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## **EFFECT OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY OF NIGERIAN MANUFACTURING SECTOR: EVIDENCE FROM NIGERIAN BREWERIES PLC**

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### **ABSTRACT**

*This study ascertains the effects of working capital management on the profitability of Nigerian manufacturing sector with special reference to Nigerian Breweries plc. An ex –post facto research design approach was adopted for the study. The population of this study comprises of all manufacturing companies in Nigeria. Using a time series data for the period of ten (11) years (2006 to 2016), Nigerian Breweries plc was chosen due to its key influence in the sector as the sample. Secondary data were obtained from the annual report of the companies from 2006 to 2016 financial year. The data collected were presented and analyzed using descriptive statistics. Three hypotheses were formulated and tested in the course of this study. Regression analysis by aid of SPSS v.17 was used to test for statistical significance of the relationship between working capital management and profitability. The results showed that accounts receivable period (ACRP) has significant negative effect on the Return on asset (ROA) of Nigerian manufacturing firms. The findings further revealed that inventory period (INVP) has insignificant positive effect on the Return on asset (ROA) of Nigerian manufacturing firms. Finally, the result established also that cash conversions cycle (CCC) has significant positive effect on the Return on asset (ROA) of Nigerian manufacturing firms. Based on the findings, this study recommends among others; manufacturing companies should keep each component of working capital at an optimal level and strive to shorten the cash conversion cycle. The company should shorten the inventory holding period by increasing turn over i.e. by massive promotion, hence avoiding extra inventory holding costs and at the same time increasing sales.*

**KEYWORDS:** *working capital management, profitability, manufacturing companies,*

### **INTRODUCTION**

Working capital management (WCM) is a managerial accounting strategy focusing on maintaining efficient levels of a firm's current assets and current liabilities. It deals with the administration of a firm's current assets and current liabilities (Harris, 2005). WCM ensures that a company has sufficient cash flow in order to meet its short-term debt obligations and operating expenses (Mekonnen, 2011). WCM is a very important component of corporate finance because it directly affects the liquidity and profitability of a company (Knauer & Wöhrmann,

2013). Working capital management is important for many reasons. Usually, the current assets of a typical manufacturing firm accounts for over half of its total assets. Thus working capital represents a significant investment in the manufacturing firms. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However, too few current assets may occasion difficulties in maintaining smooth firm operations (Lu, 2013). 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 (Deloof, 2003). In practice, it has become one of the most important issues in organizations with many financial executives struggling to identify the basic working capital drivers and the appropriate level of working capital to hold so as to minimize risk, effectively prepare for uncertainty and improve the overall performance of their businesses (Gill, Biger & Mathur, 2010). The crucial part in managing working capital (WC) is maintaining sufficient liquidity for the day-to-day business operation to ensure the firm's smooth running and meeting its obligations (Ganesan, 2007). A well calculated and employed working capital management is anticipated to add positively to the firm's performance (Padachi, 2006). Holding of excess amounts of working capital can cause a decline in the profitability of a business (Lu, 2013). Working capital management 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 firm value. Excessive investment in inventory and receivables reduces firm profits, whereas too little investment increases the risk of not being able to meet commitments as and when they become due. 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). Similar view was expressed by Mekonnen (2011) who noted that 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 short term obligations on the one hand and avoiding excessive investment in these assets on the other hand.

Nigerian Breweries plc was incorporated in 1946, its first bottle of beer, STAR Lager, rolled off the bottling lines of its Lagos brewery in June 1949. Other breweries were subsequently commissioned by the company, including Aba Brewery in 1957, Kaduna Brewery in 1963, and Ibadan Brewery in 1982. In September 1993, the company acquired its fifth brewery in Enugu, and in October 2003, its sixth brewery, sited at Ameke in Enugu. Ama Brewery began brewing on the 22 March 2003 and at 3 million hectolitres is the largest brewery in Nigeria.<sup>[3]</sup> Operations at Enugu brewery were discontinued in 2004, while the company acquired a malting Plant in Aba in 2008. In October 2011, Nigerian Breweries acquired majority equity interests in Sona Systems Associates Business Management Limited, (Sona Systems) and Life Breweries Limited from Heineken N.V. This followed Heineken's acquisition of controlling interests in five breweries in Nigeria from

Sona Group in January 2011. Sona Systems' two breweries in Ota and Kaduna, and Life Breweries in Onitsha have now become part of Nigerian Breweries Plc, together with the three brands: Goldberg lager, Malta Gold and Life Continental lager. In December 31st 2014, Nigerian Breweries Plc completed the merger with Consolidated Breweries Plc which added the three breweries in Ijebu-ode, Awo-Omama and Makurdi to the company and also with the brands 33 Export Lager, Williams Dark Ale, Turbo King Stout, More Lager, Breezer, Himalt and Maltex (the first Nigerian malt drink). In November 2015, Nigerian Breweries launched the international brand Strongbow cider which makes it the first in Nigeria to produce and bottle the cider category beverage. Nigerian Breweries Plc now has ten operational breweries from which its products are distributed to all parts of Nigeria, in addition to the malting plants in Aba and Kaduna. Nigerian Breweries also supports operations in Champion Breweries Plc, Uyo.

When we look at the diverse historical riches and products of this company; It becomes clear that there is need to know this firm manage working capital and how this effect the profitability of manufacturing industry in Nigeria.

## **STATEMENT OF RESEARCH PROBLEM**

There is no doubt that the ultimate objective of any firm is to maximize profit. However, the preservation of the liquidity of a firm is an important objective too and it is the efficient management of the various components of working capital that helps to preserve liquidity. However, problem lies in the efficient management of these various components that makes up the working capital by managers. This problem arise as a result of the fact that most managers fight to increase inventory turnover in a bid to increase profitability without been mindful of the need to speed up the debtor collection period and to delay creditor payment period as far as possible, so as to provide the funds needed to keep the cycle flowing. This puts the firms in poor liquidity position and it consequently affects the profitability of such firms. Therefore, given this position, it is expedient that an investigation of the effect of working capital management on profitability be carried out.

Conducting this research on the effectiveness of working capital management on the profitability of Nigerian manufacturing firms is to bridge the gap of literatures and empirical particularly within the sector under review.

## **OBJECTIVES OF THE STUDY**

The broad objective of this study is to examine the relationship between working capital management and the performance of listed firms. However, the specific objectives are as follows:

- i. To evaluate the extent of the relationship between the accounts receivable period (ACRP) and performance of Nigerian manufacturing companies.
- ii. To ascertain the extent of the relationship between inventory period (INVP) and performance of Nigerian manufacturing companies
- iii. To determine the extent of the relationship between the cash conversions cycle (CCC) and performance of Nigerian manufacturing companies

## LITERATURE REVIEW

### Conceptual review

#### Working Capital

Working Capital represents the current assets of a firm which is the portion of financial resources of business that changes from one type of resources to another during the day-to-day execution of business (Gitman, 2003). Current assets comprise cash, prepaid expenses, short-term investments, accounts receivable, inventory and other current assets. Net working capital can be measured by deducting current liabilities of a firm from its current assets. If the value of current assets is less than that of current liabilities then net working capital would have a negative value showing a deficit working capital. When a business entity takes the decisions regarding its current assets and current liabilities then it can be termed as working capital management. The management of working capital can be defined as an accounting approach that emphasizes on maintaining proper levels of both current assets and current liabilities. It provides enough cash to meet the short-term obligations of a firm. Working capital management has to do with the administration of all aspects of current assets, namely cash, marketable securities, stock and current liabilities. It is the functional area of finance that covers all the current accounts of the firm. It is concerned with the adequacy of current assets as well as the level of risk posed by current liabilities. Working capital management is an aspect of financial managements that seeks proper policies for managing current assets, liabilities and practically for maximizing the benefits from managing working capital. The basic purpose of managing working capital is controlling of current financial resources of a firm in such a way that a balance is created between profitability of the firm and risk associated with that profitability (Ricci & Vito, 2000). Every business requires working capital for its survival. Working capital is a vital part of business investment which is essential for continuous business operations. It is required by a firm to maintain its liquidity, solvency and profitability (Mukhopadhyay, 2004). The importance of managing working capital of

a business efficiently cannot be denied (Filbeck & Krueger, 2005). Working Capital management explicitly impacts both the profitability and level of desired liquidity of a business (Raheman & Nasr, 2007). If a firm will invest heavily in working capital i.e. more than its needs, then the profits which can be generated by investing these resources in fixed or long term assets will be diminished. Moreover, the firm will have to incur the cost of storing inventory for longer periods as well as the cost of handling excessive inventory (Arnold, 2008).

#### Profitability

Profit is an excess of revenues over associated expenses for an activity over a period of time. Terms with similar meanings include 'earnings', 'income', and 'margin'. Lord Keynes remarked that 'Profit is the engine that drives the business enterprise'. Every business should earn sufficient profits to survive and grow over a long period of time. It is the index to the economic progress, improved national income and rising standard of living. No doubt, profit is the legitimate object, but it should not be over emphasized. Management should try to maximise its profit keeping in mind the welfare of the society. Thus, profit is not just the reward to owners but it is also related with the interest of other segments of the society. Profit is the yardstick for judging not just the economic, but the managerial efficiency and social objectives also (Adamu, 2016).

Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market. According to Harvard and Upton as cited in (Adamu, 2016), profitability is the ability of a given investment to earn a return from its use. However, the term 'Profitability' is not synonymous to the term 'Efficiency'. Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Though, profitability is an important yardstick for measuring the efficiency, the extent of profitability cannot be taken as a final proof of efficiency. Sometimes satisfactory profits can mark inefficiency and conversely, a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals a satisfactory balance between the values received and value given. The change in operational efficiency is merely one of the factors on which profitability of an enterprise largely depends. Moreover, there are many other factors besides efficiency, which affect the profitability. Sometimes, the terms 'Profit' and 'Profitability' are used interchangeably. But in real sense, there is a difference between the two. Profit is an absolute term, whereas, the profitability is a relative concept.

However, they are closely related and mutually interdependent, having distinct roles in business. Profit refers to the net income earned by the enterprise during the specified period of time, while profitability refers to the operating efficiency of the enterprise. It is the ability of the enterprise to make profit on sales. It is the ability of enterprise to get sufficient return on the capital and employees used in the business operation. Weston and Brigham cited (Adamu, 2016) rightly noted that to the financial management profit is the test of efficiency and a measure of control, to the owners a measure of the worth of their investment, to the creditors the margin of safety, to the government a measure of taxable capacity and a basis of legislative action and to the country profit is an index of economic progress, national income generated and the rise in the standard of living, while profitability is an outcome of profit. Firms having same amount of profit may vary in terms of profitability. That is why Kulshrestha at cited in (Adamu,2016) has rightly stated that Profit in two separate business concern may be identical, yet, many a times, it usually happens that their profitability varies when measured in terms of size of investment.

## **THEORETICAL FRAMEWORK**

### **Behavioural finance theory**

This theory was developed by Shin (1998) as cited in Eya (2016). In the traditional finance context, companies are assumed to be rational and markets are assumed to offer opportunities for participants to take positions on either side of current asset prices. Thus, the theory is primarily concerned with the psychology of companies that may not act rationally in the way assumed by traditional financial analyst/ experts. The proponents of this theory contend that working capital management can be achieved by the rational behaviour of companies.

### **Theory of capital movement**

This theory was propounded by Iversen (1985) with ground breaking contribution in the first explanation of working capital in the industrial organization tradition. Hymer's market imperfection theory (1960) affirms that firms invest overseas so that they can control more markets, increase their profitability and create oligopolies. He saw working capital as a means of acquiring wealth both tangible and tacit. In a similar way, Vanhom (2008) used the product life cycle concept to theorize that firms set up production facilities abroad for products that already have standardized and matured in the home market. This theory has direct bearing to this study.

### **Empirical Review**

In 2013, Daniel and Ambrose Investigated working capital management and firm profitability. Empirical Evidence from manufacturing and construction firms listed on Nairobi securities Exchange, Kenya. The challenge of the study was to

find out the relationship between working capital management and profitability. The study employed a balanced panel data of five manufacturing and construction firms each which are listed on the Nairobi securities exchange (NSE). Pearson's correlation and ordinary least squares regression models were used. The study covers a period of 10 years that is 2013 – 2012. The study find out that a negative relationship exist 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. According to the study, financial leverage, sales growth, current ratio and firm size have significant effect on the firm's profitability. The researchers concluded that firms can create value for their shareholders by reducing the number of day's account receivable and by increasing their inventories to a reasonable level.

Niresh (2012) carried out a study on working capital management and financial performance of manufacturing sectors in Sri Lanka. The major purpose was to investigate the relationship between working capital management and financial performance of listed manufacturing firms in Sri Linka. The study covered a six years period between 2008 – 2011. Return on assets and return on equity were used as performance measures whereas cash conversion cycle, current assets to total asset and current liabilities to total assets were used as working capital management measures. The study employed correlation and regression analysis models for analysis and the result of the analysis revealed that there is no significant relationship between cash conversion cycle and performance measures and hence the study concludes that, manufacturing firms in Sri Linka follow conservative working capital management policy.

Ogundipe, Idowu and Ogundipe (2012) studied working capital management, firms' performance and market valuation in Nigeria. The focus of this study was to examine the impact of working capital management on firms' performance and market value of firms in Nigeria. A sample of fifty-four non-financial quoted firms in Nigeria listed on the Nigeria stock exchange was selected for the period 1995 – 2009. The data for the study was sourced from annual reports of the sample firm for the period under review. Regression model was used for analysis and the result of the analysis revealed that significant negative relationship exist between cash conversion cycle and market valuation and firms' performance in Nigeria. The findings also confirmed that there is a significant relationship between market valuations; profitability and working capital component the study recommend that Nigeria firms should ensure adequate management of working capital especially cash

conversion cycle components of account receivables, account payables and inventories, as efficiency working capital management is expected to contribute positively to firms' market value.

Seyed and Esmail, (2012) examined the relationship between working capital management and profitability for 147 listed companies on Tehran Stock Exchange for period of 2005-2009. They found that there is a negative significant relationship between working capital management and profitability.

Quayyum (2011) attempts to explain the necessity of firms optimizing their level of working capital management and maintaining enough liquidity as it affects the profit-ability, through examining four cement companies of Dhaka Stock Exchange over the period 2005-2009. He discovered that negative relationship exist between working capital management and profitability.

Vijay Kumar (2011) examined the relationship between working capital management and firm's profitability in automobile industries in India. He used 20 firms as sample for the period from 1996-2009. The result showed that there is negative relationship between the length of cash conversion cycle and firm profitability.

However, Akinola, (2011), Mobeen et al. (2011), Gill et al. (2010), Rezazadeh and Heydarian (2010), and Shakor et al, (2012) had contrary opinion, for example Akinlo, (2011) investigated if there is a long run relationship between working capital measured by cash conversion cycle and profitability, and what is the direction of the causality between those vari-ables in 66 firms in Nigeria for the period 1999-2007. He applied LLC, IPS and Hardi panel unit root test to insure the stationary of the data, which was found stationary at first difference. Then he run the panel regression to detect the long run relationship, the result revealed that there is a long run steady state relationship between working and profitability. Mobeen et al. (2011) also examined the impact of working capital management on profitability and 65 companies in Pakistan were used as sample for the periods between 2005 and 2009. Result showed that there is significant correlation between the components of working capital with market value and profitability of the company and concluded that Pakistani companies correlated heavily on current assets to

maximize profits. Gill *et al.* (2010) in their study surveyed the relationship between working capital management and profitability for the 88 U.S. companies listed on the New York Stock Exchange during the years 2005 to 2007. The results suggest that statistically there is a significant relationship between the working capital and profitability. Also,

## METHODOLOGY

An ex-post-facto research design was adopted. The ex-post-facto research design attempts to explore causes that affect relationship where causes already exist and looks backwards to explain why. The research study makes use of secondary data. The data used are obtained from the annual reports and accounts of Nigerian Breweries plc for the period of 2006-2016.

### Model specification

The implicit form of the model is shown below:

$$ROA=f(ACRP, INVP, CCC) \quad (1)$$

Where,

ROA= Return on Asset (A proxy for firm performance)

ACRP = accounts receivable period

INVP = inventory period

CCC = cash conversions cycle

In explicit form the model is presented thus;

$$ROA=\beta_0+ \beta_1 ACRP + \beta_2 INVP + \beta_3 CCC + E \quad (2)$$

$\beta_0$ =Intercept of the line with Y- axis or the value of y when x is zero

E=Error term

$\beta_1, \beta_2, \beta_3$ =The regression coefficients

*A Priori* expectation:  $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0$

### Data analysis techniques

Secondary data collected were analyzed using Descriptive statistics. This was considered in order to ascertain the qualities and behavior of the variables of this study. Then the regression analysis was used to test the hypotheses using SPSS VERSION 17.0.

## RESULTS AND DISCUSSIONS

### Regression results

#### Hypothesis one

$H_0$ : There is no significant relationship between the accounts receivable period (ACRP) and performance of Nigerian manufacturing companies

**Table 2: Regression Analysis showing the effect of accounts receivable period (ACRP) on Return on Assets (ROA)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.416	.034		12.196	.000
ACRP	-.010	.002	-.853	-4.903	.001

a. Dependent Variable: ROA

From the regression analysis, Table 2 indicates that there is a negative (t-statistics, -4.903) but significant (p-value 0.001) association between accounts receivable period (ACRP) and Return on Assets (ROA) of Nigerian manufacturing firms. This negative effect implies that a 1% increase in accounts receivable period (ACRP) will tend to decrease the level of Return on Assets (ROA) by -0.853. Based on this test, accounts receivable period (ACRP) has

significant negative effect on the Return on asset (ROA) of Nigerian manufacturing firms.

**Hypothesis two**

H<sub>0</sub>: There is no significant relationship between the inventory period (INVP) and performance of Nigerian manufacturing companies.

**Table 3: Regression Analysis showing the effect of inventory period (INVP) on Return on Assets (ROA)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.104	.121		.861	.411
INVP	.002	.001	.411	1.351	.210

a. Dependent Variable: ROA

From the regression analysis, Table 3 indicates that there is a positive (t-statistics, 1.351) but insignificant (p-value 0.210) association between inventory period (INVP) and Return on Assets (ROA) of Nigerian manufacturing firms. This positive effect implies that a 1% increase in inventory period (INVP) will tend to increase the level of Return on Assets (ROA) by 0.411. Based on this test, inventory period

(INVP) has insignificant positive effect on the Return on asset (ROA) of Nigerian manufacturing firms.

**Hypothesis three**

H<sub>0</sub>: There is no significant relationship between the cash conversions cycle (CCC) and performance of Nigerian manufacturing companies

**Table 4: Regression Analysis showing the effect of cash conversions cycle (CCC) on Return on Assets (ROA)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.304	.026		11.808	.000
CCC	301.316	114.688	.659	2.627	.027

a. Dependent Variable: ROA

From the regression analysis, Table 4 indicates that there is a positive (t-statistics, 2.627) and significant (p-value 0.027) association between cash conversions cycle (CCC) and Return on Assets (ROA) of Nigerian manufacturing firms. This positive effect implies that a 1% increase in cash conversions cycle (CCC) will tend to increase the level of Return on

Assets (ROA) by 0.411. Based on this test, cash conversions cycle (CCC) has significant positive effect on the Return on asset (ROA) of Nigerian manufacturing firms.

**Table 5: Model summary of the accounts receivable period (ACRP), inventory period (INVP) and cash conversions cycle (CCC) on return on assets (ROA).**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.950 <sup>a</sup>	.902	.861	.03257	.902	21.570	3	7	.001	2.042

a. Predictors: (Constant), CCC, ACRP, INVP

b. Dependent Variable: ROA

From table 5, R<sup>2</sup> measures the percentage of Return on Assets (ROA) that could be explained by changes in independent variables, accounts receivable period (ACRP), inventory period (INVP) and cash conversions cycle (CCC). In this case, Adjusted R<sup>2</sup> is 90.20% (0.902). This implies that about 90.20% of variation in return on asset could be explained by the effect of independent variables, accounts receivable period (ACRP), inventory period (INVP) and cash conversions cycle (CCC) while about 9.8% could be attributed to other factors capable of effecting changes in return on assets of Nigerian manufacturing firms. Also, In this case, the Durbin-Watson statistic is 2.042. This indicates the absence of autocorrelation in the data series.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

The study shows that working capital performance provides critical insight into the state of a company's financial position. It is an important indicator of financial fitness, as the availability of a company's working capital is one of the first items a lender or investor will examine on a statement of financial position. It was noted that a firm's ability to properly manage current assets and the association liabilities or current obligations may determine how well it is able to survive in the short run. The study revealed that working capital management is particularly important to manufacturing firms. Although such firms can minimize their investment in fixed assets by renting or leasing plant and equipment, they cannot avoid investment in cash receivables and inventories. Working capital ratios which are invariably liquidity ratios plays a very significant role in the performance of Nigerian Breweries plc as shown by the findings of our study. The interactions of these ratios are determined by managers of the company and its impact determines if the organization is performing well or not. Thus management's role on how working capital affects the performance of the industry is very significant.

### Recommendations

Based on the findings of this study, manufacturing companies should keep each component of working capital at an optimal level and strive to

shorten the cash conversion cycle. This can be achieved by shortening the receivables' collection period e.g. by providing discounts for earlier payments by customers. However receivables' collection period should not be reduced to the point that customers may renege from trading with the company due to strict credit terms e.g. short repayment period. Also the company should shorten the inventory holding period by increasing turn over i.e. by massive promotion, hence avoiding extra inventory holding costs and at the same time increasing sales. Lastly companies should lengthen the payables deferral period by finding those suppliers with good credit terms e.g. longer repayment period so as to maintain liquidity. However, it should be kept at the optimum level because persistent lengthening of the payables' deferral period may increase payables in the statement of financial position hence creditors may be reluctant to deal with the company due to massive payables.

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