



# EMPIRICAL STUDY ON WORKING CAPITAL MANAGEMENT AND OPERATIONAL EFFICIENCY OF LISTED MANUFACTURING FIRMS IN NIGERIA 2009 – 2018

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## ABSTRACT

*In Nigeria, the manufacturing sector is the second most important after agriculture. It is important in terms of contribution to gross domestic product, employment and foreign exchange earnings. The purpose of this work was to determine the effect of working capital management on operational efficiency of manufacturing firms in Nigeria. The study has five objectives which includes: to determine whether account receivable management influences operational efficiency of listed manufacturing firms in Nigeria, establish the degree to which account payable influences their operational efficiency, examine how inventory control, cash conversion circle and debt-equity management influences operational efficiency of listed manufacturing firms in Nigeria. The study tested five hypothesis in null order. It covered 40 manufacturing firms that are consistently listed on the Nigeria Stock Exchange from 2008 to 2018. It reviewed relevant literature as well as theoretical, conceptual and empirical analysis. The study employed an expo-facto research design, while secondary data was also used. Quantitative analysis with Karl Pearson regression was used in the analysis. The result of the study shows that there was positive relationship between four of the independent variables. The study makes the following recommendations: manufacturing firms should regularly review their credit policies, make early payment to their suppliers in order to enjoy good relationship with them, install and maintain modern inventory control system, establish optimum cash targets etc.*

**KEYWORDS:** Working capital, operational efficiency, manufacturing firms.

## 1. INTRODUCTION

Working Capital Management (WCM) is a tool used to immunize corporations from financial upheavals and when managed strategically it can improve a company's competitive position and profitability. It is the difference between current assets and current liabilities. One aspect that needs investigation is the management of working capital in manufacturing firms. It is a trading capital, not retained in the business in a particular form for longer than a year (Padachi, 2006). Working capital meets the short term financial requirements of a business enterprise. The money invested in it changes form and substance during the normal course of business operations. The wider perspective of WCM contributes to the greater opportunities to create wealth. Increasing the speed of a cash conversion cycle through receivable and payable management helps improve on profitability and liquidity

(Johnson & Soenen, 2003). Additionally, effective inventory management is also critical to the management of liquidity and profitability in many companies.

Working capital management efficiency is vital for profitability in manufacturing firms, where a major part of the assets is composed of current assets (Horne & Wachowitz, 2004). One of the major components of working capital is inventory. The inventory of a manufacturing concern 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, while current assets for a typical manufacturing company account for over half of its total assets (Raheman & Nasr, 2007).

In the present day of rising capital cost and scarce funds especially in the manufacturing subsector, 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. 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 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.

The most important goal in operating a company is to earn an income for its owners. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Increasingly, profitability is one of the most important tasks of the business managers and they constantly look for ways to change the business in order to improve profitability (Refuse, 1996). The manufacturing sector is very big, it is made up of companies that make the whole thing from abrasives to wood floors, including industrial and consumer products, as well as both finished products and materials used to manufacture finished products (Amadi, 2013). It occupies a central place in the nations' financial system and is essential driving force in the growth of the economy. Major product groups include food and beverages, chemicals, transportation, building and electronics equipment and others. In modern economies, industrial sector serves as the vehicle for the production of goods and services, the generation of employment and the enhancement of incomes. Hence, Adamu, (1989) described industry and in particular the manufacturing sub-sector, as the heart of the economy.

### 1.1 Statement of the Problem

This study arises from the need to manage working capital of manufacturing firms more effectively and efficiently – keeping viability, continuity and profitability in view. In Nigeria many manufacturing firms are said to be struggling to thrive and that some key players have been forced to move their operations to other sectors. Others have shut down their operations as evidenced by closure of Niger Steel Company Ltd, Niger Gas Company Ltd both in Enugu, NigerCem

Nkalagu Ebonyi state Nigeria. All these firms cite high operational costs as the main cause of their precarious financial situation (Udoka 2007).

### 1.2 Objectives of the study

- i. To investigate the effect of account receivable management on the profitability of listed manufacturing firms in Nigeria.
- ii. To evaluate the effect of accounts payable management on the profitability of the listed manufacturing firms in Nigeria.
- iii. To examine the effect of inventory control management on the profitability of listed manufacturing firms in Nigeria.
- iv. To identify the effect of cash conversion circle on the profitability of listed manufacturing firms in Nigeria.
- v. To evaluate the effect of debt equity management on the profitability of listed manufacturing firms in Nigeria.
- vi.

### 1.3 Hypotheses

In line with the objectives of the study, the following hypotheses have been formulated:

Ho<sub>1</sub>: Account Receivable management has no significant effect on the profitability of the listed manufacturing firms in Nigeria.

Ho<sub>2</sub>: Accounts payable management has no significant effect on the profitability of listed manufacturing firms in Nigeria.

Ho<sub>3</sub>: Inventory control management has no significant effect on the profitability of listed manufacturing firms in Nigeria.

Ho<sub>4</sub>: Cash conversion circle has no significant effect on the profitability of listed manufacturing firms in Nigeria.

Ho<sub>5</sub>: Debt Equity management has no significant effect on the profitability of listed manufacturing firms in Nigeria.

## 2. LITERATURE REVIEW

### 2.1 Conceptual Framework

Working capital is the amount of funds that a business has made available to meet the day to day cash requirements of its operations (Pandey, 2008). It is the difference between current assets and current liabilities. Current assets are the resources in cash or readily convertible into cash. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinarily within a year and such temporary investment as may readily be converted into cash upon need (Raheman & Nasr, 2007). They include bank balance, cash, marketable securities, inventories and accounts



receivables. A business must maintain an appropriate level of current assets. Over investment in current assets is not desirable. Excessive level of current assets can easily result in a company realizing a sub-standard return on investment (Raheman & Nasr, 2007; Horne & Wachowitz, 2004). However, companies with too little amount of current assets may incur shortages and difficulties in maintaining smooth operations (Horne & Wachowitz, 2004). Current liabilities are organization's commitments for which cash will soon be required. They include bank overdraft, accounts payables and unpaid bills (Pandey, 2008). A company is responsible for paying these obligations on a time basis. Liquidity for the on-going company is not reliant on the liquidation value of its assets, but rather on operating cash flows generated by those assets (Soenen, 1993). Working capital is regarded as life giving force for any economic unit and its management is considered among the most important functions of corporate management (Pandey, 2008). Every organization, profit oriented or not, irrespective of size and nature of business requires necessary amount of working capital. Working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of business (Mukhopadhy, 2004). The management of working capital is important to the financial health of businesses of all types and sizes. The amounts invested in working capital are often high in proportion to the total assets employed and so it is very vital that these amounts are used in an efficient and effective way (Pandey, 2008).

## 2.2 Gross Operating Profit (GOP)

This ratio explains how efficient a company is, in utilizing its operating assets. This ratio calculates the percentage of profit earned against the operating assets of the company (Lazaridis & tryfonidiens, 2006). 
$$\text{Gross operating profit} = (\text{Sales} - \text{COGS}) / (\text{Total asset} - \text{financial asset})$$

The negative association between company's accounts receivables and profitability suggests that the higher level of accounts receivables tend to increase the cash gap and therefore will reduce the working capital. Also the inverse association between the inventory turnover and ROA causes the Productivity volume decrease. (Lazaridis and Tryfonidis, 2006). In another study it was suggested that it is impossible to predict the impact on the current ratio, quick ratio, cash conversion cycle, profits and leverage when a change in sales causes a change in working capital variables. Likewise, a managerial decision that changes components of working capital will cause an unpredictable change in the liquidity, profitability and leverage ratios. Overall, the money collection phase was absolutely associated to the current plus quick ratios, to the receivables and to

the inventory conversion period. There are many firms in Pakistan that have invested ample amount of cash to sustain their working capital height. Then the way in which these companies sustain their working capital height will significantly affect the profitability. An inverse association of profitability with the determinants of the running capital i.e., with the debtors' collection time, stock change time, cash conversion cycle and the payment received time for the companies that are operating in Pakistan in the cement industry and also on KSE.

## 2.3 Working Capital Management and Firm Profitability

Existing literature is strongly with the view that efficient working capital improves profitability. In this context, profitability refers to the ability of an enterprise to generate profits from its investments; working capital management affects profitability in several ways (Deloof, 2003). For instance, the management of cash, debtors and stocks affects the level of profits made by an enterprise. According to him, the excessive holding of stocks leads to high stock handling costs, deterioration in the value of stocks due to damage and obsolescence, theft or pilferage by employees and wastage. All these are cost to the firm which reduces its profitability.

Moreover, inadequate stocks also lead to stock out costs and loss of goodwill of the firm, leading to losses or profits. Holding a high level of inventories leads to high capital tied up in stocks. This tied up capital means lost profitability due to forgone interest income which would have been earned if the capital tied up in stocks were invested (Saleemi, 2009). Debtors' management policy adopted by a firm will also determine the cost of bad debts, debt administration, debt collection costs and the forgone benefits due to cash tied up in debtors. This may also include the cost of discounts which may be given to debtors to induce them to make prompt payments arising out of credit sales. Likewise all these costs will reduce the profitability of the firm (Manasseh, 2001). Defective cash management will lead high costs associated with holding cash, financial distress and lost investment income due hold cash in a non-earning form (Manasseh, 2001). Examples of financial distress costs include interest costs, debt restructuring costs and legal costs. Likewise these costs will reduce the amounts of profits made by a firm.

## 2.4 Empirical Review

Studies carried out in Nigeria by (Attama and Kanayo, 2011; Udoka ... et al., 2012;



& Kelechi ... et al., 2013) were targeting SME's and excluding large enterprises. The results can only be interpreted in relation to small and medium enterprises. Ikram, Mohamad, Khalid and Zaheer (2011) studied working capital management on profitability in the cement industry. The results of the study were based on only one sub sector within the manufacturing sector. Therefore, the results of this study should be used with caution and should only be generalized to the cement industry and not entire manufacturing sector. Studies on working capital management use secondary data. Mousavi and Jari (2012), Kaddumi and Ramadan (2012) and Gakure et al(2012) used record survey sheet to collect the secondary data. However, Nyabwanga et al(2012) studied the effects of working capital management practices on performance of small enterprises in North central Kaduna, Nigeria. They used a questionnaire to collect the primary data. Secondary data from financial statements give values at a specific date and therefore required to be supplemented by primary data collected from opinions of finance managers.

Some other researchers namely, Jose, Lancaster, and Stevens (1996) carried out a detailed analysis on the association of cash conversion cycle and financial returns. They located an inverse association of profitability with cash conversion cycle. Shin and Soenen (1998) conducted an expanded study by taking a large sample of 58985 firms of US. Their study was based on a longer time phase of 1975-1994. They suggested that for generating greater volume of wealth for the shareholders of a firm, it is very crucial to manage the working capital of that firm effectively and in an efficient manner. They also recommended that profitability and net trade cycle both are inversely related to each other. In a sample of firms listed in Thailand, Napompech (2012) investigated the impact of working capital management on profitability in Thailand using a sample of 255 companies for a period of 3 years (2007-2009). Regression analysis was used in the analysis and the results revealed a negative relationship between the gross operating profit and cash conversion cycle, receivables collection period, inventory conversion period and average payment period. Therefore managers can increase the profitability of their firms by shortening the cash conversion cycle, inventory conversion period and receivables collection period. However, the findings suggested that they cannot increase profitability by lengthening the payables deferral period.

## 2.5 Theoretical framework

This work will be guided by Agency theory propounded by Fama & Jensen in 1983. According to this agency theory, managers as agents are expected to monitor corporate affairs in a most profitable manner so as to maximize the value of the owners as principals and protect the interest of other stakeholders. Under the theory, managers are responsible for managing the business profitably.

From the agency perspective, working capital is a managerial activity that managers are expected to efficiently monitor and manage so as to make profit and maximize the owners' value (Stephens & Bartunek, 1997, Dierks & Patel, 1997). Based on agency as managers managed working capital according to prescriptive theory, then it would be expected that businesses would invest in working capital, finance working capital, monitor factors that influence working capital, manage cash, accounts receivable, inventory, accounts payable, the cash conversion cycle (aggregative approach), and measure and analyze performance to ensure that the long term (fixed) assets are utilized effectively and efficiently (Angelique Nadia, 2000).

## 3.1 RESEARCH DESIGN

This study adopted ex-post facto designs. This ex-post facto research aims to study the effect of working capital management empirically on the profitability of selected listed manufacturing companies in Nigeria. The choice of expo facto research design in this study is informed by the fact that, the aim of the design is to investigate the relationships between variables and to estimate the effect of one variable on another, so as to establish a causal relationship or otherwise among the variables. This is therefore consistent with the objective of the study.

## 3.2 Population of the study

The population of this study will be made up of all the 40 listed manufacturing firm son the floor of the Nigerian Stock Exchange as at December 2013.

## 3.3 Sample Size of the study

Twenty firms were selected, the choice of was based on the following criteria: Firms that were compliant with CAMA schedule 2 which stipulates that all listed companies in Nigeria should publish and submit their audited annual report and accounts to the Nigerian Stock Exchange (NSE).

All manufacturing firms which has consistently listed with the Nigeria Stock Exchange from 2004 till





2013. Based on the above criteria, the following firms were chosen:

- |                                 |   |
|---------------------------------|---|
| 1. Unilever Plc.                | 11. 7UP Bottling Company Plc.               |
| 2. Nestle Plc.                  | 12. Dangote Floor Mills Plc.                |
| 3. Cadbury Plc.                 | 13. National Salt Company of Nigeria Plc.   |
| 4. Fidson Healthcare Plc.       | 14. Mobile Oil Plc.                         |
| 5. Evans Medical Plc.           | 15. Total Nigeria Plc.                      |
| 6. Glaxo Smithkline Plc.        | 16. MRS Oil Nigeria Plc.                    |
| 7. Nigerian Breweries Plc.      | 17. Berger Paints Plc.                      |
| 8. Guinness Nigeria Plc.        | 18. Nigerian Ropes Plc.                     |
| 9. International Breweries Plc. | 19. Ashaka Cement Plc.                      |
| 10. Vita Foam Nigeria Plc.      | 20. Cement Company of Northern Nigeria Plc. |

### 3.4. Sources and Method of Data Collection.

The study will use secondary data from the annual reports and accounts of the sampled firms under study, for the period of ten years (2004 – 2013). The use of secondary data in this study is informed by the fact that the study is based on the quantitative research methodology that requires quantitative data to test the research hypotheses.

### 3.5 Data Analysis

Pearson's Multiple regression analysis was used. Karl Pearson's regression was used to show the relationship between variables such as those between working capital management and profitability. A number of recent studies have used Pearson's correlation, regression analysis. Kaddumi and Ramadan (2012) used the models to determine the effects of working capital management on profitability of Jordan industrial firms listed at Amman stock exchange. Hussain, Farooz and Khan (2012) used these three models to investigate the relationship between aggressiveness investment policy and aggressiveness financing policy with profitability in Pakistan manufacturing firms. Regression Coefficient between

each of the variables was computed as guided by research hypothesis.

### 3.6 Statistical Model and Hypothesis Testing

The model will use Gross operating profit GOP (Profitability) as dependent variable and five independent variables, which includes Account Receivable in days (ACR), Account Payable in days (ACP), Inventory in days (INV), Cash Conversion Cycle (CCC) and Debt equity (DE). GOP is reliable in studying the effect of working capital management on firm's profitability because it measures only the performance of the operating activities of a firm in a year, this is because the measurement of the gross operating profit which is sales minus cost of goods sold excludes taxes, interest costs, depreciation and amortization (Lazaridis & Tryfonidis, 2006; Gill et al., 2010) and also it is based on this fact that this measurement will focus on the profitability. GOP is calculated as follows: (Lazaridis & Tryfonidis, 2006; Deloof, 2003). Gross operating profit = (Sales – COGS) / (Total asset – financial asset).

The relationship that exists among the five independent variables and the one dependent variable is given by the equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where:

- |                |   |  |
|----------------|---|--|
| Y              | = | Profitability  |
| B <sub>0</sub> | = | Constant   |
| X <sub>1</sub> | = | Accounts Receivable management   |
| X <sub>2</sub> | = | Account Payable management   |
| X <sub>3</sub> | = | Inventory Control management   |
| X <sub>4</sub> | = | Cash Conversion Circle   |
| X <sub>5</sub> | = | Debt Equity management   |
| B <sub>1</sub> | = | Regression Coefficient of variable X <sub>1</sub> (Account receivable)     |
| B <sub>2</sub> | = | Regression Coefficient of Variable X <sub>2</sub> (Accounts Payable)       |
| B <sub>3</sub> | = | Regression Coefficient of Variable X <sub>3</sub> (Inventory Control)      |
| B <sub>4</sub> | = | Regression coefficient of variable X <sub>4</sub> (Cash Conversion Circle) |



- $B_5$  = Regression Coefficient of variable  $X_5$  (Debt Equity)  
 $E$  = Error term

### 3.7 Variable Used

To study the effects of working capital management on the profitability of selected manufacturing companies, the Gross operating profit (Profitability) has been considered as the dependent variable of the research. The explanatory variables to be used as proxies of working capital management are (1) account receivable in days, (2) account payables in days (3) Inventory in days (4) Cash conversion Cycle (5) Debt Equity (DE).

- Inventory control - is inventory conversion period (ICP) calculated as (inventory/cost of goods sold)\*365
- Cash conversion cycle (CCC), liquidity management – is calculated as [Receivable collection period + inventory conversion period - Payable deferral period. (1 + 3 – 2 as specified above).

ebt/Equity (DE) is debt-to-equity ratio computed as total current assets/total current liability.

### Variable Measurements

- Account receivables in days - is receivable conversion period (RCP) calculated as (account receivable/sales) \*365
- Account payables in days or Credit policies - is payable deferral period (PDP) computed as [(account payable/cost of goods sold)\* 365

### 4.1 RESULTS

#### 4.2 Descriptive Statistics

The descriptive statistics of the data collected for the study is presented and discussed in this section. The summary of the descriptive statistics of the data collected is presented in Table 4.1 as follows;

**Table 4.2: Descriptive Statistics of the Variables: All firms (2009 to 2018).**

VAR	MIN	MAX	MEAN	STD	SKY	KUR	N
GOP	0.25	103	48	22	0.57	-0.64	200
ACCT REC	16	480	122	84	1.75	3.57	200
ACT PAY	5	351	131	89	0.37	-0.87	200
INV	15	530	160	97	1.18	1.58	200
CCC	15	472	180	106	0.85	0.58	200
DE	0.21	299	17	33	4.71	30.4	200

### 4.3 Hypotheses Testing

In this section, the study tested the hypotheses formulated; Table 4.6 presents the coefficients of the

variables of the study from which the hypotheses are tested. The hypothesis tested was:  $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$   
 $H_1: \text{At least one of } (\beta_1, \beta_2, \beta_3, \beta_4, \beta_5) \neq 0$

**Table 4.3.1 Regression Coefficients of the Study (2004 to 2013)**

Variables	Coefficient	P-value
Intercept/Constant	56.14584815	6.5005231
ACCT REC	-0.06175656	0.004357858
ACCT PAY	0.05887937	0.001386704
INV	-0.09416348	1.01013E-06
CCC	0.053800077	0.005899845
DE	-0.17574466	0.000157447



Table 4.3.1 shows that account receivables (ACCT REC) days has a negative significant effect on the profitability of listed manufacturing firms in Nigeria as indicated by the coefficient of -0.06175656 with p-value of (0.004357858) which is significant at 1% level of significance. Therefore, the study infers that as (ACCT REC) days increases the profitability of listed manufacturing firms in Nigeria falls. That is, account receivable days significantly reduces profitability of listed manufacturing firms in Nigeria.

Based on this, the study rejects the null hypothesis one ( $H_{01}$ ) which state that, Account Receivables collection has no significant effect on the profitability of the listed manufacturing firms in Nigeria. Therefore, the study infers that Account Receivables collection has significant effect on the profitability of the listed manufacturing firms in Nigeria, during the period covered by the study. The table also shows that account payables (ACCT PAY) days has a positive and significant effect on the profitability of listed manufacturing firms in Nigeria, considering a positive coefficient of 0.05887937 and p-value of 0.001386704 which is significant of 1% level of significance. That is, account payables day has significantly improved the profitability of listed manufacturing firms in Nigeria. Based on this, the study rejects the null hypothesis two ( $H_{02}$ ) which states that Account payables period has no significant effect on the profitability of the listed manufacturing firms in Nigeria. Therefore, the study infers that account payables period has significant positive effect on the profitability of listed manufacturing firms in Nigeria, during the period covered by the study. On the contrary, the results from the table shows that the sales days in inventory (INV) has a negative coefficient of -0.09416348 with a p-value of 1.0101306) which is not statistically significant at all levels. This suggests that the inventory in day's management has not significantly affected the profitability of listed manufacturing firms in Nigeria during the period of the study. Based on this, the study fails to rejects the null hypothesis six ( $H_{03}$ ) which states that sales days inventory has no significant effect on the profitability of the listed manufacturing

firms in Nigeria. Therefore, the study infers that sales day's inventory does not drive the profitability of listed manufacturing firms in Nigeria.

The results presented in the table also show that the cash conversion cycle (CCC) has a significant positive effect on the profitability of listed manufacturing firms in Nigeria, from the coefficient of 0.053800077 which is statistically significant at 1% level of significance (from the p-value of 0.005199845). This suggests that the CCC significantly affects the profitability of listed manufacturing firms in Nigeria during the period of the study. Based on this, the study rejects the null hypothesis four ( $H_{04}$ ) which states that, cash conversion cycle has no significant effect on the profitability of the listed manufacturing firms in Nigeria.

Lastly, the results from the table shows that the debt equity (DE) has a negative significant effect on the profitability of listed manufacturing firms in Nigeria, from the coefficient of -0.17574466 and p-value of 0.000157447 which is statistically significant at 1% level. This suggests that the debt equity management ratio has negative significant effect on the profitability of listed manufacturing firms in Nigeria during the period of the study. Therefore, the study infers that as (DE) increases, the profitability of listed manufacturing firms has no significant effect on the profitability of the listed manufacturing firms in Nigeria. Therefore, the study infers that debt equity management does significantly affect the profitability of listed manufacturing firms in Nigeria.

Based on the above result the null hypothesis was rejected that all the partial regression coefficients are equal to zero and concluded that at least one of the partial regression coefficients is not equal to zero. The implication to these findings is that all the independent variables; Account receivable in days, accounts payable practices, inventory control practices, liquidity management practices and working capital levels have a significant combined effect on profitability and can be used to predict profitability.

**Table 4.4 Results of Normality Test**

ARIABLES	W/E	V/Con.index	Z -order	Prob>Z	N
<b>OP</b>	4.459	1.000	2.247	0.012	200
<b>CR</b>	0.734	2.464	0.88	0.038	200
<b>CP</b>	0.333	3.660	0.94	0.085	200
<b>IV</b>	0.254	4.192	-1.71	-0.194	200
<b>CC</b>	0.148	5.490	0.005	0.015	200
<b>E</b>	0.072	7.871	0.024	0.047	200

Source: STATA Output



The variables of the study are subjected to Shapiro-Wilk (W) test for data normality; the technique test the null hypothesis (that the data is normal), that is, the variable came from a normally distributed population. Table 4.4 indicates that the data for all the variables are not normally distributed, because the P-values are significant at 1% level of significance (ACR, ACP, INV, CCC and DE, from Prob>Z value of 0.038, 0.085, -0.0.194, 0.015, and 0.047 respectively); and 5% level of significance (GOP Prob>Z value of 0.012). Thus, the null hypothesis (that, the data is normally distributed) is rejected. This may have effects on the results, as most of the parametric tools of analysis including regression assumed that the data is normally distributed.

## 5. SUMMARY

This study investigates the effect of working capital management on the profitability of listed manufacturing firms in Nigeria, using a sample of twenty companies. The study covers a period of 10 years (2004–2013) and employed regression research design and OLS regression analysis. Based on the tests conducted on the data collected and the analyses of the results, this study found a significant relationship between the working capital management components (account receivables, account payables, cash conversion cycle and debt equity management) and the profitability of listed manufacturing firms in Nigeria. In essence, working capital management explained 71 % of the variations in the profitability (gross operating profit) of the listed manufacturing firms in Nigeria, during the period under review.

The study was conducted based on the premise that working capital management does not influence profitability of manufacturing firms in Nigeria. The study reviewed both theoretical and empirical literature on working capital management. From the review of the related literature, a comprehensive conceptual framework of argument of the relationship between working capital management and profitability was formulated.

The hypothesized relationship was tested empirically guided by the following specific objectives; to determine whether account receivable management influences profitability of manufacturing firms, to determine the degree to which accounts payable management influence profitability of manufacturing firms, to examine how inventory control management influence profitability of manufacturing firms, to establish whether cash conversion circle (liquidity management practices) influence profitability of manufacturing firms and to investigate whether debt

equity management influence profitability of manufacturing firms in Nigeria.

Based on the conceptual framework and objectives of the study and the nature of the study, secondary data was used in the study which are collected from publish account of sample firms from the fact book of the Nigerian Stock Exchange. The independent variables of the study were tested for multicollinearity and independence. Normality tests were carried out on the profitability (dependent variable). Statistical package for social sciences MINITAB version 20.0 was used as the statistical tool for analysis all through. The study is quantitative in nature, hence data was analyzed and described using descriptive and inferential statistics. Multiple linear regression analysis was used to test the combined effect of all the independent variables.

## 5.1 Findings

The study found that there is a strong combined effect of 71% variations in the profitability of manufacturing firms in Nigeria. This was evidenced by an adjusted R-square value of 0.71253 or 71%. The independent variables (account receivable management, accounts payable management, cash conversion circles and debt equity management) on profitability of manufacturing firms in Nigeria. The above listed four independent variables were found to be statistically significant while inventory control management was removed from the optimal model because it was not significant at all levels.

The findings indicated that not all independent variables (account receivable management, accounts payable management, inventory control management, cash conversion circles and debt equity management) made a significant positive contribution in explaining the dependent variable (profitability). It was found that only inventory control management practice that is not significant at all levels, while account payable management and cash conversion circle made positive and statistically significant contribution. On the other hand debt equity management and account receivable management recorded a significant negative effect on profitability of listed manufacturing firms in Nigeria. This means that as DE and CCC increases profitability will decrease.

## 6. AREAS FOR FURTHER RESEARCH

This study was not able to exhaust all working capital management components that have effects on profitability in manufacturing firms. Therefore, effects of prepayments, accrued expenses, government regulations and policy, economic environment and





culture on profitability of manufacturing firms need be established in future studies.

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