms; that materials inventory has a significant contribution to the profitability of brewing firms; and that interdepartmental collaboration significantly contributed to the profitability of brewing firms. Based on the above findings, the study therefore concludes that effective materials management is indispensable to brewing firms in making profits. However, the study recommended that all manufacturing firms should embrace effective and efficient materials management in order to remain profitable. management should be well articulated, there should be a good management on cost control such as carrying cost, ordering cost as well and maintain production should be managed to meet demand, increase production turnover and identify opportunity.

Anichebe and Agu, (2013) studied the effect of Inventory Management on Organizational Effectiveness in Emenite, Hardis & Dromedas and the Nigeria Bottling Company all in Enugu, Enugu State. Descriptive research method, especially survey and case study were employed in carrying out the study. The population of the study is six hundred and fifty eight (658). A sample size of two hundred and forty eight (248) was derived using the Tarn Yamene formula for sample size determination from a finite population. Data were generated using questionnaire, oral interviews, observations, books, journals and the internet. Data were presented in tables and analyzed using simple percentages. Pearson product moment correlation coefficient and linear regression was use, it was discovered that irrespective of the fact that the organizations studied, painted the picture that they were applying the tenets of good inventory management, they from time to time run into the problems of inventory inadequacy. This consequently affected their production, leading to the scarcity of one brand of their products or the other, thereby affecting their profitability and consequential effectiveness negatively. The Findings indicate that there is significant relationship between good inventory management and organizational effectiveness. Inventory management has a significant effect on organizational productivity. There is highly positive correlation between good inventory management and organizational profitability. The study concluded that inventory Management is very vital to the success and growth of organizations. The entire profitability of an organization is tied to the volume of products sold which has a direct relationship with the quality of the product Against this background the study recommended that Organizations should diversify their inventory system to suit specific needs of production, and that management should closely monitor and manipulate their inventory system to maintain production consistency for organizational profitability and effectiveness.

Panigrahi (2013) conducted a study to study in depth the inventory management practices of Indian cement companies and its impact on working capital efficiency. The purpose of the

study is to examine the relationship between inventory conversion period and firms profitability. The dependent variable, gross operating profit is used as a measure of profitability and the relationship between inventory management and profitability is investigated for a sample of five top Indian cement companies over a period of ten years from 2001-2010. This study employs Regression analysis to determine the impact of inventory conversion period over gross operating profit taking current ratio, size of the firm, financial debt ratio as control variables. The results indicate that there is a significant negative linear relationship between inventory conversion period and profitability. The results of this research are in line with the previous findings. The findings indicate that Inventory conversion period has an inverse relationship with firm's profitability i.e. when the ICP days increase the "profitability of firm decreases and vice versa. It was found that, the firms" profitability as measured by GOP has a negative relationship with financial debt ratio. This implied that profitability increases with decrease in financial debt ratio. Furthermore in this study the relationship between the firm size and GOP was positive which indicates that profitability increases with an increase in firm size. The relationship between current ratio and the GOP was negative.

Working capital management efficiency is vital for manufacturing firms, where a major part of the assets is composed of current assets (Home & Wachowitz, 2004). One of the major components of working capital is inventory. The inventory of a manufacturing company comprise of finished goods, work in progress and raw materials. The sum of the three components of the inventory constitutes a heavy investment in a manufacturing firm. Current assets for a typical manufacturing company account for over half of its total assets (Raheman & Nasr, 2007).

### **2.3.8 Summary of Literature**

The aim of this study is to examine the effects of Working capital management on the profitability of firms – a study of selected manufacturing firms in Nigeria in doing so chapter two provided the conceptual and theoretical foundation as well as empirical evidence for the study, various theories were discussed and one theory adopted.

Several research works of authors around the world as well as locally were reviewed from the literature review over 70% were focused on other countries and 30% in Nigeria. The variables used in most cases were working capital management variables.

### Webometrics

Author And Date	Scope	Variable employed	Tools used	Findings
Sudi, A & ali Farok etal (2016)	Turkey from (1996-2014)	Cash, networking capital, short term bank credits, Total Bank credits, total Assets and Long term Bank credits.	Financial tools and aggregate, ratios of the business	Cash to cash equivalent and networking capital have impact on the level of bank credits in the long term
Jamina .J. (2017)	Poland from 2009-2014 construction company listed on New connect market	Stock turnover. (in days, receivable turnover (days, share of current liabilities	Authors own calculations	The study shows that in the analyzed period in the management of current assets moderate strategies dominate while in management or short term liabilities, they were aggressive strategies
Resit .C, Bahar .B, & omer .S. (2015)	Turkey 1996-2014 REALNET Working capitals of small medium and large-scale firms	Dependent variables real networking capital independent variables, Real Net Sales, Interest Rate, PP1, USD Percentage change	Descriptive study	Inflation and exchange rate decreases in networking capital, medium and large scale firms increases in dollar exchange rate.
Shamsaldin .J &Tossein .S. (2015)	Tehran 2008-2013 corporate governance	Accounts payable, cash conversion cycle, cash holdings current ratio and management efficient variable & independence are size of the board of directors, independence of the board of directors members, directors	Descriptive study	Corporate governance mechanisms play an important role in improving the efficiency of working capital
Taghizadeh K,	Tehran 2006-2009	Average collection	Multi-regression	The increase in

Ghanavati, E, & Akhori (2012)	concept and the sales of fin-mgt& library studies	period, inventory turnover, Average payment period	model	collection period, payments, period and net trading will lead towards reproduction of the probability in the company.
Farrah W A & Othman C. (2015)	Malaysia 2010-2013 (SME)	Performance index, utilization index, efficiency index	Descriptive study	The selected SME company were less efficient in managing their working cape among the study period
Zhen, Duau .L & Shou .C. (2012)	At specific industry	Dependent variable scales grown independence variable working capital (liquidly) assets turnover, inventory, and cash conversion cycle).	Linear regression based on dynamic panel data	Working capital turnover ability has positive effect on product market competition performance while enterprise working liquidity has a negative relationship with market completion performance
Zhao .B & Wijewardana ()	Sri Lakan 2002-2006	Perform on Assets, Leverage total assets, turnover, current assets	Multiple regression	The efficient types of working capital policy practices affect the firm liquidity, efficiency profitability and capability usage
Ani W.U, Okwo I.ra & Ugwunta D.O (2014)	Top five beer brewery firms in the world 2000-2011 Nigeria	CCC, sales growth, Lesser debtors collection period	Multiple linear regression	WCM have impacts on beer brewery firms profitability
Kwkanya N. (2012)	Thailant (2007-2009) CCC, receivables collection period, inventory conversion period & pacarles deferral period were regressed against gross operating profit	CCC, receivable collection period inventory conversion period and payables	Regression analysis	Negative relationship gross operating profits and inventory conversion period and the receivable collection period
IkpeFanri O. A & Owolabi F. (2014)	Nigeria (r2008-2012) Nestle & Cadbury Nigeria	Quick ratio current ratio trade receivable collection and trade payment periods	Correlation and regression analysis	Negative relationship between the liquidity and a positive relationship between the liquidity, efficiency ratios and return on equity
Makori D.M & Jagongo A. (2013)	Kenya (2003-2012) manufacturing & construction	ACP, ICP, APP, CCC	Pearson correlation and least quick regressions	Negative relationship between profitably and no of days accounts receivable and CCC

			model	but a positive relationship between profitability and no of days inventory and numbers of days payable
Salman, A.Y, Folajin O.O & Oriowo A.O (2014)	Nigeria 2005-2013	ROH, ROE, CCC, CATU, CATAR	Pearson correlation moment coefficient & multiple regression	WC has negative and significant relationship ROA and ROE.
Asghar A. & Syed A.A (2012)	Pakistan Textile, Chemical and Engineering sector	Working capital total assets profit	Ordinary least square	positive impact of working capital on total assets of the firms
Sumatui I. (2016)	2008-2014 cement manufacturing	CCC inventory conversion period, average accounts collective period and average accounts payable period	Linear regression models	positive relationship between inventory conversion period, average payment period with profitability and a negative relationship and average collective period and firm probability
Snoberj & Velontrasina M.Z (2014)	Pakistan cement industry 2006-2011	Return on equity not return on assets and net operating profitability	Ordinary least square regression	Significant negative relationship between working capital policies on profitability of the firms
Sivaran Jani RS Kislari B (2016)	Indian 2011 to 2015 steel companies	Working capital operating cycle	Correlation, regression, and chi-square	Operating cycle and the profitability of the company and that both the cycle and profitability have a linear relationship
Erik R. (2012)	Industry-wise study of finish and swedish public companies	CCC, net trade cycle	Linear regression	The correlation between net trade cycle and cash conversion cycle to profitability is negative
Abenti E & Venkatewarlu (2016)	Ethiopia Eastern manufacturing sector	CCC, accounts receivable, number of days inventories, number of days inventory and number of days account payable	Pearsons correlation analysis	There is a significant negative relationship between accounts receivables and regression assets of firms under manufacturing
Muhammad U. (2012)	Pakistan 2006-2010, other food product of Pakistan except sugar industries	Average collection period , average payment period inventory turnover	Pooled least square regression and common effect model	positive effect of WCM on profitability and liquidity of firm

		in a days, cash conversion cycle, debt cash		
Agrim, A & Rahu C. (2015)	Indian market	Average inventor period, CCC debts collection period, creditors	Linear regression model	Average inventory creditor payment period and debtor collection period are the main determinant of Working capital
Acmpus B. & Michael H	Sweden certain company characteristics have impact on profitability	Days sales outstanding, Days inventory outstanding, Days payable outstanding, CCC	Correlation & regression	positive relationship between the CCC and profitability
Haithan W. & Maryann A (201)	UAE 1990-200	Optimal CCC, Optimal Net trade cycle and Optimal operating cycle	Generalized method of movement system estimation	An increase in quick ratio is negatively associated with the firm's performance
Cristea C & Cristea M. (2016)	Romanian manufacturing industry 2011-2015	Days inventory outstanding, Days sales outstanding, Days payable outstanding	Pearson correlation coefficient	Negative relationship between profitability means through return on assets cash conversion cycles
Garcia Truel-truel pry & Martinez-solano (2005)	Spanish small and medium-size companies 1996-2002	ROA, days accounts receivable, number of days of inventory and number of days accounts payable	Generalized least square, correlation	Managers can create value by reducing their firm's number of days accounts receivable and inventories
Marison & Surrud K (2012)	India fertilizer industry	Debtor turnover, Average Collections Period, Inventory working capital, Remove, creditor return, Average payment period, inventory period	Kruskal Wallis test and ratio	No significant variables exist in the respective five companies
Walter G. (2014)	Zimbabwe 2009-2013	ROA, DD, CD, ST, CC, CR, DAR 5	The regression analysis	Positive relationship between debtors' days and firm's profitability and also a negative relationship between current ratio and profitability
Bagher A.S, Farzad & Ali. F (2016)	Egypt, Kenya, Nigeria and South Africa. Capital structure and real investments policy among active and Bankrupt firms	Bankrupt, working capital management, capital structure and non-current investment (fixed)	T-test and SPSS	WCM, accounts payable period, account receivable period differ among active and bankrupt firms but inventory turnover period, cash turnover are not different
Asa Zzaman M. &	Bangladesh	Account receivable	Multiple	WCM and profitability



Tabassum (2014)	companies (2008-2012)	in days, inventory received able Account payable in cycle cash conversion cycle in days size grown	regression	are positively correlated inventory of number of days, number of days accounts receivable and cash conversion period are positively correlated.
Lawal A.A, Abida B.I & Oyewole >oM (2015)	Nigeria manufacturing	Inventory turnover a day, debtors collection period creditors payment period	Panel data least square method of regression	A significant negative relationship between components of W.C and profitability
Junaidid & Sanusi G. (2014)	Nigeria 2001 to 20110 specific cement	Inventory turnover, debtors collection period average payment period and cash conversion cycle	Panel data analysis, general least square regression, descriptive statistics and correlation	WC variables of inventory turnover, debtors collection period, average payment period and the cash conversion cycle significantly affect the profitability of quoted cement companies
Angahar P. A & Agbo A. (2014)	Nigeria 2002-2009 specific sector (Cement)	Number of days accounts receivable are outstanding, number of days inventory are hold, CCC	Descriptive statistics and multiple regression analysis	Insignificant negative relationship between the profitability of cement companies, Negative relationship between receive profitability of these cement companies and the number of days inventory are held.
Yusuf .A (2014)	Nigeria (2008-2013) manufacturing	Average collective period inventory period	Regression analysis	Average collection period and inventory conversion period were significantly negatively related to profitability
Soyemi AA & Olawale LS (201)	Nigeria brewery firms (manufacturing)	Days inventories cash conversion cycle & Net trace cycle	Ratios analysis	Inventories and debtors were very high in case of the Guinness Nigeria
Garnze Ahmet G.S & Emin H.C (20121)	Turkey firm 2002-2009 manufacturing inistanbul	Accounts receivable average days in inventories and accounts payable	Dynamic period data	Receivable control variable has a significant negative relationship with firm value and profitability of firms
Walter G. etal (2014)	Zimbabwe firm 2009-2013	Return of Assets, Debtors days creditors Davs, stock turnover, cash conversion cycle,	Panel data regression analysis	A negative relationship between creditors days and return on Assets

		current Ratwn		
Ebualum M & Dahu J.M (2012)	Singapore 2004 to 2011 Singapore as a development	MCA, CCC, RCP.ICP	Spear man correlation analysis OLS	Negative relationship between working capital management and return on Assets
Chemis K.P (2015)	Sugar manufacturing firms in Kenya 2008-2013	Average collection period inventory turnover in days, Average payment period, cash conversion cycle and current ratio	Pearson correlation and regression analysis	Significantly negative relationship between variable of WCM and profitability of sugar manufacturing firms in Kenya.
Leonidas Nelson S. & Pranas G. 2015	Zimbabwe (2009-2012) smart Bags limited manufacturing firm in multiple currencies	Average collection period cash conversion cycle, Average payment period, inventory turnover ratio	Pearson correlation	Weak negative correlation between the collection period, cash conversion cycle, Average payment period
Mid-Azadu-Aman & Tab assum (2014)	Bangladosh Textiles 2008-2012	Account receiveiable in days, inventory turnover in days. Accounts payable days, cash conversion cycle in days	Regression	WCM are positively correlated in Bargladesh. Textiles companies
Tekonons SM & Atseye FA (2015)	Nigeria 2000-2009	Return on cash conversion cycle liquidity, Account receivable liquidity	OLS	A strong negative relationship between WCM and profitability liquidity and positive and significant relationship with return on asset
Caria M.R, Hérique D & Isobel (2015)	Middle East & West Europe 2012-2013)	Return over reeivability turnover in Days, payable turnover in Days inventory turnover in Days, Cash conversion cycle	Correlation analysis	No significant relationship between inventory conversion analysis and return assets
RahemanA, Quagyums & Tahat A. (2011)	Pakistan 1998-2007 sector-wise	Cash conversion cycle, Net trade cycle receivable turnover in Days, inventory turnover in Days, payable turnover in Days, Return on total Assets	Ratio analysis	Sector=wise WCM performance exploration and refinery cement, fetlizer and oil and Gas marketing sectors are top based on both inventory turnover measuredWCM.
Godfred A.A (2013)	SMES 160 AIM listed SMEs 2005 to 2010	Account payable cash conversion cycle	Regression analysis	Company specific characteristic were found to have significant effect on A.M listed SME companies profitability

Bandera R.M.A & Wererakoon BY.K	2005-2009 Sri-Lankan companies	Aggressive investment policy conservative firale policy, conservative investment policy and aggressive finance policy moderate working capital management policy	Panel regression analysis	Significant negative relationship between working capital management practice, Economic value added
Hampus B Hriller gren (2014)	Sweden comparative studies for smaller firm of smaller firm of different sizes	CASH CONVERSION CYCLE, PROFITABILITY SIZE, DAYS inventory outanding, Days scale outanding	Correlation and regression analysis	Positive relationship between the cash conversion cycle and profitability
Samiloglu F. & Dermigries K. (2008)	Turkey 1998-2007	Accounts receivable period inventory period, cash conversion cycle, firm size firm growth leverage	Multiple regression	Account receivable period, inventory period and leverage affect firm profitability negatively
Soyemi A. b & Dawale L.S (2014)	Nigeria brewery company 2009-2013	Gross working capital turnover ratio, current ratio, total asset ratio and current liabilities	Ratios	Guinness Nigeria possessed usage amount of current assets than consolidated breweries
Shagufa N, Farlda K & Syed S.P (20)	The link among companies point and working capital management 2008-2012	Net profitability return on assets return on equity return on capability	Regression analysis	Significant impact on firms net profit merging return on assets and return on capital employed insignificant impact
Tran V.H (2015)	2009-2014 manufacturing case of vietNam	Cash conversion cycle, net trace cycle, average collection period, average inventory period, average payment and return on assets	Pearsons collection and fixed effects multiple regression analysis	Significant negative relationship between cash conversion cycle, net trade cycle, average payment period and return on assets
James U.M, Quadri A.L & Taiwo A.I (2014)	Nigeria 2003-2013 oil and gas firms in Nigeria	Cash conversion cycle, inventory turnover ratio, liquidity	Panel data	A significant relationship between components of working capital management of profitability

SOURCE: Author' Computation 2018

## 2.4 Research Gap

- i. This study focuses on the manufacturing firms in Nigeria. Nigeria's business environment significantly differs from other countries where similar research has been conducted in terms of culture, technological advancement, economic development, consumption pattern etc. Doing a study of manufacturing firms therefore, gives the researcher the opportunity of focusing on circumstances peculiar to the firms. This is the gap that this study fills in the existing literature, which is also what makes this research relevant. It is against this backdrop that this study seeks to examine the effect of working capital management on firm profitability of manufacturing firms in Nigeria from 1986 to 2016.
- ii. To the best of researcher knowledge, there are very limited works on manufacturing firm in Nigeria.
- iii. The variables of study for majority of the works did not adequately capture the number of days in account receivables, numbers of days account payables, number of days in inventory turnover, cash conversion cycle, current ratio, creditor turnover and return on investment.
- iv. The analytical method adopted in most cases for data are basically test for stationary, cointegration test regression analysis, granger causality and panel data series (Jamina, 2017), which used cointegration. Technique for Pakistani Studies Samathi, 2016, and Regression analysis (Taghizadeh, Ghanravati & Akhari, 2012).
- v. There were clear inconsistencies and disagreement in some of the results obtained by various researchers particularly when compared with a priori expectations (Abenet & Ventaleswer, 2016 and Agrim & Rahu, 2015).
- vi. To the best of researcher's knowledge majority of the works consulted on the effects of working capital management on the profitability of firms using variables like cash

conversion cycle, inventory turnover, current ratio, number of days Account payables, number of days account receivables and creditors turnover, in assessing the effect of profitability without making a study of one sector (a manufacturing firm in Nigeria)

Thus, this study will ride on the above issue observed gaps to cover the following

- i. Present a more current work on the subject (1986 – 2016) covering 30 years as earlier works covered a scope of 10 years to 15 years and add to existing literature.
- ii. Doing a study of selected manufacturing firms in Nigeria – which to the best of researcher's knowledge had not been previously done
- iii. Also include current ratio and creditor turnover among the variables as previous research did not it .

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

The study adopted the *ex-post facto* research design. The justification for the use of *ex-post facto* research design is that it is a systematic empirical study in which the researcher does not in any way control or manipulate independent variables and only existing data in official reports of firms are collected as the situation has already taken place (Asika, 2010) and Owumere (2012).

#### **3.2 Nature and Sources of Data**

The study relied on secondary data from statement of financial positions of manufacturing firms quoted on the Nigerian Stock Exchange for the period of thirty years from 1986 to 2016. The data for the study are obtained from the individual company published annual reports and statements of financial position. The data covers a period of thirty) years from 1986 to 2016.

#### **3.3 Population and Sampling Size**

The population of this study consists of one hundred and five manufacturing firms (105) quoted on the Nigerian Stock Exchange made of conglomerates(11) consumer goods (45) industrial goods (23), Health (21)Agriculture (5) The data is obtained from statements of financial position of the manufacturing firms listed, In addition firms that had continuously published their annual reports and financial statements over the period 1986 to 2016 are considered in the study. Further observation of items from the statement of financial position and statement of comprehensive income showing signs contrary to reasonable expectations are removed. The sample sizes are determined by data availability, specification, any firm without four years observation or four years missing variable are dropped from the sample

,sample size consists of twenty one manufacturing companies (21). The justification for the sample size is solely on the availability of the required data for the number of years

### **3.4 Description of Research Variables**

In line with the objectives and the hypotheses of the study, the dependent variables are profitability (Return on Investment) and the independent are working capital variables (Current Ratio, Days in Account payables, days in account receivable, days in inventory turnover, cash conversion cycle and creditors turnover). They are explained as follows;

1. Days in accounts receivables (DAR) is measured as the average of accounts receivable/sales x 365.
2. Days in accounts payables (DAP) is measured as the average of accounts payable/sales x 365. Days payables outstanding] is used to measure the working capital management efficiency.
- 3 Days in inventory (DINV) is used to determine inventory policy effectiveness, and is measured as the Inventory / cost of goods sold) x 365
- 4 Cash Conversion Cycle (CCC) is defined as the interval of time (days) required to convert a Naira invested in current assets into cash. It is calculated by adding the average period to collect to the average inventory period and subtracting the average period of payment; i.e., [(Days inventory outstanding + Days receivables outstanding) - Days payables outstanding].  
Cash Conversion Cycle (CCC) is measured as  $DAR + DINV - DAP$ .
- 5 ROI– Return on Investment is used to measure firm profitability.

### **3.5 Model Specification**

The model for this study is gotten from a selection of variables used in the works of Jamina (2017), Shamsaldin (2015), Sumathi (2016), Abenet & venkateswerlu (2016) and Agrim & Rahu (2015). In order to present the models in functional form in line with the objectives of

the study, the following is presented; the models earlier mentioned is adopted and additional variables are added,

$$ROI = \alpha + \beta_1 x_i + \mu \text{ -----(1)}$$

$$\begin{aligned} \text{Log}(ROI)_{it} = & \alpha + \beta_1 \log(CR)_{it} + \beta_2 \log(DAR)_{it} + \beta_3 \log(DAP)_{it} + \beta_4 \log(DINV)_{it} + \beta_5 \log(CCC)_{it} \\ & + \beta_6 \log(CT)_{it} + \lambda \log(1FS)_{it} + \lambda \log(2G)_{it} + \mu_{it} \text{ ----- (2)} \end{aligned}$$

Where

$$ROI = \text{Return on investment} = \frac{EBIT}{TA}$$

EBIT = Earnings Before Interest and tax

TA = Total Asset

$\alpha$  = Constant

$\beta$  = Coefficient of the explanatory variables

$\mu$  = Error term for firm i at time t.

$$C_{Rit} = \text{Current ratio for firm i at time t.} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

$$DAR_{it} = \text{Days in Account Receivables for firm i at time t.} = \frac{\text{Annual Sales}}{\text{Average Receivables Balance}}$$

$DAP_{it}$  = Days in account payables in firm i at time t. =

$$= \frac{\text{Debtors for Goods or service}}{\text{Purchases}} \times 365$$

$DINV_{it}$  = Days in inventory for firm i at time t =

$$= \frac{\text{Costs of Goods Sold}}{\text{Average Inventory}} \times 365$$

$CCC_{it}$  = Cash conversion cycles for firm i at time t =

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

$CT_{it}$  = Creditors turnover for firm i at time t =

$$= \frac{\text{Creditors}}{\text{Days / Months / Weeks within a year}}$$



## Purchases

Control variables

$FS_{it}$  = firm size for firm  $i$  at time  $t$

$G_{it}$  = Growth of the company for firm  $i$  at time  $t$

$\mu_{it}$  = Error term for firm  $i$  at time  $t$ .

### Estimation of the Model

#### Hypothesis One (Model 1)

$\log ROI_{it} = \alpha_0 + \alpha_1 \log CR_{it} + U_{it}$  .....3.1.1 (Normal/individual model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log CR_{it} + U_{it}$  .....3.1.2 (Pooled effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log CR_{it} + U_i + V_{it}$ ...3.1.3(Fixed effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log CR_{it} + \beta_2 \log ROI_{it} + \omega_{it}; \omega_{it} = \epsilon_i + V_{it}$  ....

3.1.4 (Random effect model)

#### Hypothesis Two (Model 2)

$\log ROI_{it} = \alpha_0 + \alpha_1 \log DAR_{it} + U_{it}$  .....3.2.1 (Normal/individual model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAR_{it} + U_{it}$  .....3.2.2 (Pooled effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAR_{it} + U_i + V_{it}$ ...3.3.3(Fixed effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAR_{it} + \beta_2 \log ROI_{it} + \omega_{it}; \omega_{it} = \epsilon_i + V_{it}$  ....

3.2.4 (Random effect model)

#### Hypothesis Three (Model 3)

$\log ROI_{it} = \alpha_0 + \alpha_1 \log DAPI_{it} + U_{it}$  .....3.3.1 (Normal/individual model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAPI_{it} + U_{it}$  .....3.3.2 (Pooled effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAPI_{it} + U_i + V_{it}$ ...3.3.3(Fixed effect model)

$\log ROI_{it} = \alpha_0 + \beta_1 \log DAPI_{it} + \beta_2 \log ROI_{it} + \omega_{it}; \omega_{it} = \epsilon_i + V_{it}$  ....

3.3.4 (Random effect model)

#### Hypothesis Four (Model 4)

$\log ROI_{it} = \alpha_0 + \alpha_1 \log DINV_{it} + U_{it}$  .....3.4.1 (Normal/individual model)

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{DINV}_{it} + U_{it} \dots \dots 3.4.2 \text{ (Pooled effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{DINV}_{it} + U_i + V_{it} \dots 3.4.3 \text{ (Fixed effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{DINV}_{it} + \beta_2 \log\text{ROI}_{it} + \omega_{it}; \quad \omega_{it} = \epsilon_i + V_{it} \dots$$

3.4.4 (Random effect model)

### Hypothesis Five (Model 5)

$$\log \text{ROI}_{it} = \alpha_0 + \alpha_1 \log\text{CCC}_{it} + U_t \dots \dots 3.5.1 \text{ (Normal/individual model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CCC}_{it} + U_{it} \dots \dots 3.5.2 \text{ (Pooled effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CCC}_{it} + U_i + V_{it} \dots 3.5.3 \text{ (Fixed effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CCC}_{it} + \beta_2 \log\text{ROI}_{it} + \omega_{it}; \quad \omega_{it} = \epsilon_i + V_{it} \dots$$

3.5.4 (Random effect model)

### Hypothesis six (Model 6)

$$\log \text{ROI}_{it} = \alpha_0 + \alpha_1 \log\text{CT}_{it} + U_t \dots \dots 3.6.1 \text{ (Normal/individual model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CT}_{it} + U_{it} \dots \dots 3.6.2 \text{ (Pooled effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CT}_{it} + U_i + V_{it} \dots 3.6.3 \text{ (Fixed effect model)}$$

$$\log\text{ROI}_{it} = \alpha_0 + \beta_1 \log\text{CT}_{it} + \beta_2 \log\text{ROI}_{it} + \omega_{it}; \quad \omega_{it} = \epsilon_i + V_{it} \dots$$

3.6.4 (Random effect model)

## 3.6 Method of Research Analysis

Descriptive statistics and inferential statistical techniques would be used to analyze the data.

Multivariate regression Model based on Cross sectional pooled data from the annual reports and other financial statements. Pooled panel data analysis, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects (Gujarati, 2003)

## 3.7 Techniques of Data Analyses

For the purpose of analyzing the data collected and drawing conclusion on the study, the following analyses techniques are employed;

1. Diagnostic/ Standard Tests
2. Test for Stationarity (Unit Root Test)
3. Regression Analyses

### 3.7.1 Diagnostic and Standard Tests

This test for the data behavior and goodness for the purposes of using them for the model estimation and will cover basic or descriptive statistics like skewness, kurtosis, normality, mean, median, variance, standard deviation etc. the mean, median and mode is used here to test the aggregative tendencies of the data set while variance, standard deviation, minimum and maximum would test spread and variability of the data sets.

The Jaque-Bera test for normality is conducted to confirm that the data is normally distributed. According to Jacque & Bera (1980) the null hypothesis is a joint hypothesis of the skewness being zero and the excess kurtosis being zero.

### **3.7.2 Test for Stationarity**

In carrying out this research work, this study used stationarity to test time series data. The statistical theory on stationarity is based on convergence theorems which assume that the data are stationary. In real life and with time series data, the assumption most often does not hold. This implies that the data are found to be non-stationary as opposed to stationarity assumption.

The problem of stationarity lies with the fact that spurious regression commonly arises where the non-stationary series are used. Analyses and decisions based on such assumption of correlation in the light of spuriousness would not be quite dependable.

The stationarity test is done using the Augmented Dickey Fuller (ADF) Test (Fuller, 1976; Dickey & Fuller, 1979) and the model is as follows:

$$Y_t = pY_{t-1} + e_t$$

Where  $p = 1$

However, we regress  $Y_t$  on its (one period) lagged value  $Y_{t-1}$  and find out if estimated  $p$  is statistically equal to 1.

### **3.7.3 Regression Analyses**

The Ordinary Least Square (OLS) method will be used as it captures the required robustness and flexibility required for a pooled data research work. Regression analyses is basically concerned with the study of the dependence of one variable (dependent variable) on one or more other explanatory or independent variables (regressors) with the view to finding out or estimating/predicting the mean or average value of the former in terms of known or repeated values of the latter (Gujarati & Porter, 2009).

In specific terms, regression analyses explains the variation in an outcome (dependent variable) Y, as it depends on a predictor (independent explanatory) variable X. It is a correlation based test. Correlation is one of the most common and useful statistics. It describes the degree of relationship between two variables.

The following statistical parameters will be deployed to interpret the results of the ordinary least square Regression equations:

### **R<sup>2</sup> test**

This is also known as the coefficient of multiple determination tests. It was used to determine the goodness of fit of estimated coefficients of the variables in the specified models. To adopt the rejection criteria, for the stated null hypotheses, the R<sup>2</sup> value for the estimated regression equation for each pair of our dependent and independent variable must be 50% and above to be significant.

Hence, the critical value will be determined at 5% level of significant.

### **Correlation Coefficients(R)**

To establish the degree of association between two variables, the correlation coefficient ( $r^2$ ) would be calculated. The correlation coefficient ( $r^2$ ) was chosen because it does not require an assumption of our sample being drawn from normal distribution as is required under the usual correlation coefficient.

### **F-Statistic**

This was applied to ascertain the overall significance of the model. The acceptance criteria for our null hypotheses of no significant relationship between the dependent and independent variables shall be based on the statement that “if the calculated is less than the critical F-value, we accept otherwise we do not accept the null hypotheses”.

The F value provides a test of the null hypotheses that the true slope coefficient is simultaneously zero. If the F value computed exceeds the critical value from the F table at the 5% percent level of significance, we reject the  $H_0$  (null hypothesis). Therefore the critical value will be based on 2 degree of freedom at 5% level of significance.

### **T-Statistic**

Which is also referred as student t-test was used to test for significance, to ascertain the statistical reliability of the coefficient in the specified models. We tested whether the estimated coefficient are significantly different from zero. T-statistics are applied to measure or judge the statistical reliability of the estimated individual regression coefficients. It is imperative to deploy the t-statistics where the sample size is below (30). The decision rule of the t-statistics (Bryant, 1960) is as follows:

- i) Where the estimated (calculated)  $t$  is greater than the critical  $t$  value of the null hypothesis ( $H_0$ ) is rejected and the alternate  $H_1$  is accepted, i.e  $t_c > t_1$ , and
- ii) Where the estimated (calculated)  $t$  is less than the critical value of table  $t$ , accept the null hypothesis  $H_0$ , and reject the alternate hypothesis,  $H_1$  i.e  $t_c < t_1$ , reject  $H_1$  and accept  $H_0$ .

### **Adjusted R-Square statistics**

This is also known as coefficient of determination. In statistics, this is used in the context of statistical models whose main purpose is the prediction of future outcomes on the basis of other related information. It is the proportion of variety in a data set that is accounted for by

the statistical model. It is a statistic that will give information about the goodness of fit of a model

### **Test for Serial Correlation**

In a time series or panel data model, this is correlation between the errors in different time periods. A series is said to be serially correlated where the data are correlated across time and the errors arise from adjacent time periods. It could either be positive or negative serial correlation:

$$\text{Corr}(u, u_s) \neq 0$$

A suspicion of serial correlation may be corrected using;

**The Durbin-Watson (DW) Statistics:** A test for first order autocorrelation, i.e. a test for whether a (residual) series is related to its immediately preceding values. One way to motivate the test and to interpret the test statistic would be in the context of a regression of the time  $t$  error on its previous value (Durbin & Watson, 1951).

$$U_t = \rho u_{t-1} + v_t$$

Where:  $u_t$  = Error term at time  $t$ ;  $\rho$  = Probability values;  $v_t$  = Variable at time  $t$ .

**The Breusch-Godfrey Statistics:** This is a joint test for autocorrelation that will allow examination of the relationship between the mean of the error term and its lagged values at the same time. The Breusch-Godfrey test is a more general test for autocorrelation up to the  $r^{\text{th}}$  order (Godfrey 1978, Pagan and Godfrey 1979)

When time series variables are non-stationary, it is interesting to see if there is a certain common trend between those non-stationary series. If two non-stationary series  $\mathbf{X}_t \sim \mathbf{I}(1)$ ,  $\mathbf{Y}_t \sim \mathbf{I}(1)$  has a linear relationship such that  $\mathbf{Z}_t = \mathbf{m} + \mathbf{a} \cdot \mathbf{X}_t + \mathbf{\beta} \cdot \mathbf{Y}_t$  and  $\mathbf{Z}_t \sim \mathbf{I}(0)$ , ( $\mathbf{Z}_t$  is stationary), then we call the two series  $\mathbf{X}_t$  and  $\mathbf{Y}_t$  are cointegrated.

Two broad approaches to/ test for the cointegration are Engel & Grange (1987) and Johansen (1988). Broadly speaking cointegration test is equivalent to examine if the residuals of

regression between two non-stationary series are stationary. For Engel-Granger test, regress  $Y_t$  on  $X_t$  (or vice versa), and use the residual to see if it is stationary (unit root test described above). If it is stationary two series  $X_t$  and  $Y_t$  cointegrated.

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

#### 4.1 Presentations of Companies' under Consideration

This chapter presents companies whose datasets collected and collated from the statement of financial position of various companies that are quoted on Nigerian Stock Exchange for the periods under study (1986-2016) The Company's data are attached as appendix and the companies considered for the study are presented in table 4.1. The companies cut across industrial sector, consumer goods, agricultural, health and conglomerate. In addition, the results of various econometric and statistical methods of estimations adopted in line with the objectives and aforementioned methodology of this work are also contained in this chapter. The tests of the formulated equations and hypotheses are also presented with conclusions drawn against the backdrop of the formulated models and a priori expectations. The various diagnostic, standard and validity tests conducted are shown with the main aim of vouching for the reliability of the used datasets and estimated models.

**Table 4.1 Companies Considered for the Study**

S/NO	NAME OF COMPANY	KIND OF COMPANY
1	ASHAKA CEMENT	INDUSTRIAL GOODS
2	AVON CROWCAPS CONTAINERS	INDUSTRIAL GOODS
3	SEVEN UP BOTTLING COMPANY PLC	CONSUMER GOODS
4	VITAFOAM NIGERIA PLC	CONSUMER GOODS
5	LAFARGE WAPCO PLC	INDUSTRIAL GOODS
6	NIGERIAN GERMAN CHEMICAL	INDUSTRIAL GOODS

7	UNILEVER PLC	CONSUMER GOODS
8	NESTLE NIG PLC	CONSUMER GOODS
9	CADBURY	CONSUMER GOODS
10	A. G. LEVENTIS	CONGLOMERATE
11	BERGER PAINT PLC	INDUSTRIAL GOODS
12	GUIN NESS PLC	CONSUMER GOODS
13	UAC NIG PLC	CONGLOMERATE
14	INTERNATIONAL BREWERIES PLC	CONSUMER
15	JOHN HOLT	CONGLOMERATE
16	GLAXOSMITHLINE	HEALTH
17	PHARMA-DEKO	HEALTH
18	EVANS MEDICAL PLC	HEALTH
19	OKOMU OIL PLC	AGRIC
20	LIVESTOCK	AGRIC
21	LEVENTIS	INDUSTRIAL GOODS

Source: Authors Compilation (See Appendix for companies Data)

#### 4.2 Data Analysis

The descriptive statistics will be done using the Jarque-Bera Normality test, which requires that for a series to be normally distributed; the histogram should be bell-shaped and the Jarque-Bera statistics would not be significant. This implies that the p-value given at the bottom of the normality test table should be greater than the chosen level of significance to accept the Null hypothesis that the series is normally distributed (Brooks, 2014).

**Table 4.2: Panel Descriptive Statistics**

	CCC	CR	CT	DAP	DAR	DINV	FS	ROI
Mean	10.37255	37.64617	6670971.	4149727.	3.344875	1362.992	0.846154	7.957948
Median	0.000000	0.867274	0.000000	0.000000	0.000000	0.000000	1.000000	0.179455
Maximum	2957.273	2229.246	4.34E+09	2.70E+09	684.1700	276253.5	1.000000	1521.607
Minimum	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Std. Dev.	120.1491	187.7002	1.70E+08	1.06E+08	33.22018	13660.07	0.361079	73.74433
Skewness	22.88662	7.071389	25.43622	25.43622	16.14545	15.85550	-1.918806	15.85531
Kurtosis	558.7724	60.34959	648.0015	648.0015	297.9397	288.4576	4.681818	295.1546
Jarque-Bera	8422325.	94493.58	11337489	11337487	2384204.	2234149.	475.4692	2338914.
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	6742.156	24470.01	4.34E+09	2.70E+09	2174.169	885944.7	550.0000	5172.666
Sum Sq. Dev.	9368836.	22865150	1.88E+19	7.26E+18	716223.7	1.21E+11	84.61538	3529409.
Observations	650	650	650	650	650	650	650	650

Source: Computation by author using E-view 9.5

The mean and median as well as the standard deviation for the panel data in table 4.2, for the study area shows even spread and variations for the series. The panel mean, median, maximum and Standard Deviation for all the variables show positive and healthy trend. Significantly, kurtosis which shows the degree of peakedness is also shown along with the skewness which is a reflection of the degree or departure from symmetry of the given series.



With a majority of the variables having kurtosis in excess of 3, there is strong evidence to believe they are mostly platykurtic. The Jarque-Bera and the probability of the pooled panel data show strong sign of normality considering the spread among the variables and a significant p-value of 0.0000 which is less than the chosen significant level of 5%. The implication of this is that the observed out-linear in the companies descriptive statistics have been corrected through the panel pool effect and the result from such a process can be adequately relied upon.

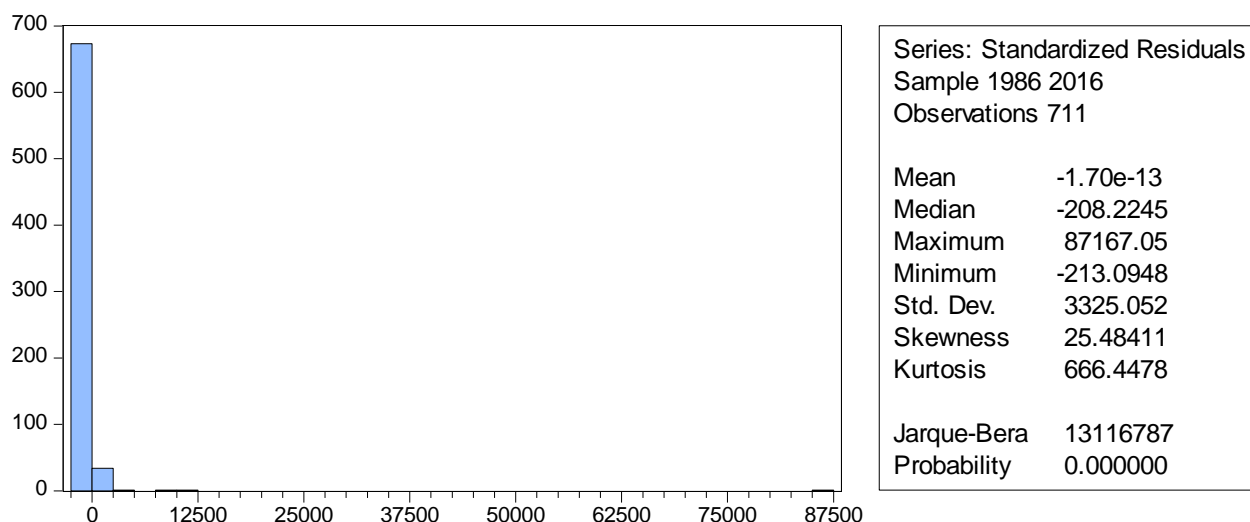
**Table 4.3: Panel Covariance Matrix**

	CCC	CR	CT	DAP	DAR	DINV	FS	ROI
CCC	14413.59321	373.474081	61576578.35	38306158.2	20.79411234	11626.923542	1.595036355	124.68205427
CR	088909	6901533	540009	3586048	313999	02256	47904	38428
CT	-	-	-	-	-	-	-	-
DAP	373.4740816	35177.1538	250138052.8	154541813.	50.49599028	362072.918455	4.74263705	269.74620341
DAR	901533	2993821	359958	4662192	626585	41591	08981	22656
DINV	-	-	-	1.79535648	-	-	-	-
FS	61576578.35	250138052.	2.887437251	6888163e+	22252589.68	8780222634.9	1026300.921	52766495.197
ROI	540009	8359958	3504e+16	16	21447	36209	386293	21964
CCC	-	-	-	1.11632039	-	-	-	-
CR	38306158.23	154541813.	1.795356486	8593857e+	13843116.72	5412666328.1	638412.3356	32821249.564
CT	586048	4662192	888163e+16	16	716444	62496	953699	9421
DAP	-	-	-	-	-	-	-	-
DAR	20.79411234	50.4959902	22252589.68	13843116.7	1101.882608	219044.66664	0.512524445	22.054056035
DINV	313999	8626585	21447	2716444	122816	12158	150023	57741
FS	-	-	-	-	-	-	-	-
ROI	11626.92354	362072.918	8780222634.	541266632	219044.6666	186310533.34	208.9080747	10045.460337
CCC	202256	4541591	936209	8.162496	412158	89473	690667	51716
CR	1.595036355	5.47426370	1026300.921	638412.335	0.512524445	208.90807476	0.130177514	1.2114253810
CT	47904	508981	386293	6953699	150023	90667	7928993	92378
DAP	-	-	-	-	-	-	-	-
DAR	124.6820542	269.746203	52766495.19	32821249.5	22.05405603	10045.460337	1.211425381	5429.8592910
DINV	738428	4122656	721964	649421	557741	51716	092378	81309
FS	-	-	-	-	-	-	-	-
ROI	-	-	-	-	-	-	-	-

Source: Computation by author using E-view 9.5

From table 4.3, covariance matrix table, the result indicates mostly negative relationship between the variables with regards to ROI but however the result prove significant linear covariance and relationship between ROI and CCC, CR, CT, DAP, DAR, DINV and FS at a range of 1.21% to over 52766495.197%. Similarly, significant covariance is observed between all the variables interchangeably.

**Figure 4.1: Panel data test for Normality**



Source: Computation by author using E-view 9.5

The histogram in figure 4.1 shows a one-sided bell-shape with Jarque-Bera and the p-value of the panel series significant at the 5% level of significance shows the presence of strong Normality in the distribution.

#### 4.2.2: Diagnostic Tests

The aim here is to carry out various diagnostic tests to ensure that our data and model used in this research work conforms to the basic assumptions of the classical linear regression. This will ensure that the output of this process is not error prone and is reliable.

##### 4.2.2.1: Test for Stationarity

The test for stationarity requires that the variables in the series model must be stationary at a given level and p-value must be significant at that level. Stationarity is attained where the test statistics is most negative and greater than the critical value of the chosen level of significance

**Table 4.4: Panel Unit Root Result**

Variables	LLandC Test Statistics	Critical Values @5%	P-value	Order of Integration
CCC	-16.069	-11.6087	0.0000	I(0)
CR	-27.393	-25.5168	0.0000	I(0)
CT	-13.706	-7.64159	0.0000	I(0)
DAP	-13.970	-8.37787	0.0000	I(0)
DAR	-15.861	-11.7783	0.0000	I(0)
DINV	-16.168	-12.2337	0.0000	I(0)
ROI	-16.419	-9.91780	0.0000	I(0)
FS	-14.466	-2.90887	0.0018	I(1)

Source: Author's E-view 9.5 Computation

The Table 4.4 shows the stationerity tests for the panel data series following the Levin, Lin and Chu (LLC) statistics. All the panel variables were found to be stationery at level (0) except FS that is stationary at first difference (1). At levels as reported, the variable p-value were all 0.0000 and less than the 5% chosen significance level and thus we reject the Null hypothesis of the presence of no stationarity and accept the alternative that there is stationarity. Thus, stationerity is attained by all the variables at the levels and first difference for FS.

#### 4.2.2.2: Test for Multicollinearity

**Table 4.5: Panel Correlation Matrix**

	CCC	CR	CT	DAP	DAR	DINV	FS	ROI
CCC	1	0.01658608 889189984	- 0.00301837 464911066	- 0.003019868 537858039	- 0.00521778 994279803	- 0.007095123 862992068	0.036822771 05597455	0.0140936515 8508226
CR	0.01658608 889189984	1	0.00784861 702861743	- 0.007798682	0.00811071 013312852	0.141431774 0876654	0.080896061 34159494	0.0195177928 4069359
CT	0.00301837 464911066	0.00784861 702861743	1	0.999999970 786069	0.00394508 730219233	- 0.003785563	0.016739807 25541339	0.0042141276 20116283
DAP	0.00301986 853785803	0.00779868 223295455	0.99999997 0786069	1	0.00394704 235211946	- 0.003753168	0.016747070 61701121	0.0042156679 23651348
DAR	0.00521778 994279803	0.00811071 013312852	0.00394508 730219233	- 0.003947042	1	0.483444155 8785798	0.042793610 73681713	0.0090162619 71098466
DINV	0.00709512 386299206	0.14143177 40876654	0.00378556 359205653	- 0.003753168	0.48344415 58785798	1	0.042419791 94535925	0.0099875013 49295716
FS	0.03682277 105597455	0.08089606 134159494	0.01673980 725541339	0.016747070 61701121	0.04279361 073681713	0.042419791 94535925	1	0.0455653166 4848158
ROI	0.01409365 158508226	0.01951779 284069359	0.00421412 762011628	- 0.004215667	0.00901626 197109846	- 0.009987501	0.045565316 64848158	1

Source: Computation by author using E-view 9.5

Table 4.6, shows a negative panel correlation of a maximum of 4.5% between ROI and the working capital variables. This implies that changes in working capital variables could result to negative changes in return on investment (ROI). The key findings signify that working capital has negative correlation with ROI.

### 4.3 Test of Hypothesis – Pooled Effect Output

The data for the selected study areas were pooled together to enable the researchers determine the optimum overall result for the variables of working capital management.

**Table 4.6: Pooled Effect Panel EGLS (E-views Generalized Least Square)**

Dependent Variable: ROI				
Method: Panel EGLS (Period weights)				
Date: 07/03/18 Time: 18:51				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (unbalanced) observations: 650				
Linear estimation after one-step weighting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	0.002580	0.002603	0.990943	0.3221
CR	-0.001179	0.001728	-0.682460	0.4952
CT	-3.65E-06	7.59E-06	-0.481301	0.6305
DAP	5.87E-06	1.22E-05	0.481284	0.6305
DAR	-0.001116	0.017745	-0.062880	0.9499
DINV	-2.21E-05	7.11E-05	-0.310855	0.7560
FS	1.762683	0.344593	5.115256	0.0000
C	5.66E-05	0.016100	0.003518	0.9972
Weighted Statistics				
R-squared	0.042774	Mean dependent var	13.18671	
Adjusted R-squared	0.032337	S.D. dependent var	52.40236	
S.E. of regression	53.15508	Sum squared resid	1813947.	
F-sssssxstatistic	4.098315	Durbin-Watson stat	1.151891	
Prob(F-statistic)	0.000204			
$\bar{C}$	Unweighted Statistics			
R-squared	-0.006830	Mean dependent var	7.957948	
Sum squared resid	3553515.	Durbin-Watson stat	1.570311	

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Source: Author's E-views 9.5 computation

The pooled effect model results in table 4.7, was carried out using Generalized Least square period weightings and the  $R^2$  and Adjusted  $R^2$  both showed 4.2% and 3.2% respectively. This shows that the chosen regression does not good fits. Hence, the goodness of fit panel regression model of 4.2% implies that the chosen explanatory variables do not explain variations in the dependent variables. The square of the correlation between the value of the dependent variable and the corresponding fitted values from the model. A correlation coefficient must be between -1 and +1 by definition. Hence, a low correlation of 4.2% implies that the model is unfit and thus provides a very poor fit to the data. Also, with an extremely low Adjusted  $R^2$  of 3.2% implies that the model cannot take on more variables conveniently without the  $R^2$  falling beyond 4.2%, which is very commendable. F-statistics of 4.098315 is considered low but good and significantly and it shows that there is significant positive relationship between the dependent and explanatory variables. The overall probability (F-statistics) of 0.000204 is rightly signed and highly significant. Thus, the Durbin-Watson of 1.570311 lends support to the fact that the result is reliable as outcome of this research work.

**Table 4.7: Fixed Effect Panel E-views Generalized Least Square (EGLS)**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 18:59				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (unbalanced) observations: 650				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	-0.004817	0.024862	-0.193757	0.8464
CR	-0.002595	0.017934	-0.144697	0.8850
CT	-6.40E-06	7.54E-05	-0.084956	0.9323
DAP	1.03E-05	0.000121	0.084708	0.9325
DAR	-0.047323	0.103743	-0.456158	0.6484
DINV	-2.14E-05	0.000257	-0.083398	0.9336
FS	0.979251	9.917805	0.098737	0.9214
C	7.570198	8.858292	0.854589	0.3931
Effects Specification				

Cross-section fixed (dummy variables)			
Period fixed (dummy variables)			
--			
R-squared	0.114925	Mean dependent var	7.957948
Adjusted R-squared	0.029707	S.D. dependent var	73.74433
S.E. of regression	72.64072	Akaike info criterion	11.49392
Sum squared resid	3123791.	Schwarz criterion	11.89341
Log likelihood	-3677.525	Hannan-Quinn criter.	11.64887
F-statistic	1.348595	Durbin-Watson stat	1.467259
Prob(F-statistic)	0.050436		

Source: Author's E-views 9.5 computation

Fixed Effect panel analysis was also carried out to compare the output of this panel data analysis obtained from the pooled data with the fixed effect. In table 4.8, The  $R^2$  and Adjusted  $R^2$  both showed porous 11.5% and 2.9% respectively. This shows that the chosen regression model does not show goodness of fits. Hence, the goodness of fit panel regression model of 11.5% implies that chosen explanator variables does not explain variations in the dependent variables based on the  $R^2$  of 11.5%. The square of the correlation between the value of the dependent variable and the corresponding does not also show good fit values from the model. This is stressed by the extremely low Adjusted  $R^2$  of 2.9% which implies that the model cannot take on more variables conveniently without the  $R^2$  falling beyond 11.5%, which is not commendable and not good for return on investment. F-statistics of 1.348595 is positive and significant and it shows that there is no significant positive relationship between the dependent and explanatory variables. The overall probability (F-statistics) of 0.050436 is well signed and significant and shows that working capital variables has significant relationship with return on investment in Nigeria. The Durbin-Watson of 1.467259 (approximately 1.5) is considered good and shows that the outcome of this academic exercise is very reliable.

However, we shall further subject the result of above test procedures to Redundant Fixed Effects Test for both the fixed effect model as a confirmatory test to determine whether fixed panel technique will be adopted for our analysis. The study couldn't go ahead to do the Correlation Random Effect- Hausman Test because the variables of the study showed to be

an unbalanced data for such test. Thus, the need to go ahead with the fixed effect study after pooled effect consideration.

**Table 4.9: Redundant Fixed Effects Test**

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section and period fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.277082	(20,592)	0.0013
Cross-section Chi-square	48.173421	20	0.0004
Period F	0.976175	(30,592)	0.5043
Period Chi-square	31.384381	30	0.3967
Cross-Section/Period F	1.498236	(50,592)	0.0174
Cross-Section/Period Chi-square	77.448266	50	0.0077

Source: Author's E-views 9.5 computation

The p-value associated with the test statistics in table 4.9 is significant at 0.0013 when compared to chosen significance level of 5%. Based on the significance of the test, the fixed effect panel techniques will be adopted for our panel data analysis.

### 4.3.1 Restatement of Hypothesis One

$H_{01}$ : Current ratio has no significant effect on return on investment of the Nigerian manufacturing firms.

$H_{i1}$ : Current ratio has significant effect on return on investment of the Nigerian manufacturing firms.

**Table 4.8: Result –Return on Investment using Panel EGLS test for Model 1**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:22				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR	-0.002523	0.017785	-0.141883	0.8872
FS	0.988786	9.864770	0.100234	0.9202
C	7.203716	8.816371	0.817084	0.4142
Effects Specification				

Source: Author's E-views 9.5 computation

From table 4.10, current ratio (CR) has a t-statistic value of -0.141883 and a p-value of 0.8872 which shows a negative effect and statistically insignificant effect on return on investment (ROI) at 5% level of significance since its p-value is well above 0.05. The result of the Firm Size (FS) showing t-statistics of 0.100234 with p-value of 0.9202 also signify a positively insignificant effect on ROI as a control variable. Thus, we accept the null hypothesis to reject the alternative.

This result is very instructive as levels of current ratios in the manufacturing firms in Nigeria shows negative and insignificant effect on return on investment in Nigeria at the 5% level of significance and indicates that a 1% increase in levels of CR will result to a 0.002523% decline in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that states that current ratio (CR) has no significant effect on return on investment of the Nigerian manufacturing firms and reject the alternative hypothesis.

#### 4.3.2 Restatement of Hypothesis Two

**H<sub>02</sub>:** There is no significant relationship between Account Receivables and Return on Investment of the Nigerian manufacturing firms.

**H<sub>2</sub>:** There is a significant relationship between Account Receivables and Return on Investment of the Nigerian manufacturing firms.

**Table 4.9: Result – Return on Investment using Panel EGLS test for Model 2**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:28				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DAR	-0.048344	0.090155	-0.536234	0.5920
FS	1.138310	9.860931	0.115436	0.9081
C	7.143813	8.809263	0.810943	0.4177
Effects Specification				

Source: Author's E-views 9.5 computation



From table 4.11, Account receivable (DAR) has a t-statistic value of -0.536234 and a p-value of 0.5920, which shows a negative and insignificant effect on return on investment (ROI) at 5% level since its p-value is well above 0.05. Therefore, we accept null hypothesis and reject the alternative.

Also, the firm size (FS) with t-statistic value of 0.115436 and p-value of 0.9081 also signify positively insignificant effect on ROI at the 5% level of significance. Though its presence acts as a moderating variable in the model, it does not have any significant effect on ROI. This result indicates that the coefficients of the past levels of DAR has a negative sign and decreasing effect on ROI at the 5% level of significance and the implication is that a 1% increase in account receivables will result to a 0.048344% decrease in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that there is no significant relationship between Account Receivables and Return on Investment of the Nigerian manufacturing firms and reject the alternative hypothesis

### 4.3.3 Restatement of Hypothesis Three

H<sub>03</sub>: Days in Account Payables have no significant effects on Return on Investment of the Nigerian manufacturing firms.

H<sub>3</sub>: Days in Account Payables have significant effects on Return on Investment of the Nigerian manufacturing firms.

**Table 4.10: Result – Return on Investment using Panel EGLS test for Model 3**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:36				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DAP	-2.83E-08	2.80E-08	-1.011348	0.3123
FS	0.801637	9.847824	0.081402	0.9351
C	7.384434	8.806575	0.838514	0.4021
Effects Specification				

Source: Author's E-views 9.5 computation

From table 4.12, account payable (DAP) has a t-statistic value of -1.011348 and a p-value of 0.3123 which shows a negative effect and statistically insignificant effect on return on investment (ROI) at 5% level of significance since its p-value is well above 0.05. The result of the Firm Size (FS) showing t-statistics of 0.081402 with p-value of 0.9351 also signify a positively insignificant effect on ROI as a control variable. Thus, we accept the null hypothesis to reject the alternative.

This result is very instructive as levels of current ratios in the manufacturing and in Nigeria shows negative and insignificant effect on return on investment in Nigeria at the 5% level of significance and indicates that a 1% increase in levels of DAP will result to a 2.8308% decrease in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that states that Days in Account Payables have no significant effects on Return on Investment of the Nigerian manufacturing firms and reject the alternative hypothesis.

#### 4.3.4 Restatement of Hypothesis Four

Ho<sub>4</sub>: Days in inventory Turnover does not significantly affects Return on Investment of the Nigerian manufacturing firms.

H<sub>4</sub>: Days in inventory Turnover significantly affects Return on Investment of the Nigerian manufacturing firms.

**Table 4.11: Result – Return on Investment using Panel EGLS test for Model 4**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:43				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DINV	-7.58E-05	0.000223	-0.340589	0.7335
FS	0.923420	9.854507	0.093705	0.9254
C	7.267395	8.816029	0.824339	0.4101
Effects Specification				

Source: Author's E-views 9.5 computation

From table 4.13, Inventory Turnover (DINV) has a t-statistic value of -0.340589 and a p-value of 0.7335, which shows a negative and insignificant effect on return on investment (ROI) at 5% level since its p-value is well above 0.05. Therefore, we accept null hypothesis and reject the alternative.

Also, the firm size (FS) with t-statistic value of 0.093705 and p-value of 0.9254 also signify positively insignificant effect on ROI at the 5% level of significance. Though its presence acts as a moderating variable in the model, it does not have any significant effect on ROI. This result indicates that the coefficients of the past levels of DINV has a negative sign and decreasing effect on ROI at the 5% level of significance and the implication is that a 1% increase in account receivables will result to a 7.5805% decrease in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that Days in inventory Turnover does not significantly affects Return on Investment of the Nigerian manufacturing firms reject the alternative hypothesis.

#### 4.3.5 Restatement of Hypothesis Five

H<sub>05</sub>: There is no significant relationship between Days in Cash Conversion Cycle and Return on Investment of the Nigerian manufacturing firms.

H<sub>5</sub>: There is a significant relationship between Days in Cash Conversion Cycle and Return on Investment of the Nigerian manufacturing firms.

**Table 4.12: Result – Return on Investment using Panel EGLS test for Model 5**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 21:26				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	-0.004928	0.024781	-0.198878	0.8424
FS	1.009452	9.863754	0.102340	0.9185
C	7.142409	8.811516	0.810577	0.4179

Source: Author's E-views 9.5 computation

From table 4.14 Cash Conversion Cycle (CCC) has a t-statistic value of -0.198878 and a p-value of 0.8424 which shows a negative effect and statistically insignificant effect on return on investment (ROI) at 5% level of significance since its p-value is well above 0.05. The result of the Firm Size (FS) showing t-statistics of 0.102340 with p-value of 0.9185 also signify a positively insignificant effect on ROI as a control variable. Thus, we accept the null hypothesis to reject the alternative.

This result prove levels of Cash Conversion Cycle in the manufacturing in Nigeria shows negative and insignificant effect on return on investment in Nigeria at the 5% level of significance and indicates that a 1% increase in levels of Cash Conversion Cycle will result to a 0.004928% decline in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that states that there is no significant relationship between Days in Cash Conversion Cycle and Return on Investment of the Nigerian manufacturing firms reject the alternative hypothesis.

#### 4.3.6 Restatement of Hypothesis Six

$H_{06}$ : Days in Creditors Turnover have no significant effects on Return on Investment of the Nigerian manufacturing firms.

$H_6$ : Days in Creditors Turnover have significant effects on Return on Investment of the Nigerian manufacturing firms.

**Table 4.15: Result – Return on Investment using Panel EGLS test for Model 6**

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 21:34				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (unbalanced) observations: 650				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

CT	-1.85E-08	1.74E-08	-1.062308	0.2885
FS	0.619090	9.848751	0.062860	0.9499
C	7.557467	8.805861	0.858232	0.3911
Effects Specification				

Source: Author's E-views 9.5 computation

From table 4.15, Creditors Turnover (CT) has a t-statistic value of -1.06208 and a p-value of 0.2885, which shows a negative and statistically insignificant relationship with return on investment (ROI) at 5% level of significance since its p-value is more than 0.05. Therefore, null hypothesis of no significant relationship is accepted thereby rejecting the alternative hypothesis.

Also, the firm size (FS) with t-statistic value of 0.062860 and p-value of 0.9499 also signify positively insignificant relationship with ROI at the 5% level of significance. However, its presence acts only as a moderating variable in the model and hence has no significant effect on ROI. This result indicates that the coefficients of the past levels of CT has a negative sign and decreasing effect on ROI at the 5% level of significance and the implication is that a 1% increase in creditor turnover will result to a 1.8508% decrease in return on investment (ROI).

**Decision Rule:** We accept the null hypothesis that Days in Creditors Turnover have no significant effects on Return on Investment of the Nigerian manufacturing firms and reject the alternative hypothesis.

#### 4.4. Discussion of Findings

This study examined the effect of working capital management on profitability of manufacturing firms in Nigeria from 1986 to 2016 with a view to affirming or refuting the nexus between working capital variables and return on investment in Nigeria. Following a detail theoretical review and empirical analyses, findings were made in line with the research questions as well as set and tested hypotheses. The study employed six models and used diagnostic tests namely – Unit root test, multicollinearity, normality, covariance, and

cointegration tests; panel data analysis represented in table 4.2 to 4.16. The findings are hereby discussed below in line with the objectives of this study.

### **Objective One**

**To ascertain the effect of Current Ratio on return on investment of the Nigerian manufacturing firms.**

The result of the panel data regression analysis revealed that Current Ratio has a negative and insignificant effect on Return on Investment of the Nigerian manufacturing firms. The study showed that past levels of current ratio has a negative (t-statistic of -0.141883) and insignificant effect with p-value of 0.8872 on Return on Investment of the Nigerian manufacturing firms at the 5% level of significance. The coefficient of the past levels of current ratio (CR) has a negative sign (-0.002523%) at the chosen level of significance. This implies that a 1% increase in past levels of CR will result to a 0.002523% decline on Return on Investment of the Nigerian manufacturing firms. The result of this study is consistent with the findings of Farrah, Noredi and Othman (2016), Zhen, Duan and Shou (2017) study of working capital on engineering product market competition performance in manufacturing industry, Kulkanya (2012) study of working capital management on profitability and Ikpefan and Owolabi (2014) study of the relationship between working capital management and profitability looking basically at Nestle Nigeria Plc and Cadbury Nigeria. It however contradict the theoretical foundation of Perking Order theory and also does not support our apriori expectation of a positive and significant effect. A plausible direct interpretation of this result is that the current ratio of manufacturing firms in Nigerian manufacturing companies providing organization have overtime been inefficient and has been below impactful threshold.

### **Objective Two**

**To determine the effects of account receivable on return on investment of the Nigerian manufacturing firms.**

The result of the panel data studies show that day in account receivable (DAR) has a negative and statistically insignificant effect on return on investment of the Nigerian manufacturing firms. The study showed that past levels of day in account receivable has a negative (t-statistic of -0.536234) and statistically insignificant effect (p-value of 0.5920) on value return on investment of the Nigerian manufacturing firms at the chosen 5% level of significance. The coefficient of the past levels of DAR has a negative sign (0.536234%) at the level of significance. This result indicates that the coefficient of the past levels of DAR has a negative sign and insignificant effect on return on investment at the 5% level of significance. This implies that a 1% increase in past levels of DAR will result to a 0.536234% decrease in return on investment of the Nigerian manufacturing firms. The result of this study is supported by the study of Lawal, Abiola and Oyedele (2015) study of the effect of working capital on profitability of selected Nigerian manufacturing companies, Ganze Ahmet and Emin (2012) study of the relationship between working capital management components and performance of 75 manufacturing firms listed on Istanbul Stock Exchange Market, Ibrahim and Datin (2012) study of the effect of working capital management on firms profitability in Singapore; all these studies found a negative and insignificant effect of DAR on profitability index used in their different studies. The finding of this objective contradicts the Perking Order theory and also does not support our apriori expectation of a positive and significant effect. Surprisingly, the result is similar to the earlier objective one, signifying that working capital variables in account receivable and current ratio affect return on investment insignificantly within the panel period considered for the study.

### **Objective Three**

**To evaluate the effects of account payable on return on investment of the Nigerian manufacturing firms.**

The result of the panel data analysis shows that day in account payable (DAP) has a negative and insignificant effect on return on investment of the Nigerian manufacturing firms. The study showed that past levels of DAP has a negative (t-statistic of -1.011348) and statistically insignificant effect (p-value of 0.3123) on return on investment of the Nigerian manufacturing firms at the 5% level of significance. The coefficient of the past levels of DAP has a negative sign (-1.011348%) at the chosen level of significance. This result indicates that the coefficients of the past levels of DAP has a negative sign and depressive effect on return on investment at the 5% level of significance. This implies that a 1% increase in past levels of DAP will result to a -2.8308% drop in return on investment of the Nigerian manufacturing firms. The result of this study is corroborated by the study of Leonidas, Nelson and Francis (2015) study of working capital management on the profitability of manufacturing firms in the multi current environment in Zimbabwe and Takon and Atseye (2015) study of the effect of working capital management on profitability of Nigerian 46 listed companies; these studies found a negative and insignificant effect of working capital variable on manufacturing firms profitability. The Perking Order theory does not seem to hold good in the Nigerian manufacturing firm's case and also runs at variance with our a priori expectation of a positive and significant effect. A reasonable direct interpretation of this result is that account payable of manufacturing firms is weighty and affects profitability in Nigeria. It shows that day in account payable in Nigerian profitability negatively within the period under consideration and companies used

#### **Objective Four**

**To ascertain the effects of the number of days in inventory turnover on return on investment of the Nigerian manufacturing firms.**

The result of the panel data regression studies show that inventory turnover (DINT) has a negative and insignificant effect on return on investment of the Nigerian manufacturing firms. The study showed that future levels of inventory turnover have a negative (t-statistic of



-0.340589) and statistically insignificant effect (p-value of 0.7335) on return on investment at the 5% level of significance. The coefficient of the future levels of DINT has a negative sign (-7.5805%) at the chosen level of significance. This implies that a 1% increase in future levels of DINT will result to a 7.5805% decrease in return on investment of the Nigerian manufacturing firms. The result of this study is consistent with the findings of Samiloglu and Deningine (2008) in their study of the effect of working capital management on firm profitability in Istanbul Stock Exchange, Tren (2015) study of the relationship between working capital management and profitability of 98 Chinese manufacturing firms and Meryem and Belouma (2011) study of the effects of working capital management on the profitability of 386 Tunisian companies; found a statistically insignificant effect of working capital variable in days in inventory turnover on manufacturing firms profitability. This Nigerian manufacturing firmsexperience seems to completely contradict the theoretical foundation of Perking Order theory and the outcome of this study does not agree with our Apriori expectation of a positive and significant relationship. A probable direct interpretation of this result is that the efforts of manufacturing firms working capital seems to unimpressively affect firms profitability in return on investment of the Nigerian manufacturing firms.

#### **Objective Five**

**To assess the effects of the number of days in cash conversion cycle on return on investment of the Nigerian manufacturing firms.**

The result of the panel data regression studies show that day in cash conversion cycle has a negative and statistically insignificant effect on return on investment of the Nigerian manufacturing firms. The study showed that past levels of cash conversion cycle (CCC) has a negative (t-statistic of -0.198878) and statistically insignificant effect (p-value of 0.8424) on return on investment of the Nigerian manufacturing firms at the 5% level of significance.

The implication of this result is that a 1% rise in the level of CCC will result to a 0.004928% fall in the return on investment. The coefficient of the past levels of CCC has a negative sign and has negative effect at the 5% significant level. The result of this study is consistent with the findings of Richard, Dadson and Peter (2013), Alory (2012) and Ajayi and Innocent (2015); all these studies found a statistically insignificant relationship between working capital variables and manufacturing firms profitability. This study however, extends our ineffective stands of working capital variables on profitability of manufacturing firms in Nigeria. This finding further dislodges the foundation of Perking Order theory and the outcome of this study also does not agree with our Apriori expectation of a positive and significant relationship.

A plausible direct interpretation of this result could be attributable to the fact that cash conversion cycle of manufacturing firms providing organization in Nigeria are highly poor and low to further production and service growth.

### **Objective Six**

**To determine the effects of the number of days in creditors turnover on return on investment of the Nigerian manufacturing firms.**

The result of the panel data regression studies shows that creditor's turnover (CT) has a negative but insignificant effect on return on investment of the Nigerian manufacturing firms. The study showed that future levels of creditor's turnover have a negative (t-statistic of -1.062308) and statistically insignificant effect (p-value of 0.2885) on return on investment at the 5% level of significance. The coefficient of the future levels of CT has a negative sign (1.8508%) at the chosen level of significance. This implies that a 1% increase in future levels of CT will result to a 1.8508% decrease in return on investment of the Nigerian manufacturing firms. The result of this study is consistent with the findings of Akindele and Odunina (2015) in their study of the relationship between working capital management and firm's profitability of Twenty five Nigerian quoted companies, Kioko and Sitienei (2015)

study of the effect of working capital management on profitability of cements manufacturing companies listed at the Nairobi Securities Exchange and Ajayi and Innocent (2017) also study the relationship between working capital and profit of retail companies; their studies found a statistically insignificant effect of working capital variable in days in creditors turnover on manufacturing firms profitability. Thus, Nigerian manufacturing firms experience completely contradict the theoretical foundation of Perking Order theory and the outcome of this study does not agree with our Apriori expectation of a positive and significant relationship. A probable direct interpretation of this result is that the efforts of manufacturing firms' working capital unimpressively and insignificantly affect firms' profitability in return on investment of the Nigerian manufacturing firms.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary of Findings**

The findings from the specific objectives of this study are as follows:

1. That Current Ratio (CR) has a negative and statistically insignificant effect on return on investment of the Nigerian manufacturing firms.
2. That day in account receivable (DAR) has a negative and statistically insignificant effect on return on investment of the Nigerian manufacturing firms.
3. That day in account payable (DAP) has a negative and insignificant effect on return on investment of the Nigerian manufacturing firms.
4. That inventory turnover (DINT) has a negative and insignificant effect on return on investment of the Nigerian manufacturing firms.
5. That day in cash conversion cycle has a negative and statistically insignificant effect on return on investment of the Nigerian manufacturing firms..
6. That creditor's turnover (CT) has a negative and insignificant effect on return on investment of the Nigerian manufacturing firms.

## **5.2 Conclusion**

This research work studied the effect of working capital management on profitability of manufacturing firms in Nigeria as postulated by Perking Order theory. The theory largely held that the manufacturing firms' profitability responds to efficient working capital management, which constituted the focus of this work. Arguments in favour of working capital management and manufacturing firms and contradictions to the postulations were also reviewed from theoretical and empirical literature. Even lines of argument which suggests that manufacturing firms profitability depends on direction, availability and management of working capital within the Nigerian economy, were also reviewed. Empirical analysis unbundled working capital variables (indicators) into current ratio, cash conversion cycle, day in account receivable, day in account payable, creditors turnover and inventory turnover in measuring their effect. The need to domesticate the study of this effects to the Nigerian

sector will contribute to current literature on subject, validate other scholars view point, use a more dynamic and robust analytical tool that captured the panel data time series nature of the data involved motivated this study. It was against the foregoing that the study chose a broad objective of examining the effect of working capital management on return on investment of manufacturing firms in Nigeria. The results emanating from our study proved that working capital management had insignificant effects on profitability on return on investment contrary to the perking order theory and apriori expectations. Also most working capital management variables exert negative and insignificant effect on return on investment in manufacturing firms and in Nigeria. In conclusion, based on the outcome of our study, we affirm that working capital management had insignificant effect on return on investment of manufacturing firms in Nigeria. This show that the working capital management where unable to drive the profitability of firms in Nigeria. The researcher envisaged the following Nigeria specific problems to have been responsible for the results namely high cost of production, improper planning and forecasting, poor power supply, poor storage facilities, generally frustration in doing businesses in Nigeria, high inflation rate, high exchange rate of naira to the dollar, increase in prices of fuel e.g from #97 to #145, the harrasment and recent herdsmen killings as well as boko haram insurgency, inconsistencies in government policies.

### **5.3 Recommendations**

In line with the objectives of this study, findings and conclusion, we summarize our recommendations as follows:

1. Firms managers should improve on their current ratio as well as their current liabilities
- 2 Managers of firms should ensure efficient management of account receivables by putting in place good credit policies that will enhance profitability

- 3 Firms' management should continue to emphasize and implement strong controls by reducing the average collection period inventory turnover in days net Trading Cycle and Average payment period to a possible minimum level.that will ensure effective and efficient working capital management systems.
- 4 Managers of firms should reduce the cash cycle in the industry in order to increase the net present value of their shareholders this is because lower cash conversion cycle can lead to increase in profits
- 5 There is need for a more efficient inventory management system in firms to reduce over stock of inventory resulting in inefficient outcome of return on investment. Managers should ensure prompt efficient inventory management system so as to reduce having inadequate and excessive inventory holding by diversifying inventory system that will meets the specific needs of production and maintain consistency in production..
- 6 The place of corruption in public office is central in Nigeria most often working capital rules are not obeyed, funds are either misapplied embezzled or stock are outrightly stolen, in this regard government's effort at curbing corruption should be sustained if manufacturing are to remain a going concern.
- 7 .proper measures that would guarantee security of life and investment be put in place to encourage manufacturing in Nigeria

### **5.3.1 Contributions to Knowledge**

The study empirically proves that working capital management on firms profitability in Nigeria which validates the objective of this study show the following;

1. This work contributes to current literature on subject by extending number of years used by other scholars from 10 to 20 years to 31 years (1986 – 2016).
2. This work further validates the findings of some Erudite researchers such as Akindele and Odunina (2015), Kioko and Sitienei (2015), Ajayi and Innocent (2017) and

Takon and Atseye (2015) that working capital management have no significant relationship with firms profitability in Nigeria.

3. Most reviewed literature employed a combination of, days in account receivable, days in account payable, cash conversion cycle and inventory turnover. This work employed all four variables and added current ratio and creditors' turnover to measure working capital.

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## APPENDIX 1

### Unit root using LLT test`Unit Root

Null Hypothesis: Unit root (common unit root process)							
Series: CCC							
Date: 07/03/18 Time: 17:44							
Sample: 1986 2016							
Exogenous variables: Individual effects							
User-specified lags: 1							
Newey-West automatic bandwidth selection and Bartlett kernel							
Total (balanced) observations: 609							
Cross-sections included: 21							
Method		Statistic			Prob.**		
Levin, Lin & Chu t*		11.6087			0.0000		
** Probabilities are computed assuming asymptotic normality							
Intermediate results on CCC							
Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU							
OILPALM	-0.84412	1.7095	0.1273	1	1	29.0	29
JULIUS							
BERGER	-0.76214	29.027	2.5252	1	1	29.0	29
A.G. LEVENTIS	-0.58269	36.591	5.9108	1	1	29.0	29
EUANS							
MEDICAL	-1.00534	1.1934	0.0810	1	1	29.0	29
NIGERIA-GERMAN							
CHEMICALS	-0.87934	0.2572	0.0183	1	1	29.0	29
LAFARGE							
AFRICA	-0.74184	3735.9	363.71	1	1	29.0	29
NESTLE							
NIGERIAN	-0.70240	9140.5	1007.9	1	1	29.0	29
UNLEVER	-0.99693	6.0247	0.4137	1	1	29.0	29
PHARMA DEKO	-0.46273	1.0607	0.1097	1	1	19.0	29
CADBURY							
NIGERIA	-1.11187	4.3250	0.3293	1	1	29.0	29
UAC NIGERIA	-1.08028	645.37	112.39	1	1	11.0	29
INTERNATIONAL							
BREWERIES	-1.03620	290031	19467.	1	1	29.0	29
LIVESTOCK							
FEEDS	-0.60039	1.1871	0.1227	1	1	29.0	29
GLAXOSMITHLI							
NE NIGERIA	-0.89420	545.73	64.431	1	1	17.0	29
ASHAKA							
CEMENT	-0.58003	348.44	34.098	1	1	27.0	29
AVON							
CROWCAPS							
CONTAINERS	-0.87246	1.3211	0.2337	1	1	11.0	29
GUINNESS							
NIGERIA	-0.86317	48.987	9.7322	1	1	11.0	29
BERGER							
PAINTS	-0.81870	0.0412	0.0170	1	1	4.0	29
JOHN HOLT	-0.98321	2.E-07	9.E-08	1	1	4.0	29
COSTAIN WEST							
AFRICA	-0.75794	0.0670	0.0061	1	1	29.0	29
LEVENTIS	-0.68149	78.921	7.3791	1	1	29.0	29

	Coefficient	t-Stat	SE Reg	mu*	sig*	Obs
Pooled	-0.78787	-16.069	1.009	-0.548	0.895	609

Null Hypothesis: Unit root (common unit root process)  
Series: CR  
Date: 07/03/18 Time: 17:47  
Sample: 1986 2016  
Exogenous variables: Individual effects  
User-specified lags: 1  
Newey-West automatic bandwidth selection and Bartlett kernel  
Total (balanced) observations: 609  
Cross-sections included: 21

Method	Statistic	Prob.**
Levin, Lin & Chu t*	25.5168	0.0000

\*\* Probabilities are computed assuming asymptotic normality

Intermediate results on CR

Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU							
OILPALM	-0.94274	79.196	9.6490	1	1	16.0	29
JULIUS							
BERGER	-1.39662	43625.	7796.0	1	1	29.0	29
A.G. LEVENTIS	-1.12466	30633.	2138.9	1	1	29.0	29
EUANS							
MEDICAL	-0.60344	50856.	6621.6	1	1	26.0	29
NIGERIA-							
GERMAN							
CHEMICALS	-1.15991	54.590	10.995	1	1	11.0	29
LAFARGE							
AFRICA	-0.35176	0.2693	0.0943	1	1	9.0	29
NESTLE							
NIGERIAN	-0.87740	8.9628	1.0059	1	1	29.0	29
UNLEVER	-1.05207	121.12	8.6765	1	1	29.0	29
PHARMA DEKO	-0.70478	6.1454	1.2648	1	1	13.0	29
CADBURY							
NIGERIA	-0.74187	60.189	194.38	1	1	29.0	29
UAC NIGERIA	-0.57482	8.9951	2.2033	1	1	29.0	29
INTERNATIONA							
L BREWERIES	-1.39922	2.5890	0.5392	1	1	11.0	29
LIVESTOCK							
FEEDS	-1.23283	204.17	24.488	1	1	19.0	29
GLAXOSMITHLI							
NE NIGERIA	-1.04064	49.809	39.626	1	1	4.0	29
ASHAKA							
CEMENT	-0.81346	131.38	15.002	1	1	19.0	29
AVON							
CROWCAPS							
CONTAINERS	-1.06034	21.995	2.2407	1	1	23.0	29
GUINNESS							
NIGERIA	-0.80281	197.75	38.497	1	1	12.0	29
BERGER							
PAINTS	-1.10531	104868	7165.5	1	1	29.0	29
JOHN HOLT	-1.00271	239566	36676.	1	1	21.0	29
COSTAIN WEST							
AFRICA	-0.70722	32.736	46.799	1	1	0.0	29

LEVENTIS	-0.93090	28.422	2.5073	1	1	24.0	29
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.78183	-27.393	1.033	-0.548	0.895		609

Null Hypothesis: Unit root (common unit root process)  
Series: CT  
Date: 07/03/18 Time: 17:49  
Sample: 1986 2016  
Exogenous variables: Individual effects  
User-specified lags: 1  
Newey-West automatic bandwidth selection and Bartlett kernel  
Total number of observations: 606  
Cross-sections included: 21

Method	Statistic	Prob.**
Levin, Lin & Chu t*	7.64159	0.0000

\*\* Probabilities are computed assuming asymptotic normality

Intermediate results on CT

Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU	-0.53234	39974.	28049.	1	1	7.0	26
OILPALM JULIUS BERGER	-0.42636	4887.8	3873.4	1	1	1.0	29
A.G. LEVENTIS	-1.07263	5.E+08	3.E+07	1	1	29.0	29
EUANS MEDICAL NIGERIA-GERMAN	-0.84998	460967	63498.	1	1	17.0	29
CHEMICALS LAFARGE	-0.94147	4.E+06	261129	1	1	29.0	29
AFRICA NESTLE NIGERIAN	-0.70541	1.E+07	2.E+07	1	1	0.0	29
UNLEVER	-1.06789	4.E+08	3.E+07	1	1	29.0	29
PHARMA DEKO	-0.19809	339007	246328	1	1	7.0	29
CADBURY NIGERIA	-0.38598	40543.	29088.	1	1	9.0	29
UAC NIGERIA	-0.43875	1.E+06	296858	1	1	11.0	29
INTERNATIONAL BREWERIES	-1.07407	6.E+17	4.E+16	1	1	29.0	29
LIVESTOCK FEEDS	-0.62505	610578	82752.	1	1	29.0	29
GLAXOSMITHLINE NIGERIA	-0.41262	6676.0	1343.1	1	1	13.0	29
ASHAKA CEMENT	-1.08793	2.E+07	1.E+06	1	1	29.0	29
AVON CROWCAPS	-0.84540	220265	39066.	1	1	12.0	29
CONTAINERS GUINNESS	-0.79245	1.E+06	1.E+06	1	1	1.0	29
NIGERIA BERGER	-0.70008	1.E+07	2.E+06	1	1	11.0	29
PAINTS JOHN HOLT	-0.66568	5.E+06	391676	1	1	29.0	29
COSTAIN WEST	-0.80858	628111	48604.	1	1	29.0	29
	-0.44918	1.E+07	1.E+06	1	1	21.0	29

AFRICA							
LEVENTIS	-0.77205	105186	9883.9	1	1	29.0	29
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.59955	-13.706	1.029	-0.549	0.901		606

Null Hypothesis: Unit root (common unit root process)  
Series: DAP  
Date: 07/03/18 Time: 17:54  
Sample: 1986 2016  
Exogenous variables: Individual effects  
User-specified lags: 1  
Newey-West automatic bandwidth selection and Bartlett kernel  
Total (balanced) observations: 609  
Cross-sections included: 21

Method	Statistic	Prob.**
	-	
Levin, Lin & Chu t*	8.37787	0.0000

\*\* Probabilities are computed assuming asymptotic normality

Intermediate results on DAP

Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU							
OILPALM	-1.04565	2.E+07	1.E+06	1	1	29.0	29
JULIUS							
BERGER	-0.59296	59248.	4792.9	1	1	29.0	29
A.G. LEVENTIS	-1.06771	2.E+07	1.E+06	1	1	29.0	29
EUANS							
MEDICAL	-0.42100	750857	243978	1	1	11.0	29
NIGERIA-							
GERMAN							
CHEMICALS	-0.85078	683652	53868.	1	1	29.0	29
LAFARGE							
AFRICA	-0.94791	22818.	1756.3	1	1	29.0	29
NESTLE							
NIGERIAN	-1.07381	9.E+08	6.E+07	1	1	29.0	29
UNLEVER	-0.18587	300112	46893.	1	1	27.0	29
PHARMA DEKO	-0.87514	252292	218301	1	1	1.0	29
CADBURY							
NIGERIA	-0.32328	325414	62794.	1	1	24.0	29
UAC NIGERIA	-1.07407	2.E+17	2.E+16	1	1	29.0	29
INTERNATIONA							
L BREWERIES	-0.83186	108070	8610.7	1	1	29.0	29
LIVESTOCK							
FEEDS	-0.45252	148535	71574.	1	1	6.0	29
GLAXOSMITHLI							
NE NIGERIA	-0.89684	198238	35829.	1	1	17.0	29
ASHAKA							
CEMENT	-0.59590	10825.	1114.5	1	1	29.0	29
AVON							
CROWCAPS							
CONTAINERS	-0.76725	3.E+07	7.E+06	1	1	12.0	29
GUINNESS							
NIGERIA	-0.62913	221203	86857.	1	1	6.0	29
BERGER							
PAINTS	-0.61709	3.E+06	253076	1	1	29.0	29
JOHN HOLT	-0.52869	5.E+09	9.E+08	1	1	29.0	29

COSTAIN WEST							
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
AFRICA	-0.81289	6.E+06	3.E+06	1	1	3.0	29
LEVENTIS	-0.35805	8630.6	10107.	1	1	0.0	29
Pooled	-0.62644	-13.970	1.026	-0.548	0.895		609

Null Hypothesis: Unit root (common unit root process)							
Series: DAR							
Date: 07/03/18 Time: 18:01							
Sample: 1986 2016							
Exogenous variables: Individual effects							
User-specified lags: 1							
Newey-West automatic bandwidth selection and Bartlett kernel							
Total (balanced) observations: 609							
Cross-sections included: 21							
Method	Statistic			Prob.**			
Levin, Lin & Chu t*	11.7783			0.0000			
** Probabilities are computed assuming asymptotic normality							
Intermediate results on DAR							
Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU							
OILPALM	-0.68618	10.252	0.8487	1	1	29.0	29
JULIUS							
BERGER	-0.95124	2297.4	155.68	1	1	29.0	29
A.G. LEVENTIS	-0.78494	67.549	8.2339	1	1	17.0	29
EUANS							
MEDICAL	-0.73414	0.1989	0.0197	1	1	29.0	29
NIGERIA-GERMAN							
CHEMICALS	-0.85027	12.597	0.8934	1	1	29.0	29
LAFARGE							
AFRICA	-0.90302	0.3968	0.0321	1	1	25.0	29
NESTLE							
NIGERIAN	-1.02497	209.83	14.277	1	1	29.0	29
UNLEVER	-0.72220	0.0003	7.E-05	1	1	13.0	29
PHARMA DEKO	-1.09657	0.8385	0.0679	1	1	25.0	29
CADBURY							
NIGERIA	-0.46570	0.0502	0.0075	1	1	29.0	29
UAC NIGERIA	-0.84829	58.826	4.3208	1	1	29.0	29
INTERNATIONA							
L BREWERIES	-0.46531	0.0673	0.0166	1	1	15.0	29
LIVESTOCK							
FEEDS	-0.75988	26.657	2.6004	1	1	29.0	29
GLAXOSMITHLI							
NE NIGERIA	-0.71007	43.665	7.1068	1	1	15.0	29
ASHAKA							
CEMENT	-0.54698	0.1091	0.0186	1	1	17.0	29
AVON							
CROWCAPS							
CONTAINERS	-0.79172	15507.	1303.1	1	1	29.0	29
GUINNESS							
NIGERIA	-0.69515	0.6915	0.1029	1	1	22.0	29
BERGER							
PAINTS	-2.48778	0.0083	0.0013	1	1	27.0	29

JOHN HOLT	-0.97362	1704.0	116.07	1	1	29.0	29
COSTAIN WEST							
AFRICA	-0.84618	0.0369	0.0193	1	1	2.0	29
LEVENTIS	-0.82446	13.326	1.2325	1	1	23.0	29
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.75340	-15.861	1.026	-0.548	0.895		609

Null Hypothesis: Unit root (common unit root process)							
Series: DINV							
Date: 07/03/18 Time: 18:17							
Sample: 1986 2016							
Exogenous variables: Individual effects							
User-specified lags: 1							
Newey-West automatic bandwidth selection and Bartlett kernel							
Total (balanced) observations: 609							
Cross-sections included: 21							
Method		Statistic			Prob.**		
Levin, Lin & Chu t*		12.2337			0.0000		
** Probabilities are computed assuming asymptotic normality							
Intermediate results on DINV							
Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Band-width	Obs
OKOMU							
OILPALM	-0.66328	372502	33469.	1	1	29.0	29
JULIUS							
BERGER	-0.36224	20312.	4307.6	1	1	15.0	29
A.G. LEVENTIS	-0.71541	223217	45046.	1	1	10.0	29
EUANS							
MEDICAL	-0.72806	67837.	6931.6	1	1	29.0	29
NIGERIA-GERMAN							
CHEMICALS	-0.86910	1.E+06	96022.	1	1	29.0	29
LAFARGE							
AFRICA	-0.73095	27455.	2779.8	1	1	29.0	29
NESTLE							
NIGERIAN	-0.98491	6.E+07	4.E+06	1	1	29.0	29
UNLEVER	-0.56567	21.430	2.9584	1	1	19.0	29
PHARMA DEKO	-1.09340	89067.	8826.4	1	1	20.0	29
CADBURY							
NIGERIA	-0.49441	47196.	8993.7	1	1	29.0	29
UAC NIGERIA	-0.95929	7.E+07	5.E+06	1	1	29.0	29
INTERNATIONAL							
BREWERIES	-0.66331	13689.	1262.0	1	1	29.0	29
LIVESTOCK							
FEEDS	-0.82780	801389	84256.	1	1	22.0	29
GLAXOSMITHLI							
NE NIGERIA	-0.70068	37541.	6053.4	1	1	15.0	29
ASHAKA							
CEMENT	-0.98460	626.24	114.09	1	1	11.0	29
AVON							
CROWCAPS							
CONTAINERS	-0.87505	9.E+08	6.E+07	1	1	29.0	29
GUINNESS							
NIGERIA	-1.02287	1138.3	222.83	1	1	10.0	29
BERGER	-1.35619	471.11	69.876	1	1	29.0	29

	Coefficient	t-Stat	SE Reg	mu*	sig*	Obs
PAINTS						
JOHN HOLT	-0.98587	3.E+09	4.E+08	1	1	13.0
COSTAIN WEST						
AFRICA	-0.80721	31352.	2742.4	1	1	29.0
LEVENTIS	-1.06720	61428.	4130.5	1	1	29.0
Pooled	-0.76397	-16.168	1.022	-0.548	0.895	609

Null Hypothesis: Unit root (common unit root process)  
Series: D(FS)  
Date: 07/03/18 Time: 18:21  
Sample: 1986 2016  
Exogenous variables: Individual effects  
User-specified lags: 1  
Newey-West automatic bandwidth selection and Bartlett kernel  
Total (balanced) observations: 336  
Cross-sections included: 12 (9 dropped)

Method	Statistic	Prob.**
Levin, Lin & Chu t*	2.90887	0.0018

\*\* Probabilities are computed assuming asymptotic normality

Intermediate results on D(FS)

Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Band-width	Obs
OKOMU							
OILPALM							
JULIUS BERGER	-1.25000	0.1684	0.0499	1	1	14.0	28
A.G. LEVENTIS							
EUANS							
MEDICAL NIGERIA-GERMAN							
CHEMICALS							
LAFARGE							
AFRICA	-1.33333	0.1678	0.0626	1	1	13.0	28
NESTLE							
NIGERIAN							
UNLEVER	-1.78261	0.0849	0.0813	1	1	6.0	28
PHARMA DEKO	-1.25000	0.1684	0.1365	1	1	3.0	28
CADBURY							
NIGERIA	-1.00000	0.1059	0.0369	1	1	17.0	28
UAC NIGERIA							
INTERNATIONA							
L BREWERIES	-1.68293	0.1797	0.0380	1	1	23.0	28
LIVESTOCK							
FEEDS	-2.00000	0.1297	0.0491	1	1	14.0	28
GLAXOSMITHLI							
NE NIGERIA	-1.00000	0.1059	0.0536	1	1	9.0	28
ASHAKA							
CEMENT							
AVON							
CROWCAPS							
CONTAINERS	-1.00000	0.0714	0.0408	1	1	6.0	28
GUINNESS							
NIGERIA							

BERGER PAINTS	-2.00000	0.0821	0.0460	1	1	9.0	28
JOHN HOLT COSTAIN WEST	Dropped from Test						
AFRICA	-1.01205	0.1059	0.0159	1	1	12.0	28
LEVENTIS	-2.00000	0.0476	0.0460	1	1	9.0	28
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-1.41257	-14.466	1.025	-0.549	0.901		336

Null Hypothesis: Unit root (common unit root process)  
Series: ROI  
Date: 07/03/18 Time: 18:23  
Sample: 1986 2016  
Exogenous variables: Individual effects  
User-specified lags: 1  
Newey-West automatic bandwidth selection and Bartlett kernel  
Total (balanced) observations: 609  
Cross-sections included: 21

Method	Statistic	Prob.**
Levin, Lin & Chu t*	9.91780	0.0000

\*\* Probabilities are computed assuming asymptotic normality

Intermediate results on ROI

Cross Section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
OKOMU							
OILPALM	-0.82440	9.7234	2.1643	1	1	9.0	29
JULIUS							
BERGER	-0.95923	0.6916	0.1136	1	1	12.0	29
A.G. LEVENTIS	-0.81496	0.0231	0.0209	1	1	1.0	29
EUANS							
MEDICAL	-1.01461	1.1910	0.0873	1	1	29.0	29
NIGERIA-GERMAN							
CHEMICALS	-0.63252	0.0187	0.0023	1	1	29.0	29
LAFARGE							
AFRICA	-0.57623	109.59	8.7776	1	1	29.0	29
NESTLE							
NIGERIAN	-0.77270	72353.	8978.0	1	1	18.0	29
UNLEVER	-0.75035	19734.	1951.6	1	1	29.0	29
PHARMA DEKO	-1.12400	0.2326	0.1189	1	1	2.0	29
CADBURY							
NIGERIA	-0.82786	0.3387	0.0606	1	1	16.0	29
UAC NIGERIA	-1.11498	141.04	9.6550	1	1	29.0	29
INTERNATIONA							
L BREWERIES	-1.08938	8.1682	0.5820	1	1	29.0	29
LIVESTOCK							
FEEDS	-0.89809	15.186	1.2204	1	1	24.0	29
GLAXOSMITHLI							
NE NIGERIA	-0.75956	0.9993	0.2594	1	1	11.0	29
ASHAKA							
CEMENT	-0.80667	0.3252	0.0392	1	1	29.0	29
AVON							
CROWCAPS							
CONTAINERS	-0.70585	0.3385	0.0463	1	1	29.0	29
GUINNESS	-0.83789	115.74	13.928	1	1	18.0	29



NIGERIA							
BERGER							
PAINTS	-1.05013	0.1385	0.0260	1	1	14.0	29
JOHN HOLT	-0.82174	0.3273	0.4059	1	1	2.0	29
COSTAIN WEST							
AFRICA	-1.05307	17.311	1.9180	1	1	18.0	29
LEVENTIS	-0.64833	3330.2	1519.1	1	1	4.0	29
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.83437	-16.419	1.007	-0.548	0.895		609

### Co-integration

Johansen Fisher Panel Cointegration Test				
Series: CCC CR CT DAP DAR DINV FS ROI				
Date: 07/03/18 Time: 18:30				
Sample: 1986 2016				
Included observations: 651				
Trend assumption: Linear deterministic trend				
Lags interval (in first differences): 1 1				
Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	273.4	0.0000	126.4	0.0000
At most 1	213.6	0.0000	495.8	0.0000
At most 2	453.2	0.0000	232.8	0.0000
At most 3	308.2	0.0000	262.1	0.0000
At most 4	104.3	0.0000	85.90	0.0000
At most 5	55.04	0.0007	58.36	0.0003
At most 6	54.52	0.0009	40.76	0.0328
At most 7	61.17	0.0001	61.17	0.0001
* Probabilities are computed using asymptotic Chi-square distribution.				
Individual cross section results				
Cross Section	Trace Test Statistics	Prob.**	Max-Eign Test Statistics	Prob.**
Hypothesis of no cointegration				
OKOMU				
OILPALM				
JULIUS				
BERGER				
A.G. LEVENTIS				
EUANS				
MEDICAL	NA	0.5000	NA	0.5000
NIGERIA- GERMAN				
CHEMICALS	1017.9410	0.0001	801.8364	0.0001
LAFARGE				
AFRICA	NA	0.5000	NA	0.5000
NESTLE				
NIGERIAN				
UNLEVER	NA	0.5000	NA	0.5000
PHARMA DEKO	NA	0.5000	NA	0.5000
CADBURY				
NIGERIA	282.0934	0.0000	92.4234	0.0000
UAC NIGERIA				

INTERNATIONAL BREWERIES	NA	0.5000	NA	0.5000
LIVESTOCK FEEDS	NA	0.5000	NA	0.5000
GLAXOSMITHLINE NIGERIA	NA	0.5000	NA	0.5000
ASHAKA CEMENT		Dropped from Test		
AVON CROWCAPS	346.2833	0.0000	169.9877	0.0000
CONTAINERS		Dropped from Test		
GUINNESS NIGERIA		Dropped from Test		
BERGER PAINTS	773.8891	0.0000	377.2968	0.0001
JOHN HOLT		Dropped from Test		
COSTAIN WEST AFRICA	NA	0.5000	NA	0.5000
LEVENTIS	1677.7088	1.0000	894.5898	0.0001
Hypothesis of at most 1 cointegration relationship				
OKOMU OILPALM		Dropped from Test		
JULIUS BERGER		Dropped from Test		
A.G. LEVENTIS		Dropped from Test		
EUANS MEDICAL	905.7294	0.0001	762.3402	0.0001
NIGERIA-GERMAN CHEMICALS	216.1046	0.0000	100.4883	0.0000
LAFARGE AFRICA	NA	0.5000	NA	0.5000
NESTLE NIGERIAN		Dropped from Test		
UNLEVER	1330.1064	1.0000	1025.1647	0.0001
PHARMA DEKO	NA	0.5000	NA	0.5000
CADBURY NIGERIA	189.6699	0.0000	65.1525	0.0002
UAC NIGERIA		Dropped from Test		
INTERNATIONAL BREWERIES	468.4092	0.0001	230.2340	0.0000
LIVESTOCK FEEDS	1328.4818	1.0000	1025.1647	0.0001
GLAXOSMITHLINE NIGERIA	NA	0.5000	NA	0.5000
ASHAKA CEMENT		Dropped from Test		
AVON CROWCAPS	176.2957	0.0000	64.3775	0.0002
CONTAINERS		Dropped from Test		
GUINNESS NIGERIA		Dropped from Test		
BERGER PAINTS	396.5923	0.0000	186.9902	0.0000
JOHN HOLT		Dropped from Test		
COSTAIN WEST AFRICA	502.4178	0.0001	187.9749	0.0000
LEVENTIS	783.1190	0.0001	456.6101	0.0001
Hypothesis of at most 2 cointegration relationship				
OKOMU OILPALM		Dropped from Test		
JULIUS BERGER		Dropped from Test		
A.G. LEVENTIS		Dropped from Test		
EUANS MEDICAL	143.3891	0.0000	70.4472	0.0000

NIGERIA-GERMAN CHEMICALS LAFARGE AFRICA NESTLE NIGERIAN UNLEVER PHARMA DEKO CADBURY NIGERIA UAC NIGERIA INTERNATIONAL BREWERIES LIVESTOCK FEEDS GLAXOSMITHLINE NIGERIA ASHAKA CEMENT AVON CROWCAPS CONTAINERS GUINNESS NIGERIA BERGER PAINTS JOHN HOLT COSTAIN WEST AFRICA LEVENTIS	115.6163 NA 304.9418 188.2141 124.5174 238.1752 303.3171 1076.4378 111.9181 209.6021 314.4429 326.5089	0.0011 0.5000 0.0000 0.0000 0.0001 0.0000 0.0000 0.0001 0.0024 0.0000 0.0000 0.0000 0.0000	47.7212 NA 133.1999 71.1984 51.9207 112.5769 203.1506 903.2286 43.9703 132.4381 154.0275 194.9527	0.0057 0.5000 0.0000 0.0000 0.0015 0.0000 0.0001 0.0001 0.0174 0.0000 0.0000 0.0001 0.0001
Hypothesis of at most 3 cointegration relationship				
OKOMU OILPALM JULIUS BERGER A.G. LEVENTIS EUANS MEDICAL NIGERIA-GERMAN CHEMICALS LAFARGE AFRICA NESTLE NIGERIAN UNLEVER PHARMA DEKO CADBURY NIGERIA UAC NIGERIA INTERNATIONAL BREWERIES LIVESTOCK FEEDS GLAXOSMITHLINE NIGERIA ASHAKA CEMENT AVON CROWCAPS CONTAINERS GUINNESS NIGERIA BERGER PAINTS	72.9419 67.8951 2768.0775 171.7419 117.0157 72.5967 125.5983 100.1665 173.2092 67.9479 77.1640	Dropped from Test Dropped from Test Dropped from Test 0.0276 0.0705 1.0000 0.0000 0.0000 0.0000 0.0000 0.0698 0.0115	Dropped from Test Dropped from Test Dropped from Test 23.9906 31.6415 817.6752 89.5859 58.9593 31.4473 65.8886 35.1262 113.5407 23.4798 43.6824	0.4562 0.0903 0.0001 0.0000 0.0000 0.0949 0.0000 0.0353 0.0000 0.4941 0.0025

JOHN HOLT			Dropped from Test		
COSTAIN WEST					
AFRICA	160.4154	0.0000	106.3095	0.0000	
LEVENTIS	131.5562	0.0000	93.0106	0.0000	
Hypothesis of at most 4 cointegration relationship					
OKOMU			Dropped from Test		
OILPALM					
JULIUS					
BERGER			Dropped from Test		
A.G. LEVENTIS			Dropped from Test		
EUANS					
MEDICAL	48.9513	0.0393	20.2419	0.3247	
NIGERIA-GERMAN					
CHEMICALS	36.2537	0.3837	16.4421	0.6280	
LAFARGE					
AFRICA	1950.4023	1.0000	729.4258	0.0001	
NESTLE					
NIGERIAN			Dropped from Test		
UNLEVER	82.1560	0.0000	51.1426	0.0000	
PHARMA DEKO	58.0564	0.0041	25.0373	0.1024	
CADBURY					
NIGERIA	41.1494	0.1840	22.7359	0.1850	
UAC NIGERIA			Dropped from Test		
INTERNATIONA					
L BREWERIES	59.7097	0.0026	32.8063	0.0097	
LIVESTOCK					
FEEDS	65.0403	0.0006	26.9981	0.0593	
GLAXOSMITHLI					
NE NIGERIA	59.6684	0.0027	34.2874	0.0059	
ASHAKA					
CEMENT			Dropped from Test		
AVON					
CROWCAPS					
CONTAINERS	44.4681	0.1005	17.5431	0.5335	
GUINNESS					
NIGERIA			Dropped from Test		
BERGER					
PAINTS	33.4816	0.5303	16.1870	0.6499	
JOHN HOLT			Dropped from Test		
COSTAIN WEST					
AFRICA	54.1059	0.0116	22.7889	0.1827	
LEVENTIS	38.5456	0.2788	21.8266	0.2294	
Hypothesis of at most 5 cointegration relationship					
OKOMU			Dropped from Test		
OILPALM					
JULIUS					
BERGER			Dropped from Test		
A.G. LEVENTIS			Dropped from Test		
EUANS					
MEDICAL	28.7095	0.0663	14.6409	0.3149	
NIGERIA-GERMAN					
CHEMICALS	19.8116	0.4357	11.4687	0.6005	
LAFARGE					
AFRICA	1220.9765	1.0000	658.3739	0.0001	
NESTLE					
NIGERIAN			Dropped from Test		
UNLEVER	31.0133	0.0361	26.4184	0.0082	
PHARMA DEKO	33.0191	0.0206	19.0791	0.0946	
CADBURY					
NIGERIA	18.4135	0.5356	13.0067	0.4516	
UAC NIGERIA			Dropped from Test		
INTERNATIONA					
L BREWERIES	26.9035	0.1040	18.4722	0.1132	

LIVESTOCK FEEDS	38.0422	0.0045	17.0213	0.1710
GLAXOSMITHLINE NIGERIA	25.3811	0.1483	20.4538	0.0620
ASHAKA CEMENT		Dropped from Test		
AVON CROWCAPS CONTAINERS	26.9250	0.1035	12.8920	0.4622
GUINNESS NIGERIA		Dropped from Test		
BERGER PAINTS	17.2946	0.6182	12.3168	0.5167
JOHN HOLT COSTAIN WEST		Dropped from Test		
AFRICA	31.3170	0.0332	17.8278	0.1364
LEVENTIS	16.7190	0.6608	9.1336	0.8215
Hypothesis of at most 6 cointegration relationship				
OKOMU OILPALM		Dropped from Test		
JULIUS BERGER		Dropped from Test		
A.G. LEVENTIS		Dropped from Test		
EUANS MEDICAL	14.0686	0.0811	7.2059	0.4651
NIGERIA-GERMAN CHEMICALS	8.3429	0.4295	6.1512	0.5939
LAFARGE AFRICA	562.6026	0.0001	557.3965	0.0001
NESTLE NIGERIAN		Dropped from Test		
UNLEVER	4.5949	0.8502	4.5866	0.7928
PHARMA DEKO	13.9401	0.0846	11.8930	0.1147
CADBURY NIGERIA	5.4068	0.7642	3.5254	0.9057
UAC NIGERIA		Dropped from Test		
INTERNATIONAL BREWERIES	8.4313	0.4205	6.5627	0.5421
LIVESTOCK FEEDS	21.0208	0.0066	13.9544	0.0559
GLAXOSMITHLINE NIGERIA	4.9273	0.8165	3.6589	0.8935
ASHAKA CEMENT		Dropped from Test		
AVON CROWCAPS CONTAINERS	14.0331	0.0820	10.4722	0.1827
GUINNESS NIGERIA		Dropped from Test		
BERGER PAINTS	4.9778	0.8112	4.6457	0.7857
JOHN HOLT COSTAIN WEST		Dropped from Test		
AFRICA	13.4891	0.0981	9.8779	0.2201
LEVENTIS	7.5854	0.5107	5.1323	0.7250
Hypothesis of at most 7 cointegration relationship				
OKOMU OILPALM		Dropped from Test		
JULIUS BERGER		Dropped from Test		
A.G. LEVENTIS		Dropped from Test		
EUANS MEDICAL	6.8627	0.0088	6.8627	0.0088
NIGERIA-GERMAN	2.1917	0.1388	2.1917	0.1388

CHEMICALS				
LAFARGE				
AFRICA	5.2061	0.0225	5.2061	0.0225
NESTLE				
NIGERIAN		Dropped from Test		
UNLEVER	0.0083	0.9271	0.0083	0.9271
PHARMA DEKO	2.0471	0.1525	2.0471	0.1525
CADBURY				
NIGERIA	1.8814	0.1702	1.8814	0.1702
UAC NIGERIA		Dropped from Test		
INTERNATIONA				
L BREWERIES	1.8685	0.1716	1.8685	0.1716
LIVESTOCK				
FEEDS	7.0664	0.0079	7.0664	0.0079
GLAXOSMITHLI				
NE NIGERIA	1.2684	0.2601	1.2684	0.2601
ASHAKA				
CEMENT		Dropped from Test		
AVON				
CROWCAPS				
CONTAINERS	3.5608	0.0592	3.5608	0.0592
GUINNESS				
NIGERIA		Dropped from Test		
BERGER				
PAINTS	0.3321	0.5644	0.3321	0.5644
JOHN HOLT		Dropped from Test		
COSTAIN WEST				
AFRICA	3.6112	0.0574	3.6112	0.0574
LEVENTIS	2.4531	0.1173	2.4531	0.1173
**MacKinnon-Haug-Michelis (1999) p-values				

Fixed effect

Redundant Fixed Effects Tests				
Equation: Untitled				
Test cross-section and period fixed effects				
Effects Test	Statistic	d.f.	Prob.	
Cross-section F	2.277082	(20,592)	0.0013	
Cross-section Chi-square	48.173421	20	0.0004	
Period F	0.976175	(30,592)	0.5043	
Period Chi-square	31.384381	30	0.3967	
Cross-Section/Period F	1.498236	(50,592)	0.0174	
Cross-Section/Period Chi-square	77.448266	50	0.0077	
Cross-section fixed effects test equation:				
Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:16				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (unbalanced) observations: 650				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	0.007469	0.024815	0.300968	0.7635
CR	-0.010864	0.016373	-0.663541	0.5072
CT	-1.56E-05	7.52E-05	-0.207181	0.8359

DAP	2.50E-05	0.000121	0.206921	0.8361
DAR	-0.059109	0.103105	-0.573291	0.5667
DINV	-1.21E-05	0.000256	-0.047187	0.9624
FS	6.928290	9.301833	0.744831	0.4567
C	2.726065	8.365734	0.325861	0.7446

Effects Specification

Period fixed (dummy variables)

R-squared	0.046838	Mean dependent var	7.957948
Adjusted R-squared	-0.010788	S.D. dependent var	73.74433
S.E. of regression	74.14105	Akaike info criterion	11.50650
Sum squared resid	3364100.	Schwarz criterion	11.76823
Log likelihood	-3701.612	Hannan-Quinn criter.	11.60802
F-statistic	0.812788	Durbin-Watson stat	1.270481
Prob(F-statistic)	0.778588		

Period fixed effects test equation:  
 Dependent Variable: ROI  
 Method: Panel Least Squares  
 Date: 07/03/18 Time: 19:16  
 Sample: 1986 2016  
 Periods included: 31  
 Cross-sections included: 21  
 Total panel (unbalanced) observations: 650

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	-0.004723	0.024252	-0.194738	0.8457
CR	-0.000896	0.017494	-0.051229	0.9592
CT	1.15E-05	7.30E-05	0.158063	0.8745
DAP	-1.86E-05	0.000117	-0.158073	0.8745
DAR	-0.007994	0.101069	-0.079098	0.9370
DINV	-2.65E-05	0.000249	-0.106381	0.9153
FS	5.948814	8.437495	0.705045	0.4810
C	3.108884	7.666132	0.405535	0.6852

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.071142	Mean dependent var	7.957948
Adjusted R-squared	0.030822	S.D. dependent var	73.74433
S.E. of regression	72.59897	Akaike info criterion	11.44990
Sum squared resid	3278320.	Schwarz criterion	11.64275
Log likelihood	-3693.218	Hannan-Quinn criter.	11.52470
F-statistic	1.764422	Durbin-Watson stat	1.376172
Prob(F-statistic)	0.010376		

Cross-section and period fixed effects test equation:  
 Dependent Variable: ROI  
 Method: Panel Least Squares  
 Date: 07/03/18 Time: 19:16  
 Sample: 1986 2016  
 Periods included: 31  
 Cross-sections included: 21  
 Total panel (unbalanced) observations: 650

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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CCC	0.007283	0.024210	0.300843	0.7636
CR	-0.008640	0.016006	-0.539822	0.5895
CT	4.83E-06	7.29E-05	0.066316	0.9471
DAP	-7.78E-06	0.000117	-0.066347	0.9471
DAR	-0.019586	0.100494	-0.194895	0.8455
DINV	-2.27E-05	0.000248	-0.091495	0.9271
FS	9.727917	8.090896	1.202329	0.2297
C	0.102148	7.403737	0.013797	0.9890
R-squared	0.002927	Mean dependent var		7.957948
Adjusted R-squared	-0.007944	S.D. dependent var		73.74433
S.E. of regression	74.03666	Akaike info criterion		11.45923
Sum squared resid	3519076.	Schwarz criterion		11.51433
Log likelihood	-3716.249	Hannan-Quinn criter.		11.48060
F-statistic	0.269279	Durbin-Watson stat		1.284158
Prob(F-statistic)	0.965702			

## Regression

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:22				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR	-0.002523	0.017785	-0.141883	0.8872
FS	0.988786	9.864770	0.100234	0.9202
C	7.203716	8.816371	0.817084	0.4142
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.111262	Mean dependent var		7.945754
Adjusted R-squared	0.033981	S.D. dependent var		73.68824
S.E. of regression	72.42542	Akaike info criterion		11.48090
Sum squared resid	3136774.	Schwarz criterion		11.84551
Log likelihood	-3684.033	Hannan-Quinn criter.		11.62231
F-statistic	1.439704	Durbin-Watson stat		1.368742
Prob(F-statistic)	0.026759			

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:28				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				



Variable	Coefficient	Std. Error	t-Statistic	Prob.
DAR	-0.048344	0.090155	-0.536234	0.5920
FS	1.138310	9.860931	0.115436	0.9081
C	7.143813	8.809263	0.810943	0.4177
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.111660	Mean dependent var	7.945754	
Adjusted R-squared	0.034413	S.D. dependent var	73.68824	
S.E. of regression	72.40923	Akaike info criterion	11.48045	
Sum squared resid	3135372.	Schwarz criterion	11.84506	
Log likelihood	-3683.887	Hannan-Quinn criter.	11.62187	
F-statistic	1.445490	Durbin-Watson stat	1.368853	
Prob(F-statistic)	0.025445			

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:36				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DAP	-2.83E-08	2.80E-08	-1.011348	0.3123
FS	0.801637	9.847824	0.081402	0.9351
C	7.384434	8.806575	0.838514	0.4021
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.112750	Mean dependent var	7.945754	
Adjusted R-squared	0.035598	S.D. dependent var	73.68824	
S.E. of regression	72.36478	Akaike info criterion	11.47922	
Sum squared resid	3131523.	Schwarz criterion	11.84383	
Log likelihood	-3683.487	Hannan-Quinn criter.	11.62064	
F-statistic	1.461399	Durbin-Watson stat	1.365628	
Prob(F-statistic)	0.022123			

Dependent Variable: ROI				
Method: Panel Least Squares				
Date: 07/03/18 Time: 19:43				
Sample: 1986 2016				
Periods included: 31				
Cross-sections included: 21				
Total panel (balanced) observations: 651				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

DINV	-7.58E-05	0.000223	-0.340589	0.7335
FS	0.923420	9.854507	0.093705	0.9254
C	7.267395	8.816029	0.824339	0.4101
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.111405	Mean dependent var	7.945754	
Adjusted R-squared	0.034136	S.D. dependent var	73.68824	
S.E. of regression	72.41961	Akaike info criterion	11.48074	
Sum squared resid	3136271.	Schwarz criterion	11.84535	
Log likelihood	-3683.981	Hannan-Quinn criter.	11.62215	
F-statistic	1.441778	Durbin-Watson stat	1.369035	
Prob(F-statistic)	0.026281			

Dependent Variable: ROI  
Method: Panel Least Squares  
Date: 07/03/18 Time: 21:26  
Sample: 1986 2016  
Periods included: 31  
Cross-sections included: 21  
Total panel (balanced) observations: 651

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	-0.004928	0.024781	-0.198878	0.8424
FS	1.009452	9.863754	0.102340	0.9185
C	7.142409	8.811516	0.810577	0.4179
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.111291	Mean dependent var	7.945754	
Adjusted R-squared	0.034012	S.D. dependent var	73.68824	
S.E. of regression	72.42424	Akaike info criterion	11.48087	
Sum squared resid	3136672.	Schwarz criterion	11.84548	
Log likelihood	-3684.022	Hannan-Quinn criter.	11.62228	
F-statistic	1.440124	Durbin-Watson stat	1.368875	
Prob(F-statistic)	0.026662			

Dependent Variable: ROI  
Method: Panel Least Squares  
Date: 07/03/18 Time: 21:34  
Sample: 1986 2016  
Periods included: 31  
Cross-sections included: 21  
Total panel (unbalanced) observations: 650

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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CT	-1.85E-08	1.74E-08	-1.062308	0.2885
FS	0.619090	9.848751	0.062860	0.9499
C	7.557467	8.805861	0.858232	0.3911
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.114334	Mean dependent var	7.957948	
Adjusted R-squared	0.037190	S.D. dependent var	73.74433	
S.E. of regression	72.36005	Akaike info criterion	11.47921	
Sum squared resid	3125879.	Schwarz criterion	11.84425	
Log likelihood	-3677.742	Hannan-Quinn criter.	11.62080	
F-statistic	1.482090	Durbin-Watson stat	1.367500	
Prob(F-statistic)	0.018398			

## Appendix 2

### Data Presentation for the study

	YEAR	ROI	CR	DAR	DAP	DINV	CCC	CT	FS
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OKOMU OILPALM	1986	0.012633	1	0	0	0	0	0	1
OKOMU OILPALM	1987	0.08318	0.98626752	0	0	0	0	0	1
OKOMU OILPALM	1988	2.266294	1	0	0	0	0	0	1
OKOMU OILPALM	1989	0.318253	0.947145496	0	0	0	0	0	1
OKOMU OILPALM	1990	0.077079	0.471093663	0	0	0	0	0	1
OKOMU OILPALM	1991	17.10945	0	0	0	0	0	0	1
OKOMU OILPALM	1992	0.117783	0	0	0	0	0	0	1
OKOMU OILPALM	1993	5.38442	0	0	0	0	0	0	1
OKOMU OILPALM	1994	0.268142	3.029753112	0	0	0	0	0	1
OKOMU OILPALM	1995	0.044225	5.208221878	0	0	0	0	0	1
OKOMU OILPALM	1996	0.215304	4.707111205	0	0	0	0	0	1
OKOMU OILPALM	1997	0.263756	48.95274262	0	0	0	0	0	1
OKOMU OILPALM	1998	0.087844	1.499268548	0	0	0	0	0	1
OKOMU OILPALM	1999	0.250992	1	0	0	0	0	0	1
OKOMU OILPALM	2000	0	0	0	0	0	0	0	1
OKOMU OILPALM	2001	0.079699	9.882259967	0	0	0	0	0	1
OKOMU OILPALM	2002	0.037281	0	0	0	0	0	0	1
OKOMU OILPALM	2003	0.140764	1	0	0	0	0	0	1
OKOMU OILPALM	2004	0.205829	1	0.791028781	95.83172418	288.7255049	0.738898824	347.0455003	1
OKOMU OILPALM	2005	0.165418	1	7.495635861	61.03214727	2164.491585	1.291540293	250.1099618	1
OKOMU OILPALM	2006	0.096056	0.063915017	6.267901288	232.6472843	1996.109408	6.985037984	701.099518	1
OKOMU OILPALM	2007	0.021413	2.965701738	11.91449789	90.77523614	1151.717679	0.428401993	380.3187906	1
OKOMU OILPALM	2008	0.289526	0	0	0	0	0	0	1
OKOMU OILPALM	2009	0.151932	0	0	0	0	0	0	1
OKOMU OILPALM	2010	0.334884	0.078752333	0	367.6132588	0	0.391158592	517.3283857	1
OKOMU OILPALM	2011	0.019937	3.234133248	0.746196843	0	17.77239427	0.572132628	#DIV/0!	1
OKOMU OILPALM	2012	0.139966	2.849364556	0.061155522	24564.75823	10.33976843	0.685770806	756.8299573	1
OKOMU OILPALM	2013	0.089634	1.490906141	1.882922424	336.9863481	0.787481192	0.030707854	1044.486383	1
OKOMU OILPALM	2014	0.198292	0.295161439	11.8218605	141.8785069	2231.876378	2.247069119	251.9708211	1
OKOMU OILPALM	2015	0.24028	1.290038166	0	225.1171298	0	0.341273947	904.7119661	1
OKOMU OILPALM	2016	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	1986	0.105661	10.80728242	0	0	0	0	0	1
SEVEN UP COMPANY	1987	0.434699	15.9204431	0	0	0	0	0	1
SEVEN UP COMPANY	1988	0.319318	17.61959654	0	0	0	0	0	1
SEVEN UP COMPANY	1989	0.133812	0.218622545	0	0	0	0	0	1
SEVEN UP COMPANY	1990	0.188083	0.134845522	0	0	0	0	0	1
SEVEN UP COMPANY	1991	2.589015	0.108129075	0	0	0	0	0	1
SEVEN UP COMPANY	1992	0.326213	0	0	0	0	0	0	1
SEVEN UP COMPANY	1993	0.576247	0	0	0	0	0	0	1
SEVEN UP COMPANY	1994	0.042303	0	0	0	0	0	0	1
SEVEN UP COMPANY	1995	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	1996	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	1997	0.401832	0	0	0	0	0	0	1
SEVEN UP COMPANY	1998	3.306051	0	0	0	0	0	0	1
SEVEN UP COMPANY	1999	0.342995	0	0	0	0	0	0	1

SEVEN UP COMPANY	2000	0.184607	0	0	0	0	0	0	1
SEVEN UP COMPANY	2001	0.427289	0	0	0	0	0	0	1
SEVEN UP COMPANY	2002	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	2003	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	2004	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	2005	0	0	0	0	0	0	0	0
	2006	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	2007	0	0	0	0	0	0	0	0
SEVEN UP COMPANY	2008	0.04659	6.59047612	0.046556111	1310.313171	64.24682408	0.207378846	155.0476726	1
SEVEN UP COMPANY	2009	0.504786	32.36276307	0.053158086	506.2561362	60.98618192	0.086488411	43.40367627	1
SEVEN UP COMPANY	2010	2.586341	28.22655731	0.838875432	428.3445255	621.327841	0.070942964	95.38060131	1
SEVEN UP COMPANY	2011	1.01918	26.50950606	263.235292	3.523062779	433.0024909	0.116101732	378.7041932	1
SEVEN UP COMPANY	2012	0.814933	0.010329037	25.48695945	2.936743272	667.6654537	29.42497076	130.9417729	1
SEVEN UP COMPANY	2013	0.624447	0.13195129	9.571056554	1.062381066	79.6501416	16.44385564	155.0933979	1
SEVEN UP COMPANY	2014	0.05035	1151.233093	0.023764917	1.991283042	0.007034078	0.176220386	1.567832279	1
SEVEN UP COMPANY	2015	0.262181	1477.307958	4.491160011	9.39888326	17.87600868	0.091742352	5.236824336	1
SEVEN UP COMPANY	2016	0	0	0	0	0	0	0	0
A.G. LEVENTIS	1986	0.118237	0	0	0	0	0.919093851	0	1
A.G. LEVENTIS	1987	0	0	0	0	0	0	0	1
A.G. LEVENTIS	1988	0.064184	0	0	0	0	0	0	1
A.G. LEVENTIS	1989	0.06084	0	0	0	0	0	0	1
A.G. LEVENTIS	1990	0.02794	0	0	0	0	0	0	1
A.G. LEVENTIS	1991	0.072304	35.23907239	0	0	0	0.366020977	0	1
A.G. LEVENTIS	1992	0.115931	1.085616734	0	0	0	19.99044548	0	1
A.G. LEVENTIS	1993	0.049957	0.408160521	0	0	0	41.57943987	0	1
A.G. LEVENTIS	1994	0.461193	3.299776286	0	0	0	24.56760291	0	1
A.G. LEVENTIS	1995	0.028484	0	0	0	0	0	0	1
A.G. LEVENTIS	1996	0.037031	0	0	0	0	0	0	1
A.G. LEVENTIS	1997	0.015914	0	0	0	0	2.972758046	0	1
A.G. LEVENTIS	1998	0.04814	0	0	0	0	2.864302946	0	1
A.G. LEVENTIS	1999	0.000532	0	0	0	0	2.302235879	0	1
A.G. LEVENTIS	2000	0.022905	0	0	0	0	0.152297475	0	1
A.G. LEVENTIS	2001	0.011962	0	0	0	0	1.441222139	0	1
A.G. LEVENTIS	2002	0.049524	10.04636645	0	0	0	0.133609618	0	1
A.G. LEVENTIS	2003	0.090862	0.283543548	0	0	0	5.456074236	0	1
A.G. LEVENTIS	2004	0.103757	306.5860976	0.435307485	66.85880842	287.6118918	0.030545686	8.51143216	1
A.G. LEVENTIS	2005	0.179469	39.09525755	0.423854985	51.12908255	2608.112128	0.705601667	0.641315693	1
A.G. LEVENTIS	2006	0.149964	35.13183755	0.39004252	5.491495684	222.8002985	1.018886823	78.71834146	1
A.G. LEVENTIS	2007	0.179172	0.826276527	45.22977528	94.33324345	613.1308496	0.107267414	863.1037523	1
A.G. LEVENTIS	2008	0.18567	11.38161039	12.54599936	21.64640542	302.1154779	0.109594967	61.27690091	1
A.G. LEVENTIS	2009	0.171077	0.996773495	3.294789106	110.7809903	74.83394493	0.651738557	164.2116251	1
A.G. LEVENTIS	2010	0.744962	12.50407619	2.934233139	14.98378294	153.5812483	0.018793553	64.37749968	1
A.G. LEVENTIS	2011	0.143238	11.66087162	0.03628742	25146.456	5.299123162	0.0088366	121817.3995	1
A.G. LEVENTIS	2012	0.035337	0.959038341	0.006429198	0	1.737477689	1.388802054	0	1
A.G. LEVENTIS	2013	0.267322	1.22510987	0.134582431	109.359546	39.62973549	0.206177812	132.0973362	1

A.G. LEVENTIS	2014	0.022568	929.5080321	0	122.323125	0	0.225065337	0	1
A.G. LEVENTIS	2015	0	0	0	0	0	0	0	0
A.G. LEVENTIS	2016	0	0	0	0	0	0	0	0
EUANS MEDICAL	1986	0	0	0	0	0	0	0	0
EUANS MEDICAL	1987	0	0	0	0	0	0	0	0
EUANS MEDICAL	1988	0	0	0	0	0	0	0	0
EUANS MEDICAL	1989	0.19974	0	0	0	0	0	0	1
EUANS MEDICAL	1990	0.173451	30.876	0	0	0	0	0	1
EUANS MEDICAL	1991	0.225164	27.91870824	0	0	0	0	0	1
EUANS MEDICAL	1992	0.114724	46.27024793	0	0	0	0	0	1
EUANS MEDICAL	1993	0.06354	98.33112094	0	0	0	0	0	1
EUANS MEDICAL	1994	0.060023	857.6821192	0	0	0	0	0	1
EUANS MEDICAL	1995	0.019122	1361.431734	0	0	0	0	0	1
EUANS MEDICAL	1996	0.284291	251.8172644	0	0	0	0	0	1
EUANS MEDICAL	1997	0.042876	1.466986951	0	0	0	0	0	1
EUANS MEDICAL	1998	5.675227	125.0382387	0	0	0	0	0	0
EUANS MEDICAL	1999	0.578397	0	0	0	0	0	0	0
EUANS MEDICAL	2000	0.051327	0	0	0	0	0	0	1
EUANS MEDICAL	2001	0	0	0	0	0	0	0	1
EUANS MEDICAL	2002	0	0	0	0	0	0	0	1
EUANS MEDICAL	2003	0.085756	3.003759703	0.007609889	3732.855547	1.63821706	0.197140193	2666.471808	1
EUANS MEDICAL	2004	0.054685	6.197796602	0.000945904	3112.95599	1.072176972	0.162709004	943.1177634	1
EUANS MEDICAL	2005	0.015955	1.299161543	0.001113657	3299.371635	0.497027981	0.171963482	787.0913701	1
EUANS MEDICAL	2006	0.076318	1.235482493	0.000215624	2217.817027	0.123701983	0.147238154	420.568094	1
EUANS MEDICAL	2007	0	0	0	0	0	0	0	0
EUANS MEDICAL	2008	0.882471	0.842645212	0	0	0	0	0	1
EUANS MEDICAL	2009	2.377551	0.609589648	0	0	0	0	0	1
EUANS MEDICAL	2010	0.125601	0.999449616	0.008272387	1966.012632	7.820512462	0.096987175	2213.709496	1
EUANS MEDICAL	2011	0.063227	1.672803571	0.016733465	367.8473111	9.077456221	0.113282876	471.5518902	1
EUANS MEDICAL	2012	0.027086	0.099177943	1.859624248	239.9170272	1262.833619	6.018103541	196.6240967	1
EUANS MEDICAL	2013	0.132661	0.760146676	2.323717097	378.966351	1234.626612	0.044955216	500.9799501	1
EUANS MEDICAL	2014	0.11465	0.531421555	0.00200951	533.8974476	0.992079652	0.286609264	1713.485987	1
EUANS MEDICAL	2015	0	0	0	0	0	0	0	0
EUANS MEDICAL	2016	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	1986	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	1987	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	1988	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	1989	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	1990	0.219877	1.662757398	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1991	0.255491	2.175770395	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1992	0.303078	2.27830256	0	0	0	0	0	1
NIGERIA-GERMAN	1993	0.148058	1.113898275	0	0	0	0	0	1

CHEMICALS									
NIGERIA-GERMAN CHEMICALS	1994	0.193234	1.478309496	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1995	0.216944	1.57939453	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1996	0.162314	4.465793099	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1997	0.005841	5.089330025	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1998	0.00695	0.174437309	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	1999	0.029896	2.72706831	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	2000	0.039811	4.149002748	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	2001	0.0867	6.563662233	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	2002	0.109445	1.489440247	0.010740473	850.1235089	1.796625449	0.048884383	1909.539037	1
NIGERIA-GERMAN CHEMICALS	2003	0.132995	1.369145588	0.003237224	1483.371025	0.712851912	0.110644327	3237.471127	1
NIGERIA-GERMAN CHEMICALS	2004	0.165028	1.301130119	0.000997006	444.9397737	0.191991986	0.037502697	96.96215344	1
NIGERIA-GERMAN CHEMICALS	2005	0.140084	0.991146642	0.00060712	1198.012971	0.151074271	0.007854537	225.263338	1
NIGERIA-GERMAN CHEMICALS	2006	0.101611	8.847125295	0.00048474	760.6477291	0.048828321	0.017190649	419.6622454	1
NIGERIA-GERMAN CHEMICALS	2007	0.032849	1.421782438	0	1483.63867	0	0.006835223	359.3616427	1
NIGERIA-GERMAN CHEMICALS	2008	0	2.574105335	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	2009	0.35744	0	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	2010	0.117966	19.65592358	0	0	0	0	0	1
NIGERIA-GERMAN CHEMICALS	2011	0.680765	0.402024364	2.304736233	79.11889123	486.6081326	0.040088262	84.96334845	1
NIGERIA-GERMAN CHEMICALS	2012	0.066509	0.075895661	19.76234153	4089.599882	6508.343012	0.349104258	10049.33156	1
NIGERIA-GERMAN CHEMICALS	2013	0.073235	11.17318436	2.42702895	304.0823999	703.3991639	2.826185	941.6677498	1
NIGERIA-GERMAN CHEMICALS	2014	0	37.58137206	0.545678458	284.3183936	346.1106369	0.293924051	1063.931013	0
NIGERIA-GERMAN CHEMICALS	2015	0	0	0	0	0	0	0	0
NIGERIA-GERMAN CHEMICALS	2016	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1986	0.21914	0	0	0	0	0	0	1
LAFARGE AFRICA	1987	0.279097	0	0	0	0	0	0	1
LAFARGE AFRICA	1988	0.370634	0	0	0	0	0	0	1
LAFARGE AFRICA	1989	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1990	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1991	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1992	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1993	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1994	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1995	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1996	0	0	0	0	0	0	0	0

LAFARGE AFRICA	1997	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1998	0	0	0	0	0	0	0	0
LAFARGE AFRICA	1999	0	0	0	0	0	0	0	0
LAFARGE AFRICA	2000	0	0	0	0	0	0	0	0
LAFARGE AFRICA	2001	0	0	0	0	0	0	0	0
LAFARGE AFRICA	2002	0	0	0	0	0	0	0	0
LAFARGE AFRICA	2003	0.179441	0.36688455	0.128761542	132.3626442	24.66174211	0.091477841	326.8554473	1
LAFARGE AFRICA	2004	0.070307	0.488239268	0.002596899	503.3637606	0.608563601	0.247489905	1638.837033	1
LAFARGE AFRICA	2005	0.220938	0.780389201	3.450223132	23.16168752	12.62265067	0.246309741	461.361573	1
LAFARGE AFRICA	2006	0.474409	0.995851479	0.671550748	4.046411984	1.550538744	0.492914522	170.6027549	1
LAFARGE AFRICA	2007	0.000356	0.001090923	0	0	795.2333178	245.6860303	211.228008	1
LAFARGE AFRICA	2008	0.000316	0.001026942	0.130854302	5.325483656	785.9644947	321.4116318	70.82516138	1
LAFARGE AFRICA	2009	0	0	0	0	0	0	0	0
LAFARGE AFRICA	2010	0.124067	0	0	0	0	0	0	1
LAFARGE AFRICA	2011	55.37332	1.587807187	0	690.7407775	0	0.944119467	18889.35812	1
LAFARGE AFRICA	2012	9.312437	1.493169357	0	192.8641538	0	0.734885384	11687.95896	1
LAFARGE AFRICA	2013	28.32257	2.823845307	0	0	0	0	0	1
LAFARGE AFRICA	2014	0.264029	0.953701406	0.377430024	35.28859533	1.480188182	0.281802498	7232.192178	1
LAFARGE AFRICA	2015	0.166191	0.826476208	0.072115312	57.37366931	1.943133736	0.223253351	180.8346356	1
LAFARGE AFRICA	2016	0	0	0	0	0	0	0	0
NESTLE NIGERIAN	1986	0	0	0	0	0	0	0	0
NESTLE NIGERIAN	1987	0.378879	0	0	0	0	0	0	1
NESTLE NIGERIAN	1988	0.243921	0	0	0	0	0	0	1
NESTLE NIGERIAN	1989	0.234759	0	0	0	0	0	0	1
NESTLE NIGERIAN	1990	0.254932	0	0	0	0	0	0	1
NESTLE NIGERIAN	1991	0.316491	4.542258491	0	0	0	0	0	1
NESTLE NIGERIAN	1992	0.167532	7.92016837	0	0	0	0	0	1
NESTLE NIGERIAN	1993	0.224667	0.214023345	0	0	0	0	0	1
NESTLE NIGERIAN	1994	0.254723	0.548140264	0	0	0	0	0	1
NESTLE NIGERIAN	1995	0	1.221617447	0	0	0	0	0	1
NESTLE NIGERIAN	1996	0.043067	0.006058101	0	0	0	0	0	1
NESTLE NIGERIAN	1997	55.17823	0.140662506	0	0	0	274.9357224	0	1
NESTLE NIGERIAN	1998	0.128236	0.090075696	0	182.200867	0	263.0572841	18.66392723	1
NESTLE NIGERIAN	1999	0.236161	1.023245614	0	191.2710321	0	103.5870124	0	1
NESTLE NIGERIAN	2000	0.026255	0.27269038	0	24.79296778	0	0.201568398	0.465160383	1
NESTLE NIGERIAN	2001	28.22556	4.084148893	0	0	0	0	0	1
NESTLE NIGERIAN	2002	0.160525	0	0	0	0	0	0	1
NESTLE NIGERIAN	2003	0.245745	1	0.01681556	255.3386989	0.946994737	2.734696242	684.3350717	1
NESTLE NIGERIAN	2004	0.523035	1	0.220238756	22.70087058	3.026292961	0.300781276	247.6660569	1
NESTLE NIGERIAN	2005	21.85224	1.164538256	5.241615371	166968.2895	4074.611002	0.111528792	106781.7105	1
NESTLE NIGERIAN	2006	0.70197	1.087010068	79.55041612	0	41280.95902	0.149440589	0	1
NESTLE NIGERIAN	2007	0	14.03659652	0.006787518	193.2080413	1.089937118	268.9354061	201.2387361	1
NESTLE NIGERIAN	2008	0.472684	11.08529412	0.004208665	335.9393192	1.030849557	193.3209339	234.2203424	1
NESTLE NIGERIAN	2009	40.48037	0.236379112	0.013276081	94.21276469	1.555808045	67.57104003	86.47715107	1
NESTLE NIGERIAN	2010	311.4857	0.103350337	0.0039562	179.4493269	1.434855079	1.53827123	86.86064361	1



NESTLE NIGERIAN	2011	1521.607	1	0.016320306	173.4872944	5.164541087	0.013904438	152.4464428	1
NESTLE NIGERIAN	2012	281.5797	1.022382559	0.008672519	432.1966625	4.849003558	144.713348	610.3165986	1
NESTLE NIGERIAN	2013	24.072	1.256371679	0.00744119	778.2832832	4.929590772	328.5153881	1264.853532	1
NESTLE NIGERIAN	2014	23.04876	3.157657335	6.000502386	0.372396004	4.774979212	83.99666689	0.415581842	1
NESTLE NIGERIAN	2015	245.9836	3.394934819	5.746723398	95.77152341	5.105799818	218.7144259	133.3844858	1
NESTLE NIGERIAN	2016	0	0	0	0	0	0	0	0
UNLEVER	1986	0.434578	0	0	0	0	0	0	0
UNLEVER	1987	0.447533	0	0	0	0	0	0	1
UNLEVER	1988	0.57185	0	0	0	0	0	0	1
UNLEVER	1989	0.445001	0	0	0	0	0	0	1
UNLEVER	1990	0.312292	0	0	0	0	0	0	1
UNLEVER	1991	2.71109	0	0	0	0	0	0	1
UNLEVER	1992	0.350543	0	0	0	0	0	0	1
UNLEVER	1993	6.111213	0	0	0	0	0	0	1
UNLEVER	1994	46.65867	0	0	0	0	0	0	1
UNLEVER	1995	5.155005	0	0	0	0	0	0	1
UNLEVER	1996	0.479553	0	0	0	0	0	0	1
UNLEVER	1997	0.021571	0	0	0	0	0	0	1
UNLEVER	1998	0.007521	15.16372481	0	0	0	0	0	1
UNLEVER	1999	0.162346	11.70190422	0	0	0	0	0	1
UNLEVER	2000	0.31084	5.204746649	0	0	0	0	0	1
UNLEVER	2001	22.74898	4.16323134	0	0	0	0	0	1
UNLEVER	2002	0	0	0	0	0	0	0	0
UNLEVER	2003	0.711325	1.081396548	0.08417697	692.532109	9.069846316	0.14441864	2386.467287	1
UNLEVER	2004	0.751121	0.985815385	0.056725581	446.0388082	1.32895711	0.280922808	1311.019066	1
UNLEVER	2005	0.262967	1.065270277	0.018010295	1597.419333	11.71157437	0.130237785	1208.524188	1
UNLEVER	2006	0.325604	0.895896383	0.002006885	1095.521838	0.530366453	0.152727593	1871.129174	1
UNLEVER	2007	732.3775	0.73220739	0.038865045	1463.489484	15.2786338	0.110596293	2868.704589	1
UNLEVER	2008	582.6221	0.809782609	0.049699189	1221.88704	17.83234765	0.22917226	2556.598074	1
UNLEVER	2009	0.021574	1.10494674	0.004859027	1399.435569	2.447079668	0.000566739	1880.466465	1
UNLEVER	2010	0.733654	0.062297306	0.002312043	628.9451691	0.702219623	13.42818816	1404.034707	1
UNLEVER	2011	0.877876	0.742823323	0.007756236	487.2711653	2.061403793	1.063915444	1395.326433	1
UNLEVER	2012	0.815051	1.832904568	0.001130964	351.5504396	0.32188093	0.245909979	930.9927481	1
UNLEVER	2013	0.157961	0.653481973	0.000428693	493.2923491	0.182333414	0.173028717	1277.653984	1
UNLEVER	2014	0.236811	59.00770462	0.02812383	243.6565357	1.018108114	0.072114006	43.0933276	1
UNLEVER	2015	0.359008	0.606821169	0.015562714	2934.657019	10.13508338	2.106820116	600.6153734	1
UNLEVER	2016	0	0	0	0	0	0	0	0
PHARMA DEKO	1986	0	0.119379916	0	0	0	0	0	1
PHARMA DEKO	1987	0.048441	1.143573265	0	0	0	0	0	1
PHARMA DEKO	1988	0.00853	1.130622304	0	0	0	0	0	1
PHARMA DEKO	1989	0.019079	1.865748709	0	0	0	0	0	1
PHARMA DEKO	1990	0.022147	0.607517779	0	0	0	0	0	1
PHARMA DEKO	1991	0.002603	3.204334365	0	0	0	0	0	1
PHARMA DEKO	1992	0.009771	3.760683761	0	0	0	0	0	1
PHARMA DEKO	1993	0.368474	0.695643295	0	0	0	0	0	1

PHARMA DEKO	1994	0.467868	0.317970353	0	0	0	0	0	1
PHARMA DEKO	1995	0.082484	0	0	0	0	0	0	1
PHARMA DEKO	1996	0.075076	0	0	0	0	0	0	1
PHARMA DEKO	1997	0.145492	0	0	0	0	0	0	1
PHARMA DEKO	1998	0	0	0	0	0	0	0	0
PHARMA DEKO	1999	0	0	0	0	0	0	0	0
PHARMA DEKO	2000	0	0	0	0	0	0	0	0
PHARMA DEKO	2001	0	0	0	0	0	0	0	0
PHARMA DEKO	2002	0.368191	0.46873453	0	2660.765423	0	0.137672661	598.6746915	1
PHARMA DEKO	2003	0.250724	0.555871698	0	68.07327863	0	0.235414957	993.7897542	1
PHARMA DEKO	2004	0.108209	3.03959024	0	518.1698989	0	0.014139713	1484.836369	1
PHARMA DEKO	2005	0.022672	2.173457645	0	793.0548176	0	0.026976073	901.3630337	1
PHARMA DEKO	2006	0	0	0	0	0	0	0	0
PHARMA DEKO	2007	0	0	0	0	0	0	0	0
PHARMA DEKO	2008	0	5.212550037	0	0	0	0	0	1
PHARMA DEKO	2009	0	0.10788512	0	0	0	0	0	1
PHARMA DEKO	2010	2.514361	10.47396603	2.513876306	0	1537.633283	0.498721576	0	1
PHARMA DEKO	2011	0.074365	4.475297862	0	0	0	0.613833989	0	1
PHARMA DEKO	2012	0.141582	3.432791447	0	0	0	0.022832132	0	1
PHARMA DEKO	2013	1.024363	0.07652955	0	0	0	0.12281338	0	1
PHARMA DEKO	2014	0.169986	7.972270545	0.651951158	0	163.2212595	0.112251578	0	1
PHARMA DEKO	2015	0.249715	0.391513011	4.442022949	0	623.9928808	5.672583295	0	1
PHARMA DEKO	2016	0	0	0	0	0	0	0	0
CADBURY NIGERIA	1986	0.202823	68.15987642	0	0	0	0	0	1
CADBURY NIGERIA	1987	0.283164	298.6714976	0	0	0	0	0	1
CADBURY NIGERIA	1988	0.313298	3.989331911	0	0	0	0	0	1
CADBURY NIGERIA	1989	0.667039	107.3766553	0	0	0	0	0	1
CADBURY NIGERIA	1990	1.06599	0.719448305	0	0	0	0	0	1
CADBURY NIGERIA	1991	1.150443	1.466481084	0	0	0	0	0	1
CADBURY NIGERIA	1992	0.898684	5.860523385	0	0	0	0	0	1
CADBURY NIGERIA	1993	0	17.16477122	0	0	0	0	0	1
CADBURY NIGERIA	1994	0	0	0	0	0	0	0	0
CADBURY NIGERIA	1995	0	0	0	0	0	0	0	0
CADBURY NIGERIA	1996	0	0	0	0	0	0	0	0
CADBURY NIGERIA	1997	0.021272	1.104677406	0	0	0	0	0	1
CADBURY NIGERIA	1998	0.449378	1.297533188	0	0	0	0	0	1
CADBURY NIGERIA	1999	0.507847	2.244440872	0	0	0	0	0	1
CADBURY NIGERIA	2000	0.624392	1.970815225	0	0	0	0	0	1
CADBURY NIGERIA	2001	0.72714	1.37560331	0.012178898	1637.649632	2.510430486	9.713203042	3902.99408	1
CADBURY NIGERIA	2002	0.474825	7.983083421	0.015440609	334.9144971	2.951512481	0.827510007	134.9705634	1
CADBURY NIGERIA	2003	0.000426	9.001463182	0.001610784	1902.373599	0.728162297	0.497472834	799.6021519	1
CADBURY NIGERIA	2004	0.000375	4.039140233	0.010867176	819.5335865	3.700606038	0.606256373	361.7972682	1
CADBURY NIGERIA	2005	0.373355	0.551019029	0.000429274	1580.563592	0.271297118	0.809834149	488.5072151	1
CADBURY NIGERIA	2006	0.002448	4.608277148	0.069379007	471.7277206	12.00404562	3.13402E-05	41.64326864	1
CADBURY NIGERIA	2007	0.016493	0.0453125	0.022556391	1068.227384	12.00365408	5.689655172	33.0195599	1

CADBURY NIGERIA	2008	0.13346	0.350220767	0.008162413	1500.761942	2.480365667	0.199911853	2804.266356	1
CADBURY NIGERIA	2009	0	0	0	0	0	0	0	1
CADBURY NIGERIA	2010	0.047555	1.176527087	0.038255957	373.6764774	14.16135097	0.423268508	993.4392084	1
CADBURY NIGERIA	2011	0.150136	1.463411003	0.044341262	618.9603117	29.29343218	0.583660514	1520.828309	1
CADBURY NIGERIA	2012	0.137251	1.547713621	0.876084595	639.5640478	935.6953067	0.653815792	1591.491891	1
CADBURY NIGERIA	2013	3.092935	1.82330349	1.164073816	1969.115999	1443.663196	0.676636054	4172.824296	1
CADBURY NIGERIA	2014	1.268745	0.842515526	1.121277006	1303.728995	1042.149782	0.298725403	2892.38882	1
CADBURY NIGERIA	2015	0.055509	1.093742754	0.004274714	1959.596381	4.162585756	4.238390335	4212.013593	1
CADBURY NIGERIA	2016	0	0	0	0	0	0	0	0
UAC NIGERIA	1986	0.177696	12.59019608	0	0	0	0	0	1
UAC NIGERIA	1987	0.133148	11.29607843	0	0	0	0	0	1
UAC NIGERIA	1988	0.18623	12.71764706	0	0	0	0	0	1
UAC NIGERIA	1989	0.203792	5.144189992	0	0	0	0	0	1
UAC NIGERIA	1990	0.216809	2.042219121	0	0	0	0	0	1
UAC NIGERIA	1991	0.017184	1.842015992	0	0	0	0	0	1
UAC NIGERIA	1992	0.179315	1.684825715	0	0	0	0	0	1
UAC NIGERIA	1993	0.158548	1.857619141	0	0	0	0	0	1
UAC NIGERIA	1994	0.014084	0	0	0	0	0	0	1
UAC NIGERIA	1995	2.538815	0	0	0	0	0	0	1
UAC NIGERIA	1996	0.148934	1.290084986	0	0	0	0	0	1
UAC NIGERIA	1997	0.068102	0.201680672	0	0	0	0	354.4964029	1
UAC NIGERIA	1998	6.291724	0.833059088	0	0	0	0	0	1
UAC NIGERIA	1999	0.110379	0	0	0	0	0	0	1
UAC NIGERIA	2000	0.028861	3.183398438	0	0	0	0	13.69360258	1
UAC NIGERIA	2001	0.103533	0	0	0	0	0	0.449691992	1
UAC NIGERIA	2002	0	0	7.508566064	#DIV/0!	0	0	0	1
UAC NIGERIA	2003	2.305	4.450632891	42.87244534	755.7873082	47295.52296	0.064231145	918.925969	1
UAC NIGERIA	2004	0.157957	0.473818025	5.048834784	986.3387112	6409.478205	3.26966952	1092.702809	1
UAC NIGERIA	2005	0	0.011659167	0.354736283	9.186126836	101.2856974	131.8374801	124.3111138	1
UAC NIGERIA	2006	0.254159	1.575227327	0.204206142	2087.943193	329.4235525	0.313031064	143.3812141	1
UAC NIGERIA	2007	0.005569	13.62165443	0	40.49247329	0	0.330248504	369.4725641	1
UAC NIGERIA	2008	0.006019	9.987567258	0	369.2358518	0	0.268095958	258.7039821	1
UAC NIGERIA	2009	0.12437	0.001211533	0.024329268	677.5311604	288.279099	51.41061644	1.431532911	1
UAC NIGERIA	2010	65.50695	0.026652118	0	86.52480461	0	13.94747377	4.587897104	1
UAC NIGERIA	2011	0.046218	0.147215688	0.008364421	2695788437	46.54532808	1.141767195	4335581657	1
UAC NIGERIA	2012	0.090723	1.224408864	0.033918138	283.3116713	207.7046406	0.103303327	56.36517445	1
UAC NIGERIA	2013	2.839639	0.973121613	0.001374667	248.2161028	0.448563379	0.222611125	3095.407988	1
UAC NIGERIA	2014	1.05809	1.246073452	4.925857572	570.6565357	1033.049309	0.153980862	499.3860581	1
UAC NIGERIA	2015	0.107143	1.194215468	0.078858236	4328.509423	107.6893439	0.187185945	68.36838403	0
UAC NIGERIA	2016	0	0	0	0	0	0	0	0
INTERNATIONAL BREWERIES	1986	0	0	0	0	0	0	0	0
INTERNATIONAL BREWERIES	1987	0	0	0	0	0	0	0	0
INTERNATIONAL BREWERIES	1988	0	0	0	0	0	0	0	0

INTERNATIONAL BREWERIES	1989	0	0	0	0	0	0	0	0
INTERNATIONAL BREWERIES	1990	0.223944	1.340187628	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1991	2.029639	1.460342477	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1992	0.185555	1.624066653	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1993	0.022208	0.725404567	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1994	0.214761	1.854141329	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1995	0.119976	0.799967655	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1996	0.043449	1.429393962	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1997	0.324765	0.093155003	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1998	0.453647	0.073844781	0	0	0	0	0	1
INTERNATIONAL BREWERIES	1999	0	6.395658175	0	0	0	0	0	0
INTERNATIONAL BREWERIES	2000	0	0	0	0	0	0	0	1
INTERNATIONAL BREWERIES	2001	0	0	0	0	0	0	0	1
INTERNATIONAL BREWERIES	2002	0	0	0	0	0	0	0	1
INTERNATIONAL BREWERIES	2003	3.88101	3.753776306	0	41.81741837	0	0.024334213	1140.107519	1
INTERNATIONAL BREWERIES	2004	1.720575	2.554035974	0	601.4528152	0	0.079092538	4594.118339	1
INTERNATIONAL BREWERIES	2005	0.000426	0.288644759	0.880198954	1769.996031	377.3459768	3.62374888	3782.021458	1
INTERNATIONAL BREWERIES	2006	0	0.492525536	1.073845332	72.27344573	259.8104582	2957.272583	35.38274454	1
INTERNATIONAL BREWERIES	2007	6.98E-06	6.363193577	0.821516995	3.429609255	4.776934222	9.859628309	3.139732565	1
INTERNATIONAL BREWERIES	2008	0.000336	0.094009387	0.395725094	5.140752359	4.869944329	114.9834645	0.689144453	1
INTERNATIONAL BREWERIES	2009	0.158249	0.545118952	0.141060381	6.010702525	38.14939088	0.892117011	0.656359126	1
INTERNATIONAL BREWERIES	2010	0.351032	0.12120562	0.076103818	55.99903	2.256569974	0.092487503	65.91097	1
INTERNATIONAL BREWERIES	2011	0.146124	0.334382884	0.008981821	396.9613515	2.200537869	0.682374805	197.9398614	1
INTERNATIONAL BREWERIES	2012	0	0	0	0	0	0	0	0
INTERNATIONAL BREWERIES	2013	15.43503	0.840350866	0.467806165	359.5990022	272.846197	1.574985132	581.9682912	1
INTERNATIONAL BREWERIES	2014	0.142645	0.85711176	0.380224282	287.2817814	243.7135264	32.9920862	380.8538612	1
INTERNATIONAL BREWERIES	2015	0.933976	0.729439586	0.918834996	24.50409166	471.864479	11.73142069	17.64744302	1
INTERNATIONAL BREWERIES	2016	0	0	0	0	0	0	0	0
LIVESTOCK FEEDS	1986	0.687052	1.313974886	0	0	0	0	0	1
LIVESTOCK FEEDS	1987	0.555175	1.256543902	0	0	0	0	0	1
LIVESTOCK FEEDS	1988	0.134858	17.17009855	0	0	0	0	0	1
LIVESTOCK FEEDS	1989	0.25013	33.11766218	0	0	0	0	0	1
LIVESTOCK FEEDS	1990	0.926125	0.665850349	0	0	0	0	0	1

LIVESTOCK FEEDS	1991	2.596459	0.682482759	0	0	0	0	0	1
LIVESTOCK FEEDS	1992	21.73815	1.000502277	0	0	0	0	0	1
LIVESTOCK FEEDS	1993	1.663684	8.728527288	0	0	0	0	0	1
LIVESTOCK FEEDS	1994	0.241167	10.69735003	0	0	0	0	0	1
LIVESTOCK FEEDS	1995	1.214739	2.973674645	0	0	0	0	0	1
LIVESTOCK FEEDS	1996	0.194611	0	0	0	0	0	0	1
LIVESTOCK FEEDS	1997	1.627341	0.671994434	0	0	0	0	0	1
LIVESTOCK FEEDS	1998	0.602805	0.286329436	0	0	0	0	0	1
LIVESTOCK FEEDS	1999	0.50684	1.778202718	0	0	0	0	0	1
LIVESTOCK FEEDS	2000	0.868602	15.01786147	0	0	0	0	0	1
LIVESTOCK FEEDS	2001	0	7.933965041	0	0	0	0	0	0
LIVESTOCK FEEDS	2002	0.082252	0.945526092	0	0	0	0	0	1
LIVESTOCK FEEDS	2003	0.022957	0	0	0	0	0	0	1
LIVESTOCK FEEDS	2004	0.066324	5.634059262	27.15267564	15.06042939	4830.36496	0.893108051	16.89657443	1
LIVESTOCK FEEDS	2005	0.220997	72.62102105	20.566616	192.4365305	2190.078326	0.08190746	238.5805326	1
LIVESTOCK FEEDS	2006	0.28566	0	0	0	0	0	0	1
LIVESTOCK FEEDS	2007	0	0	0	0	0	0	0	0
LIVESTOCK FEEDS	2008	0.224067	1.157512365	0.019826001	0	1.333517812	0.064652727	0	1
LIVESTOCK FEEDS	2009	0.174047	0.833945587	1.758379779	199.9026225	965.1980923	0.062653533	69.30292347	1
LIVESTOCK FEEDS	2010	0.132993	21.47522412	0.075483699	0	7.403354134	0.046052956	0	1
LIVESTOCK FEEDS	2011	0.11422	1.04520962	0.043287949	942.2438842	0.532838422	5.909306461	58.54435306	1
LIVESTOCK FEEDS	2012	0.10675	0.111650457	0.053088458	2035.045907	15.70511086	4.160067206	161.4497292	1
LIVESTOCK FEEDS	2013	0.006887	1.629599793	0.049641638	1464.232504	82.4810903	1.359180791	214.838912	1
LIVESTOCK FEEDS	2014	0.202703	0.135087509	2.530641272	124.4789848	13.26993989	0.319827839	19.67702306	1
LIVESTOCK FEEDS	2015	0.252147	0.149252878	0.647744074	809.4060282	20.50098866	0.474328847	379.4690853	1
LIVESTOCK FEEDS	2016	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1986	0.066503	35.71710526	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1987	0.434581	1.467988253	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1988	0.589369	2.85310348	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1989	0.492821	3.426186893	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1990	0.49432	0.083327639	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1991	0.59169	38.94987035	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1992	0	0.533337962	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	1993	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1994	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1995	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1996	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1997	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	1998	0	0	0	0	0	0	0	0

GLAXOSMITHLINE NIGERIA	1999	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	2000	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	2001	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	2002	0	0	0	0	0	0	0	0
GLAXOSMITHLINE NIGERIA	2003	0.638984	0.540114619	0.219138018	1252.189209	40.95723333	2.012181122	2.191739364	1
GLAXOSMITHLINE NIGERIA	2004	0.589849	0.058149663	0.371997974	261.1021164	44.16807546	17.86639434	0.576802003	1
GLAXOSMITHLINE NIGERIA	2005	0.399421	2.651322344	1.436060976	133.6292224	66.45100492	0.27283564	63.69079165	1
GLAXOSMITHLINE NIGERIA	2006	0.396581	0.035010845	0.21357266	796.7756703	44.43878021	4.074606504	9.84774838	1
GLAXOSMITHLINE NIGERIA	2007	0	0.129425755	0.250841858	1105.61706	756.0575142	7.29975001	135.382099	1
GLAXOSMITHLINE NIGERIA	2008	1.925934	0.160417521	0.244852814	647.7133418	66.37044528	128.943401	106.427188	1
GLAXOSMITHLINE NIGERIA	2009	3.551916	0.138305458	2.106280222	43.06331726	36.83771761	18.5621795	105.4339563	1
GLAXOSMITHLINE NIGERIA	2010	0.740184	1.630489685	0.95334151	253.0117862	146.0180746	1.36551517	13.04727119	1
GLAXOSMITHLINE NIGERIA	2011	0.659665	3.047113818	35.60613896	628.2602776	583.826456	3.098710908	22734.70054	1
GLAXOSMITHLINE NIGERIA	2012	0.572579	2.377684396	20.54057489	55.89600095	603.0616645	3.084617872	14.64153882	1
GLAXOSMITHLINE NIGERIA	2013	4.736781	0	0	0	0	0	0	1
GLAXOSMITHLINE NIGERIA	2014	2.125551	4.498298726	2.846654912	1507.011786	349.6518329	0.711861109	3323.208006	1
GLAXOSMITHLINE NIGERIA	2015	0	2.76477725	0.255334867	1734.463972	131.4857572	3.255809144	4277.589772	1
GLAXOSMITHLINE NIGERIA	2016	0	0	0	0	0	0	0	0
ASHAKA CEMENT	1986	0.163656	0	0	0	0	0	0	1
ASHAKA CEMENT	1987	0.291927	0	0	0	0	0	0	1
ASHAKA CEMENT	1988	0.403045	0	0	0	0	0	0	1
ASHAKA CEMENT	1989	0.623096	0	0	0	0	0	0	1
ASHAKA CEMENT	1990	0.323299	0	0	0	0	0	0	1
ASHAKA CEMENT	1991	0.355174	0	0	0	0	0	0	1
ASHAKA CEMENT	1992	0.363612	0	0	0	0	0	0	1
ASHAKA CEMENT	1993	0.431905	0	0	0	0	0	0	1
ASHAKA CEMENT	1994	0.518741	0.708237002	0	0	0	0	0	1
ASHAKA CEMENT	1995	0.658607	1.461788866	0	0	0	0	0	1
ASHAKA CEMENT	1996	0.422581	0.552446736	0	0	0	0	0	1
ASHAKA CEMENT	1997	0.391789	0.726064105	0	0	0	0	0	1
ASHAKA CEMENT	1998	2.564476	0.851451018	0	0	0	0	0	1
ASHAKA CEMENT	1999	2.502439	0.735044059	0	0	0	0	0	1
ASHAKA CEMENT	2000	0.317772	1.254319274	0	0	0	0	0	1
ASHAKA CEMENT	2001	0.406964	1.462206339	0	0	0	0	0	1
ASHAKA CEMENT	2002	0.472409	0.491201162	0.090995327	184.9473562	21.76169978	20.61967725	61.39137202	1
ASHAKA CEMENT	2003	0.640676	1.92346595	0.068261821	301.4086289	4.364949482	12.86912591	130.4871951	1
ASHAKA CEMENT	2004	0.370789	1.852661837	0.121796042	55.77415994	0.877296844	10.46128996	224.5676721	1

ASHAKA CEMENT	2005	0.000275	0.288365563	0.029672679	102.5922779	0.487329489	11.96723437	2242.635456	1
ASHAKA CEMENT	2006	0.0002	0.166411278	0.468615977	345.8644349	5.28161706	7.27250516	518.6932967	1
ASHAKA CEMENT	2007	0.17903	0.028694781	0.453572336	248.6194155	15.13541308	16.50430485	97.61037473	1
ASHAKA CEMENT	2008	0.271832	0	1.60179124	219.7485227	17.0594188	0	307.2687101	1
ASHAKA CEMENT	2009	0.253303	62.84248202	0.295253498	50.98060926	1.868502504	0.085646573	1434.223617	1
ASHAKA CEMENT	2010	0.948678	19.73976411	0	0	0	0	0	1
ASHAKA CEMENT	2011	0.099368	5.414344579	0.40030225	355.3464306	128.0507068	6.575497397	7.445986681	1
ASHAKA CEMENT	2012	1.063774	0.882230449	0.842924901	12.36211513	15.14330126	87.55320614	36.51661312	1
ASHAKA CEMENT	2013	0.100003	10.54320461	0.669567901	16.02873407	10.46047817	7.943189086	36.5247357	1
ASHAKA CEMENT	2014	1.000036	2.136059641	0.25205848	42.25223396	2.270784986	73.35288031	16.6785134	1
ASHAKA CEMENT	2015	0.913547	2.16425836	0.722067594	45.18116676	55.14340943	0	322.490815	0
ASHAKA CEMENT	2016	0	0	0	0	0	0	0	0
AVON CROWCAPS CONTAINERS	1986	0	0	0	0	0	0	0	0
AVON CROWCAPS CONTAINERS	1987	0	0	0	0	0	0	0	0
AVON CROWCAPS CONTAINERS	1988	0	0	0	0	0	0	0	0
AVON CROWCAPS CONTAINERS	1989	0.518169	1.14377343	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1990	0.731073	0.999843815	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1991	0.299054	1.283955307	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1992	0.451525	0.526361393	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1993	2.781791	18.0118686	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1994	1.787551	0.187399465	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1995	0.08616	0.051886494	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1996	0.215374	1.184266045	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1997	0.192823	0.877430131	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1998	0.158218	0.066452383	0	0	0	0	0	1
AVON CROWCAPS CONTAINERS	1999	0.095957	0.066537991	342.1721758	28.59791673	21714.66465	5.606401425	3379.571534	1
AVON CROWCAPS CONTAINERS	2000	0.087193	0.046625235	684.1700162	108.5162726	166514.5985	0.589546181	340.2768879	1
AVON CROWCAPS CONTAINERS	2001	0.061899	0.172710383	2.319251315	546.4068187	17973.48485	0.604689129	266.5162036	1
AVON CROWCAPS CONTAINERS	2002	0.086284	1.773672638	4.06902756	2614.193986	722.4218255	0.105013863	4929.060461	1
AVON CROWCAPS CONTAINERS	2003	0.001029	0.103489217	0.825294762	3590.368977	3493.491334	2.654581129	3685.907817	1
AVON CROWCAPS CONTAINERS	2004	0.013871	0.684090038	18.52096838	65.02403903	1672.229858	0.486070472	287.8662122	1
AVON CROWCAPS CONTAINERS	2005	0.188438	2.614647868	8.018223235	929.9120201	147.6462558	2.394710615	791.88681	1
AVON CROWCAPS CONTAINERS	2006	0.155432	0.182661875	0.651864332	905.7013811	144.2286816	0.028413805	36.10878259	1
AVON CROWCAPS CONTAINERS	2007	1.928239	1.22245129	8.80673766	54.72014399	133.0994505	0.086271962	135.1596641	1
AVON CROWCAPS CONTAINERS	2008	2.073828	0.130385124	20.50975899	392.9258749	402.7124101	0.042529423	592.4931586	1

AVON CROWCAPS CONTAINERS	2009	0.706093	12.10795245	10.07817585	1194.865512	207.1735824	0.092481214	781.9481293	1
AVON CROWCAPS CONTAINERS	2010	0.160935	1.192566809	6.595419646	15906.71128	1244.289903	0.132944167	1043.436029	1
AVON CROWCAPS CONTAINERS	2011	0.023942	0.131638928	0.34844936	26764.26549	36.53169439	0.582028634	1421.90279	1
AVON CROWCAPS CONTAINERS	2012	0.213211	0.115453412	4.535345376	6131.304494	1044.1686	0	1050.108267	1
AVON CROWCAPS CONTAINERS	2013	0.115658	1.987795993	12.25392277	260.2083196	450.8921566	0.67554293	192.7284185	1
AVON CROWCAPS CONTAINERS	2014	0.031928	14.57817656	0.61365951	1498.165138	18.13847556	0.051093809	366.4624074	1
AVON CROWCAPS CONTAINERS	2015	0.057768	11.43327419	0.110209283	17453.82774	15.18246105	0.106483644	728.1598371	1
AVON CROWCAPS CONTAINERS	2016	0	0	0	0	0	0	0	0
GUINNESS NIGERIA	1986	0.345088	0.009282632	0	0	0	0	0	1
GUINNESS NIGERIA	1987	0.230829	0.055461818	0	0	0	0	0	1
GUINNESS NIGERIA	1988	0.377044	0.012488727	0	0	0	0	0	1
GUINNESS NIGERIA	1989	0.222981	0.070011538	0	0	0	0	0	1
GUINNESS NIGERIA	1990	0.022139	1.080401961	0	0	0	0	0	1
GUINNESS NIGERIA	1991	0.247669	0.937424242	0	0	0	0	0	1
GUINNESS NIGERIA	1992	0.763002	1.917434211	0	0	0	0	0	1
GUINNESS NIGERIA	1993	1.836006	4.219791367	0	0	0	0	0	1
GUINNESS NIGERIA	1994	0.252665	0.697718033	0	0	0	0	0	1
GUINNESS NIGERIA	1995	0.146809	0.569936364	0	0	0	0	0	1
GUINNESS NIGERIA	1996	0.077058	0.933974359	0	0	0	0	0	1
GUINNESS NIGERIA	1997	1.580309	1.391064103	0	0	0	0	0	1
GUINNESS NIGERIA	1998	0.089556	6.868181818	0	0	0	0	0	1
GUINNESS NIGERIA	1999	25.7473	4.110778443	0	0	0	0	0	1
GUINNESS NIGERIA	2000	3.561044	3.689204545	0	0	0	0	0	1
GUINNESS NIGERIA	2001	0.59593	3.921428571	0	0	0	0	0	1
GUINNESS NIGERIA	2002	0.104631	2.139425044	0	0	0	0	0	1
GUINNESS NIGERIA	2003	0.68691	0.149469443	0.106697558	143.7637373	7.166233476	2.880587707	1156.252714	1
GUINNESS NIGERIA	2004	0.604987	1.053087422	0.011412044	119.6017178	1.276762037	2.931386869	561.7562792	1
GUINNESS NIGERIA	2005	7.795844	1.045117546	0.043755613	806.9469922	1.718880353	3.570910695	881.2687373	1
GUINNESS NIGERIA	2006	0.815981	1.045203754	0.175728594	38.35777022	1.603691826	16.44749092	300.1920809	1
GUINNESS NIGERIA	2007	0.046887	1.689267648	0.125825284	704.9919059	2.363497345	20.45086677	17617.54221	1
GUINNESS NIGERIA	2008	0.463694	19.07616316	0.075137519	2670.719787	1.41123802	1.404158874	5608.432651	1
GUINNESS NIGERIA	2009	0.444478	46.73137343	0.748580971	1007.415453	149.5852367	0.158151107	1984.741289	1
GUINNESS NIGERIA	2010	0.585851	1.908196787	0.508714813	98.90158471	9.616882799	3.557852914	2589.511642	1
GUINNESS NIGERIA	2011	5.311085	4.398068771	0.006318074	263.4359403	1.227753798	31.90096543	98.56827548	1
GUINNESS NIGERIA	2012	12.26504	33.37197867	0.378852937	226.5224289	6.622032486	0.198150177	70.80688772	1
GUINNESS NIGERIA	2013	12.09712	64.15073313	4.482792	158.6404729	117.5038205	0.989305032	347.190386	1
GUINNESS NIGERIA	2014	54.18627	0.978623172	3.788009851	11.52844697	23.34000612	1.449442857	60.96472959	1
GUINNESS NIGERIA	2015	0.333711	8.17199599	0.139199936	47.79964178	2.487604387	1.589636104	14.15069474	1
GUINNESS NIGERIA	2016	0	0	0	0	0	0	0	0
BERGER PAINTS	1986	0.0103	10.80728242	0	0	0	0	0	1
BERGER PAINTS	1987	0.414991	1.423502927	0	0	0	0	0	1



BERGER PAINTS	1988	0.343	17.61959654	0	0	0	0	0	1
BERGER PAINTS	1989	0	22.83383686	0	0	0	0	0	0
BERGER PAINTS	1990	0.500423	32.83904762	0	0	0	0	0	1
BERGER PAINTS	1991	0.403931	38.57304527	0	0	0	0	0	1
BERGER PAINTS	1992	0.500973	39.46376812	0	0	0	0	0	1
BERGER PAINTS	1993	0.388842	99.16190476	0	0	0	0	0	1
BERGER PAINTS	1994	0.592033	132.7802929	0	0	0	0	0	1
BERGER PAINTS	1995	0.819965	23.15939545	0	0	0	0	0	1
BERGER PAINTS	1996	0.430374	10.34117881	0	0	0	0	0	1
BERGER PAINTS	1997	0.349437	1.472891328	0	0	0	0	0	1
BERGER PAINTS	1998	0.199577	4.00161711	0	0	0	0	0	1
BERGER PAINTS	1999	0.0609	11.11061732	0	0	0	0	0	1
BERGER PAINTS	2000	0.095209	0.567075575	0	0	0	0	0	1
BERGER PAINTS	2001	0.318899	0.541517364	0	0	0	0	0	1
BERGER PAINTS	2002	0.247169	3.894456523	0.027852947	1836.031087	8.57467894	0.017592043	3124.871312	1
BERGER PAINTS	2003	0.273072	4.992035949	0.002100809	9324.406936	1.254649936	0.012617098	12067.92647	1
BERGER PAINTS	2004	0.237015	4.344314551	0.00079644	2227.097791	0.345392021	0.010631618	1660.863973	1
BERGER PAINTS	2005	0.062579	2.782083413	0.063194499	1697.660035	18.48844546	0.06578311	2474.936909	1
BERGER PAINTS	2006	0.089926	4.206280131	0.018252431	1901.164018	5.288439483	0.036139354	1359.716723	1
BERGER PAINTS	2007	0.173542	1790.710046	0.016949208	2441.515943	4.562948937	0.007669084	1562.600392	1
BERGER PAINTS	2008	0.180629	3.640807535	0.011040282	1315.356519	2.08667867	0.393618326	1327.879427	1
BERGER PAINTS	2009	0.216762	2.856448371	0.026824029	1374.574324	6.681465504	0.517758416	1113.310811	1
BERGER PAINTS	2010	0.309733	5.860196396	0	0	0	0	0	1
BERGER PAINTS	2011	0.233359	52.06104869	0.000922767	541.4729324	0.096300886	0.097626232	1325.096905	1
BERGER PAINTS	2012	0.16012	3.069093439	0.03171858	426.7083578	4.679756887	0.969145343	1084.835324	1
BERGER PAINTS	2013	2.045271	2.25587782	0.004264955	307.5756016	0.089788724	0.057547147	589.459779	1
BERGER PAINTS	2014	0.070479	1.788393669	0.315240736	1394.869165	105.4277553	0.205714423	1166.584352	1
BERGER PAINTS	2015	0.185916	1.65701316	0.665710742	125.9645941	140.6850428	0.027705985	190.1063563	1
BERGER PAINTS	2016	0	0	0	0	0	0	0	0
JOHN HOLT	1986	3.684211	0.166666	0	0	0	0	0	1
JOHN HOLT	1987	1.381921	31.0460251	0	0	0	0	0	1
JOHN HOLT	1988	1.324558	40.6504065	0	0	0	0	0	1
JOHN HOLT	1989	0.244025	130.8	0	0	0	0	0	1
JOHN HOLT	1990	0.513631	876.8472906	0	0	0	0	0	1
JOHN HOLT	1991	0.662716	184.2715232	0	0	0	0	0	1
JOHN HOLT	1992	0.433044	2229.246002	0	0	0	0	0	1
JOHN HOLT	1993	0.33808	31.97879859	0	0	0	0	0	1
JOHN HOLT	1994	1.622	550.6276151	0	0	0	0	0	1
JOHN HOLT	1995	2.283796	653.6480687	0	0	0	0	0	1
JOHN HOLT	1996	1.541537	987.6623377	0	0	0	0	0	1
JOHN HOLT	1997	0.496657	22.88235294	0	0	0	0	0	1
JOHN HOLT	1998	1.490826	1055.333333	0	0	0	0	0	1
JOHN HOLT	1999	0.118056	42.79635258	0	0	0	0	0	1
JOHN HOLT	2000	0.475138	200.5263158	0	0	0	0	0	1
JOHN HOLT	2001	1.139674	0	0	0	0	0	0	1

JOHN HOLT	2002	0	0	0	0	0	0	0	1
JOHN HOLT	2003	0.065789	421.3209733	3.652968037	1141.928571	276253.5478	4.89824E-06	557.4071429	1
JOHN HOLT	2004	0.828194	665.433526	0.000996693	291586.7925	3405.934902	2.46699E-06	797.3528302	1
JOHN HOLT	2005	0.344444	732.6043738	0.003524306	494682.3529	60659.02579	0.002442334	3383.764706	1
JOHN HOLT	2006	0.581395	448.1953488	6.7579E-05	289343.9732	1532.540238	0.000171971	298.6808036	1
JOHN HOLT	2007	0.037975	568.0539419	0.014285714	730	1157.599414	0.000251276	219.5615385	1
JOHN HOLT	2008	1.055822	1050.796813	5.633908477	77.97195513	54965.91137	0.000500474	73.11698718	1
JOHN HOLT	2009	0.043114	0	0	0	0	0	0	1
JOHN HOLT	2010	0.064188	0	0	0	0	0	0	1
JOHN HOLT	2011	1.291645	431.7836943	0.319693095	475.7166667	36676.04502	0.000178914	486.4233333	1
JOHN HOLT	2012	0.688771	342.6513672	0.294117647	2216.071429	4166.666667	0.000213751	2994.955357	1
JOHN HOLT	2013	0.21112	1199.113261	27.01612903	389.8296326	8520.905923	0.00010084	260.4627827	1
JOHN HOLT	2014	0.788295	252.384586	226.8431002	1206.705831	72039.47368	0.000882842	241.7973877	1
JOHN HOLT	2015	0.978012	0	0	0	0	0	0	1
JOHN HOLT	2016	0	0	0	0	0	0	0	0
VITAFOAM NIGERIA PLC	1986	0.017092	0	0	0	0	0	0	1
VITAFOAM NGERIA PLC	1987	0.143162	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1988	0.117442	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1989	0.15795	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1990	0.00268	13.03796496	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1991	0.012612	17.56332661	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1992	0.1224	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1993	1.668612	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1994	0.255173	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1995	0.304876	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1996	0.037577	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1997	1.041873	0.752138834	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1998	0.088024	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	1999	3.415741	0	0	0	0	0	0	1
VITAFOAM NIGERIA PLC	2000	0	0	0	0	0	0	0	0
VITAFOAM NIGERIA PLC	2001	0	0	0	0	0	0	0	0
VITAFOAM NIGERIA PLC	2002	0	0	0	0	0	0	0	0
VITAFOAM NIGERIA PLC	2003	22.92395	3.359125302	0.032868289	3426.282804	1.944769122	0.022272876	3260.062257	1
VITAFOAM NIGERIA PLC	2004	0.382894	1.19846299	0.02576314	1644.221772	4.834805526	0.333099446	13319.02501	1
VITAFOAM NIGERIA PLC	2005	1.927124	9.662095753	0.306579788	2664.934113	448.4623802	0.12387913	3874.278416	1
VITAFOAM NIGERIA PLC	2006	1.10274	4.388638012	0.010801477	13529.05682	16.1725355	0.084105443	13970.1074	1

VITAFOAM NIGERIA PLC	2007	0.092001	13.74219831	0.16662326	99.8343763	29.98730651	0.065436243	65.05685181	1
VITAFOAM NIGERIA PLC	2008	0.407908	24.16923163	0.728370903	115.0510065	65.79654466	0.015236769	2522.181476	1
VITAFOAM NIGERIA PLC	2009	0.066126	7.187374914	0.030486358	202.0059112	84.0185225	0.803517803	202.1020018	1
VITAFOAM NIGERIA PLC	2010	0.00679	1.46462062	0.070599507	599.0515599	39.97176221	1.400877841	204.3187271	1
VITAFOAM NIGERIA PLC	2011	0	9.176823368	0.162845792	60.02623156	91.11210105	0.040295928	230.2577743	1
VITAFOAM NIGERIA PLC	2012	0.098849	0.359822327	0	37.07748826	0	0	66.61062457	1
VITAFOAM NIGERIA PLC	2013	1.113711	0.832127047	0.734175188	840.6796493	639.9426203	0	6228.260816	1
VITAFOAM NIGERIA PLC	2014	0.370452	8.582232538	0.327198445	1507.095176	775.2053662	0	416.9140557	1
VITAFOAM NIGERIA PLC	2015	0	0	0	0	0	0	0	0
VITAFOAM NIGERIA PLC	2016	0	0	0	0	0	0	0	0
LEVENTIS	1986	0.262583	2.531445457	0	0	0	0	0	1
LEVENTIS	1987	0.393973	1.300334267	0	0	0	0	0	1
LEVENTIS	1988	0.659407	0.629564277	0	0	0	0	0	0
LEVENTIS	1989	0.519544	0.237515182	0	0	0	0	0	1
LEVENTIS	1990	0.497399	1.004413083	0	0	0	0	0	1
LEVENTIS	1991	3.287178	0	0	0	0	0	0	1
LEVENTIS	1992	0.372191	0	0	0	0	0	0	1
LEVENTIS	1993	0.534918	0	0	0	0	0	0	1
LEVENTIS	1994	0.629482	0	0	0	0	0	0	1
LEVENTIS	1995	1.825587	0	0	0	0	0	0	1
LEVENTIS	1996	0.183644	0	0	0	0	0	0	1
LEVENTIS	1997	0.164184	0	0	0	0	0	0	1
LEVENTIS	1998	0.20749	0	0	0	0	0	0	1
LEVENTIS	1999	0.33386	0	0	0	0	0	0	1
LEVENTIS	2000	263.9405	0	0	0	0	0	0	1
LEVENTIS	2001	0.398278	0.942913311	0	0	0	0	0	1
LEVENTIS	2002	129.5406	0.759651566	0	0	0	0	0	1
LEVENTIS	2003	176.0361	0.27292639	0.00548336	64.20586941	0.300857525	48.79978092	1202.113486	1
LEVENTIS	2004	30.01062	0.203236989	0.072992851	197.0967177	7.638555195	30.0743259	1691.8701	1
LEVENTIS	2005	15.6244	0.900158623	0.062424394	193.3121952	3.290096179	5.813469173	0	1
LEVENTIS	2006	0.000327	28.1049175	0.010353892	532.0105724	1.42323985	0.289300607	0	1
LEVENTIS	2007	0.000447	3.79656806	0.009529575	447.7719101	1.633089758	0.395573768	0	1
LEVENTIS	2008	0.000741	2.871047033	0.122956142	69.77141193	8.330265404	0.38432404	0	1
LEVENTIS	2009	0.000644	0.889193752	0.008917552	105.8276878	0.529497667	0.313912621	0	1
LEVENTIS	2010	0.910734	1.624804962	2.513194088	0.266017315	1.42939199	0.312968917	0	1
LEVENTIS	2011	0.665901	10.78346356	20.45920315	0.412587504	7.358413308	0.348903704	0	1
LEVENTIS	2012	0.595245	1.739965819	3.764909213	0.848956292	1362.191387	0.399526579	0.755376988	1
LEVENTIS	2013	5.539737	0.823129026	0.377183799	1.832100061	5.444090015	0.210417275	2.724566226	1
LEVENTIS	2014	0.35741	2.030508177	0.049375557	50.87360249	5.418540287	0.019251741	49.58599141	1
LEVENTIS	2015	0.314531	4.018549783	2.111680421	8.320942036	53.67094255	0.009072226	371.1862238	1
LEVENTIS	2016	0	0	0	0	0	0	0	0

Source: Factbook from Nigerian Stock Exchange and Statement of Financial Position of various companies for the various years