

Impact of Working Capital Management on the Performance of Manufacturing Firms in Nigeria

DANIEL, Emmanuel

Department of Accounting,
Bingham University,
Karu, Nasarawa State

E – Mail: emmyfordaniel@yahoo.com, Phone No: +234 8186498043

AZA, Solomon, Ph.D

Department of Accounting,
Bingham University,
Karu, Nasarawa State
Phone No: +234 88030816443

JACOB, Jeremiah

Department of Accounting,
Bingham University,
Karu, Nasarawa State

E – Mail: meetjj4real@yahoo.com, Phone No: +234 8039498577

Abstract

This study examines the impact of working capital management on the performance of manufacturing firms (Beta Glass Nig. Plc). The primary objective was to examine the extent to which cash conversion cycle management affect return on asset (ROA) of manufacturing firms in Nigeria. The study runs from the period, 2010-2019. Ex-post facto research design method was used for data collection from annual financial report of Beta Glass Nigeria Plc. Data was collected from annual financial reports of Beta Glass Nigeria Plc. Multiple regression technique was used in analyzing the models with the help of E-view statistical package for testing the hypothesis. Return on Assets as a measure of performance was used as the dependent variable, cash conversion cycle was used as a measure of the independent variable, while size and growth were incorporated as control variables. The results showed that cash conversion cycle had a significant negative relationship with performance [ROA]. Based on the findings, the study recommends that firms should shorten the period between purchase of goods to pay for their purchases as to enhance profitability. They can also reduce the period between converting of raw materials into finished goods as to sell them.

Keywords: Working Capital Management, Manufacturing Firm, Return on Asset (ROA) and Cash Conversion Cycle

INTRODUCTION

The term working capital implies a company investment in short term assets, cash, short term securities, account receivables and inventories. Precisely, these assets are financed by short term liabilities, thus net working capital is current assets less current liabilities. Working capital management is the decision relating to working capital and short-term financing, and this includes managing the relationship between the company short term assets and its short-term liabilities. This enables the company to continue operations and to have enough cash flow at its disposal to satisfy both maturing short-term debts and upcoming operational expenses, which is the major objective of working capital management (Deloof, 2003). Management of working capital is important to the financial health of business of all sizes (Padachi, 2006). This importance is hinged on many reasons, first, the amount invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient way. Secondly, the management of working capital directly affects the liquidity and the performance of the corporate firm and consequently it's net worth (Yazdanfar, 2014). Working capital management therefore is aimed at maintaining a balance between liquidity and performance while conducting the day-to-day operations of a business concern.

Increased performance is one of the primary goals of financial managers. Without an acceptable level of performance, businesses will find it very difficult, if not impossible, to survive in the long run. Managers are therefore continuously adopting and adapting strategies to improve performance. And one of such strategies is through working capital management. Working capital is a financial metric which indicates the operating liquidity of organizations (Elijelly, 2004). Working capital is seen as a part of an organization operating capital, referring to current assets such as cash at hand, cash in bank, raw materials, work in progress, finished goods and accounts receivable. 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 (Lamberson, 1995).

The major purpose of working capital management is to keep sufficient liquidity to sustain operations and to meet obligations (Eljelly, 2004). Hence, traditionally, efficiency of working capital management is based on the principle of speeding up collections as quickly as possible and slowing down disbursements as slowly as possible (Nobanee & AlHajjar, 2009) in order to minimize the risk of having insufficient funds to pay for the short-term liabilities. However, holding too much liquidity will work to reduce the risk at the cost of decreased performance. This trade-off between performance and risk is the key to working capital management (Dash and Hanuman, 2009) which aims at maintaining a balance between liquidity and performance while conducting the day-to-day operations of a business (Falope & Ajilore, 2009). Thus, efficient working capital management, as argued by Eljelly, (2004), involves the planning and the controlling of the current assets and the current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations while avoiding excessive investment in these assets. The existence of efficient working capital management practices can make a substantial difference between the success and failure of a company. Usually, working capital efficiency is measured using net working capital which is defined as the difference between current assets and current liabilities. When the current assets are higher than the current liabilities, the company is said to have working capital efficiency which shows the company's ability to remain a going concern and to have sufficient funds to satisfy both maturing short debt and upcoming operational expenses. Efficient management of working capital is vital for the success and survival of companies to enhance performance and contribution to economic growth.

To observe how working capital management can affect performance, one needs to take a look at a company's statement of financial position. In analyzing the financial statement, one has to take a look at company's cash flow, the accounts receivable and account payment periods. The lower the accounts receivable period ratio the more liquid is the firm. Accounts payment period compare creditors with the total credit purchases. It signifies the credit period enjoyed by the firm in paying creditors. Accounts payable include both sundry creditors and bills payable. The longer the period the more advantageous for the firm as such fund can be put to other uses. However, longer accounts holding period can erode a firm's credit worthiness. It is expected that accounts payable days should relate positively with firm performance. This is because, as accounts payable days increase, the firm tends to have more time to reinvest, acquire other short-term assets, and turn them over, before repaying their creditors. Based on the foregoing relationship between working capital management and firm's performance, a study as this is necessary. It is against this background that the study seeks to examine the effect of working capital management on the performance of Beta Glass Nigeria Plc. in Nigeria. The indicators are analyzed on a time series basis to give insight to the level of performance in the Beta Glass Nigeria Plc. in Nigeria.

The chief finance officers of most industries spend most of their time and effort on day-to-day working capital management. Still, due to the inability of financial managers to properly plan and control the current assets and current liabilities of their companies, the failure of a large number of businesses can be

attributed to the inefficient working capital management (Yazdanfar, 2014). Inadequate working capital leads the company to bankruptcy. On the other hand, too much working capital results in wasting cash and ultimately the decrease in performance (Chakraborty, 2008). The effectiveness of working capital management may impact on both the liquidity and performance of any corporation (Owolabi and Obida, 2012). Management strategy aimed at maintaining a balance between liquidity and performance has far reaching consequences on the growth and survival of the firm. Thus, the manager of a business entity is in a dilemma of achieving desired trade-off between liquidity and performance in order to maximize the value of a firm. Despite the emphasis placed on working capital management in ensuring performance of Beta Glass Nigeria Plc. in Nigeria, the management is yet to come on the path of sound performance growth. They are faced with two major issues. First, given the level of sales and the relevant cost considerations the management of Beta Glass Nigeria Plc. in Nigeria are faced with issues in determining the optimal amounts of account receivable, account payable and inventory that they will choose to maintain in order to enhance performance. Secondly, given these optimal amounts, what is the most economical way to finance these working capital investments in order to produce the best possible results? Perhaps, the inability of management to use working capital management indicators as part of key measures of performance may be responsible for the fluctuations in their financial performance.

LITERATURE REVIEW

Conceptual Frame Work

Concepts of Working Capital Management

Working capital management (WCM) refers to all management decisions and actions that ordinarily influence the size and effectiveness of the working capital (Kaur, 2010). It is a managerial accounting strategy which focuses on maintaining efficiency levels of current assets and current liabilities to ensure that a firm has sufficient cash flow in order to meet its short-term obligations. WCM is an essential part of financial part of financial management and contributes significantly to a firm's wealth creation as it directly influences organizational profitability and liquidity (Raheman and Nasr, 2007; Naser, 2013). The most important issue in WCM is the maintaining of liquidity in the day to day operations of the firm. Working capital management is important for creating value for shareholders. The working capital management meets the short-term financial requirement of a business enterprise. It is the investment required for running day to day business. In working capital management, the more descriptive term is networking capital which refers to the current assets less current liabilities which are typically accounts payable and other obligation due within one year. It also explained as follows: current assets, commonly called working capital represent the portion of investment that circulates from one form to another in ordinary conduct of business (Gitman, 2003). Working capital is the life blood of the firms. Decision concerning a firm's current assets and current liabilities are important because they influence the expected return and risk characteristic of the firm. The latter affect investment perception and result in a change in the market values of the firm's ordinary shares. The concept of working capital generally, there are two concepts of working capital that is gross concept and net concept. Gross concept of working capital is refers to all the current assets and represent the amount of fund invested in current asset. Thus, gross working capital is the capital invested in current assets. Current assets are those assets which can be converted into cash within the short time period. $\text{Gross working capital} = \text{Total current assets}$.

In this way, gross working capital refer to the firm's investment in current asst. gross working capital represents total of current asset to which includes cash in hand, cash at bank, inventory, prepaid expenses, bills receivables. Net concept of working capital is the excess of current assets over current liabilities. In other words, the different between current assets and current liabilities is called net working capital. $\text{Net working capital} = \text{current asset} - \text{current liabilities}$. In this way, net working capital is the difference of current asset and current liability (Axel, 2012). The working capital policy of the firm deals with the decision concerning investments in current assets and also concerning how these investments will be financed. Since the management of current assets and current liabilities is closely related, the term

working capital management is usually used in reference to the management of current assets, the management of current liabilities, and the management of all relationship between current assets and current liabilities. The objective of working capital is to maintain level of net working capital that maximizes the wealth of the firm's ordinary share holder. In general, working capital management is simple and a straight forward concept of ensuring the ability of the organization to fund the difference between the short-term assets and short term liabilities (Afza& Nazir 2007). In practice working capital management has become one of the most importance issues in the organization where many financial executive are struggling to identify the basic are working capital drivers and the appropriate level of working capital (Lamberson, 1995). The working capital requirement decides the liquidity and profitability of a firm and hence affects the financing and investing decision. Lesser requirement of working capital leads to less need for financing and less cost for capital and hence availability of more cash for shareholder.

Concepts of Cash Conversion Cycle

The level of accounts receivables, payables and inventories affects the liquidity position of the firm significantly, while current and liquidity ratios have been recognized traditionally. However, both of these ratios are static and their appropriateness for liquidity analysis is questionable. Therefore, a dynamic liquidity measure for the cash conversion approach had been introduced by Hager (1976). The cash conversion cycle (CCC) is the length of time that funds are tied up in working capital or the length of time between paying for working capital and collecting cash from the sale of working capital (Brigham & Houston, 2007). Brealey, Myers &Mracus (2001), defined cash conversion cycle as "the longer the production process, the more cash the firm must keep tied up in inventories". Similarly, the longer it takes customers to pay their bills, the higher value of accounts receivable. On the other hand, if certain firm can delay paying for its own materials, it may decrease the amount of cash it needs as there is no any cash outflow at the moment. In other words account payables reduced net working capital.

Management of Working Capital

Working capital management has lately become a better-known concept as more and more managers are starting to realize the benefits that a well- managed working capital can bring. In literature, authors generally refer to the concept of working capital as, working capital or net working capital. These two expressions are sometimes distinguished but in this thesis we will describe them with the same definition. We believe an assimilation of the two expressions is acceptable as the expressions are so closely related with each other in their meaning. Arnold defines working capital as, "the difference between current assets and current liabilities" (Arnold, 2008). After reviewing different sources about working capital, it has become clear that the definitions taken from Arnold is a very general definition that is frequent used to define both working capital and net working capital. This is also the definition that we will apply when we refer to working capital and net working capital in this thesis. Continuing with the concept of working capital management, Jeng-Ren, describes this as "companies' management of their short-term capital" (Jeng-Ren, 2006). The short-term capital is here referred to as the current assets and current liabilities. Accordingly, we intend to follow Jeng-Ren, definition about working capital management in our thesis. The management of working capital is impotent to the financial health of business of all sizes.

The amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient and effective way. However, there is evidence that business firms are not very good at managing their working capital. Given that many business firms suffer from under capitalization, the importance of exerting tight control over working capital investment is difficult to overstate. A firm can be very profitable, but if this is not translated into cash from operations within the same operating cycle, the firm would need to borrow to support its continued working capital needs. Thus, the twin objectives of profitability and liquidity must be synchronized and one should not impinge on the other for long. Investments in current assets are inevitable to ensure delivery of goods or services to the ultimate customers and a proper management of same should give the desired impact on either profitability or liquidity. If resources are blocked at the different stage of the supply chain, this will

prolong the cash operating cycle. Another component of working capital is account payable, but it is different in the sense that it does not consume resources; instead it is often used as a short term source of finance. Thus, it helps firms to reduce its cash operating cycle, but it has an implicit cost where discount is offered for early settlement of invoices.

Working capital management essentially concern itself with companies' management of their short-term capital. The short-term capital refers to the capital that companies use in their daily operations and it consists of companies' current assets and current liabilities. A well- managed working capital promotes a company's well- being on the market in terms of liquidity and it also acts in favor for the growth of shareholders value (Jeng-Ren, 2006). Current assets consist of capital tied up in cash, short-term financial investments, inventories, account receivables and other current assets (Brealey, Myers & Allen, 2006.). Current assets can be defined as assets used in companies' daily operations with the expectation to provide companies cash in return within a period no longer than approximately a year. The short-term investments can be seen as a safety net for companies due to the fast cash conversion ability (Raheman& Nasr, 2007). The current liabilities include short-term loans, the debts to suppliers as account payables, accrued income taxes, and interest payments on long-term debts, dividend and other current liabilities (Pass & Pike, 2007). Current liabilities provide external financing for companies and they are especially important for smaller companies that can experience difficulties to get long-term loans (Teruel& Mart, 2007). Working capital management aims to create an effective flow of the capital passing through the activities of current assets and liabilities. Figure 1 demonstrates a more detailed view of the working capital cycle and the arrows in the figure illustrate the cash flow movements within a company (Pass & Hike, 2007).When purchased material has undergone a manufacturing process and become finished goods, it is time to get the products sold to earn money. The money derived from sales are used to pay debtors, finance new investments and give money back to shareholders in dividends. From here the cycle starts over again (Pass & Hike, 2007).

Empirical Review

Musa (2018), examines the effect of working capital management on profitability of quoted bottling companies in Nigeria for the period, 2001-2014. The quoted bottling companies in the consumer goods sector are seven (7) as at 31st December, 2014. All the companies were studied using census approach. Specifically, the study seeks to assess the impact of inventory turnover days, account receivable days, account payable days and cash conversion cycle on profitability of the companies. The study adopted Correlational Research Design and data were analysed with the aid of OLS multiple regression technique, using 98 firm-year observations. Data were extracted from the audited annual reports and accounts of the quoted companies. The study found that inventory turnover days have positive and strong impact on profitability of quoted bottling companies in Nigeria at 1% level of significance. Also, account receivable days have a negative and significant effect on profitability of the quoted bottling companies at 5% levels of significance. However, account payable days found to have positive but insignificant influence on profitability of companies, while the cash conversion cycle has a positive and significant influence on profitability of the companies. This implies that, increase in the cash conversion cycle will generate more profits. While increase in inventory turnover days and decrease in account receivable days will generate more profits. The study concludes that, efficient management of working capital affects the performance of quoted companies in Nigeria. The study therefore recommends that, the management of the companies should give due importance to working capital management, and emphasize an optimal working capital levels in their respective companies, because of the positive impact of cash conversion circle and account payables on the profitability. This may attract more customers and consequently higher profit.

Uguru, Chukwu, andElom (2018), determine the effect of working capital management on the profitability of brewery firms in Nigeria. This study adopts the ex-post-facto research design and employed the Ordinary Least Square (OLS) regression technique in analyzing the data. To ascertain the effect of working capital management (number of days account receivables are outstanding, number of days inventory are held, and cash conversion cycle) on the profitability (return on assets) of brewery firms

in Nigeria, the study used the sample of Nigerian Breweries Plc and Guinness Nigeria Plc for the period of 2006 to 2014. And the findings suggest that the management of the number of days account receivables are outstanding, numbers of days inventory are held, and cash conversion cycle are significant factors in the accomplishment of the profitability objective of brewery firms in Nigeria. It was recommended that brewery firms should reduce heavy investments in current assets to avoid high inventory costs, and excess cash holdings and account receivables. Nwachukwu and Odo (2017), investigated the effect of working capital management on the profitability of Flour Mills of Nigeria Plc. Specifically the study sought to determine the extent to which Number of Days of Accounts Receivable; Number of Days of Inventory; and Number of Days of Accounts Payable affect Gross Profit Margin (GPM) of Flour Mills of Nigeria Plc. The study was anchored on Trade-off theory of capital structure. The study adopted a correlational descriptive non-experimental research design approach based on data derived from the past annual reports of Flour Mills of Nigeria Plc. Data collected was analyzed using Pearson correlation technique via the Statistical Package for Social Science (SPSS) version 20. The study reports a positive and significant influence of Number of Days of Accounts Receivable; Number of Days of Inventory; and Number of Days of Account Payable on gross profit margin (GPM) of Flour Mills of Nigeria Plc. The implication of the result which showed a positive impact of working capital management variables on gross profit margin of FMN indicates that the longer the number of days it takes a firm to be paid for sales made and inventory held, the less profit it is expected to make. The study recommended that Flour Mills of Nigeria Plc should be very apt in reducing the number of days of account receivables and inventories to a reasonable minimum in order to boost profitability.

Aregbeyen (2013), the efficiency of working capital management (WCM) has implications for firms' profitability. This paper empirically investigates the effects of WCM on the profitability of a sample of 48 large manufacturing firms quoted on the Nigerian Stock Exchange (NSE) for the period 1993 to 2005. It is aimed at filling the gaps in a previous study and contribute to expanding and enriching the literature particularly on Nigeria and at large. The analysis examined the responses of the firms' profitability to WCM and a number of augmenting factors. Profitability was alternatively measured by gross operating profit (GOI), net operating income (NOI) and return on assets (ROA). Likewise, WCM was measured by the average collection period (ACP), average pay period (APP), inventory turnover days (ITID) and comprehensively by the cash conversion cycle (CCC). The results indicate that the firms' have been inefficient with WCM and caused significant reductions in profitability. The paper concludes that improving the efficiency of WCM is essential and recommends that manufacturing firms in Nigeria should shorten the ACP, APP, ITID and reduce their CCCs. Boisjoly (2009), conducted the study to examine the impact of working capital management and corporate reinvestment policies and practices on financial ratios and distributions of 50 non-bank companies over time for the period from 1990 to 2004. Financial ratios related to working capital management and capital investment process include accounts receivable turnover, inventory turnover, accounts payable turnover, working capital per share, cash flow per share, and investment ratio. The results show the increasing of the average of five financial ratios: accounts receivable turnover, inventory turnover, accounts payable turnover, working capital per share and cash flow per share. Also, the results from ratio distribution tests show that the cash flow per share and the investment ratio have significantly changed over time which indicates that aggressive management of working capital and significant increase in productivity have resulted in significant improvement in cash flow per share and reduced the level of corporate reinvestment. Samiloglu and Demirgunes (2008), conducted a study to examine the effect of working capital management on company profitability of listed manufacturing companies in Istanbul Stock Exchange for the period from 1998 to 2007. Cash conversion cycle, accounts receivable period and inventory period are used to measure the effects of working capital management; return on assets is used as a profitability measure. Results from regression analysis show that profitability has a significant positive relation with firm growth and significant negative relations with accounts receivable period, inventory period and leverage.

Theoretical Framework

Monetarist Theory of Cash Management

This theory was propounded by (Friedman, 1956). He asserts that “the quantity theory is in the first instance a theory of the demand for money. It is not a theory of output, or of money income, or of the price level.” The demand for money on the part of ultimate wealth holders is formally identical with that of the demand for a consumption service. He regards the amount of real cash balances (M/P) as a commodity which is demanded because it yields services to the person who holds it. Thus money is an asset or capital good. Hence the demand for money forms part of capital or wealth theory. For ultimate wealth holders, the demand for money, in real terms, may be expected to be a function primarily of the following variables:

- i. Total Wealth: The total wealth is the analogue of the budget constraint. It is the total that must be divided among various forms of assets. In practice, estimates of total wealth are seldom available. Instead, income may serve as an index of wealth. Thus, according to Friedman, income is a surrogate of wealth.
- ii. The Division of Wealth between Human and Non-Human Forms: The major source of wealth is the productive capacity of human beings which is human wealth. But the conversion of human wealth into non-human wealth or the reverse is subject to institutional constraints. This can be done by using current earnings to purchase non-human wealth or by using non-human wealth to finance the acquisition of skills. Thus the fraction of total wealth in the form of non-human wealth is an additional important variable.
- iii. The Expected Rates of Return on Money and Other Assets: These rates of return are the counterparts of the prices of a commodity and its substitutes and complements in the theory of consumer demand. The nominal rate of return may be zero as it generally is on currency, or negative as it sometimes is on demand deposits, subject to net service charges, or positive as it is on demand deposits on which interest is paid, and generally on time deposits. The nominal rate of return on other assets consists of two parts: first, any currently paid yield or cost, such as interest on bonds, dividends on equities, and costs of storage on physical assets, and second, changes in the prices of these assets which become especially important under conditions of inflation or deflation.

Miller-Orr Cash Management Model

Pandey (2010) stressed that Miller Orr model overcame the shorting comings of Baumol model as it allows for daily cash flow fluctuation and assumes that net cash flow are normally distributed. Unlike the Baumol Model, this model allows for uncertainty cash flows and safety stocks (precautionary balance). According to Marsh (2009), “The Miller-Orr model imposes upper and lower limits which trigger buy/sell actions in order to bring cash balances back to an optimal ‘return point’. In doing this, it constrains the upward and downward movements of cash to within ‘acceptable limits. The model allows the company to set the lower control limit while the model determines the higher control limit and the average cash balance. Marsh further explained that an organization will either buy or sell securities for cash to return its cash balance to a normal return point. When the cash balance reaches the upper limit, an organization will buy securities in order to lower the cash balance to the return point. Likewise also, when the cash balance reaches the lower limit, an organization will sell securities to have the cash balance back at the return point. Jarrad (2000) also explained that the approach of Miller and Orr in 1966 was to assume that the underlying problem facing the manager is to keep enough cash on hand to meet daily transactions demand, while minimizing the opportunity cost of not holding a return yielding asset. He further explained that Miller and Orr focused their model on maintaining two boundaries; the upper and lower boundaries. If the upper boundary is crossed, it will trigger a transfer out of cash into an interest-bearing asset and if the lower boundary is crossed, it will trigger a transfer into the cash account. This study pitch its tents on this theory

METHODOLOGY

The purpose of this research is to contribute towards a very important aspect of financial management

with reference to Nigeria manufacturing firms. The study investigated if Cash Conversion Cycle has impact on Return on Assets (ROA) of Beta Glass Nigeria Plc. The study fully relied on historic accounting data sourced from the financial statements and accounts of Beta Glass Nig. Plc listed on the Nigerian Stock Exchange (NSE) for the period of ten years (2010-2019). Ex – post facto research design was adopted. Data was obtained from published annual reports and statement of accounts of quoted companies on NSE. This constitutes the most authoritative and accessible documents for assessing the performance of the affected firms. Section 335[2] of Nigerian Companies and Allied Matters Act of 1990 (CAMA) specifies that the balance sheet of a company shall give a true and fair view of state of affairs of the company at year-end. The data generated is being employed to run both cross sectional and time-series regression. The multiple regression technique was used with the aid of E-view statistical package in analyzing the models stated. The ideas behind regression analysis are the statistical dependence of one variable, the dependent variable, in this case, return on assets (ROA), on one or more variables, the independent variable or explanatory variable. Two control variables were also included in the model. These are Growth and Size (Nazir & Afza, 2009).

The general form for the model for a multiple regression analysis is given in the form below:

$$Y = a + b_1X_1 + b_2X_2 + b_3 X_3 + \dots + b_nX_n + e \dots\dots\dots (1)$$

Where:

- Y = Dependent variable
- a = Constant of the equation
- b₁ - b_n = Coefficient of independent variables
- X₁ - X_n = Independent variables
- e = Error Term.

In the above equation, the constants b₁, b₂, b₃... b_n determine the slope or gradient of the line and the constant term {a} determines the point at which the line crosses the Y-axis, otherwise known as the Y-intercept (Gujaranti, 1995). In order to test the hypothesis of this study which states as thus:

Ho: Cash Conversion Cycle does not have a significant impact on Return on Assets of Nigerian manufacturing firms, the model could be written as follows:

$$ROA = a + b CCC + Log Size + Log Growth + e \dots\dots\dots (2)$$

Where:

- ROA = Return on Assets
- a = Constant of the equation
- CCC = Cash Conversion Cycle
- Log Size = Size (in logarithm)
- Log Growth = Growth (in logarithm)
- b = Coefficient of the independent variables
- e = Error Term.

The dependent variable for this study is the Return on Assets (ROA) while the independent variable is the Cash Conversion Cycle. The control variables are the Size and Growth of the firms respectively. Return on Assets [ROA] is used as a measure of performance in firms (Nazir & Afza ,2009). In order words, ROA is a measure of the overall effectiveness of the firm in generating profit with available assets (Horne & Wachowicz, 2005). It is equivalent to Return on Investment (ROI), but more appropriate measure of the operating efficiency of a firm (Pandey ,2005). Though there exist various measures of the variable in empirical profitability studies, the most often used in the literature is Return on Assets being defined as:

$$\text{Net Income after Taxes} \dots\dots\dots (3)$$

Impact of Working Capital Management on the Performance of Manufacturing Firms in Nigeria

Average Book Value of Assets

This variable has been used by Samilogu & Demirgumes (2008), Falope & Ajilore (2009); Nazir & Afza (2009) and others. Cash Conversion Cycle (CCC) is a proxy for working capital management efficiency. It is the flow of funds from the suppliers to inventory, to accounts receivables and back into cash. It is calculated as follows:

$$CCC = AR + INV - AP \dots\dots\dots (4)$$

Where AR is Accounts Receivable, INV is Inventory period and AP is Accounts Payable (Alipour, 2011; Padachi, 2006; Richards and Laughlin, 1980; and Raheman, et.al. 2010)

$$(AR) = \frac{\text{Accounts Receivable} \times 365}{\text{Sales}} \dots\dots\dots (5)$$

$$\text{Inventory (INV)} = \frac{\text{Inventories} \times 365}{\text{Cost of Sales}} \dots\dots\dots (6)$$

$$\text{Accounts Payable [AP]} = \frac{\text{Accounts Payable} \times 365}{\text{Sales}} \dots\dots\dots (7)$$

The control variables are Size of the firm and Growth in sales. Size captures economies of scale and it is believed that as a company becomes larger, it is better placed to reap economies of scale. The study measured size as the logarithm of total assets as follows:

$$\text{Size} = \log \text{ total assets} \dots\dots\dots (8)$$

This variable has been used by Gill (2010); Padachi (2006); Alipour (2011).

Growth of a firm is measured by variation in its annual sales value with references to previous year's sales. This ratio is fairly straightforward as follows:

$$\text{Growth} = \frac{\text{Sales}_1 - \text{Sales}_0}{\text{Sales}_0} \dots\dots\dots (9)$$

Where Sales₁ = this year's sales and sales₀ = previous year's sales. [Falope and Ajilore, 2009; Garcia-Teruel and Solano, 2007].

RESULT AND DISCUSSION

Table 1: Summary of Variables and their % Changes for Period 2010 - 2019

Year	ROA	%	CCC	%	AR	%	AP	%	Growth	%	Size	%
2010	.11	-	5.78	-	87.15	-	143.23	-	.52	-	7.28	-
2011	.13	18.18	5.85	1.21	125.52	44.03	177.74	24.09	.21	-59.62	7.36	1.10
2012	.09	-30.77	6.43	9.91	127.69	1.73	139.08	-21.76	.04	19.05	7.39	4.08
2013	.12	33.33	6.63	3.11	127.89	1.57	139.68	4.31	.04	0.0	7.89	6.77
2014	.14	16.67	7.56	14.03	107.09	-16.26	90.16	-35.45	.91	127.5	8.18	3.68
2015	.10	28.57	7.63	9.26	90.52	-15.47	106.35	17.96	1.10	20.0	8.23	6.11
2016	.24	33.33	7.64	1.32	65.73	-37.32	234.85	120.83	1.01	-18.19	8.52	3.52
2017	.34	41.67	7.57	-9.16	58.73	3.53	140.41	.40.21	.08	-21.72	8.83	3.64
2018	.49	44.12	7.87	3.96	58.23	-8.51	140.81	2.84	1.30	62.5	9.33	5.66
2019	.73	48.98	7.90	3.81	52.71	-9.48	125.98	-10.53	2.19	68.46	9.83	5.36
Average		26.0		4.16		-4.02		6.90		22.0		4.44

Source: Beta Glass Nigeria Plc Annual Financial Report (2010 – 2019)

According to Table 1, Cash Conversion Cycle (CCC) stood at 5.78 in 2010 and had a slight yearly increase to 7.90 in 2019. The percentage changes for years 2011 to 2019 stood at 1.21, 9.91, 3.11, 14.03, 9.26, 1.32, -9.16, 3.96, and 3.81 with the highest change of 14.03% in 2014, followed by 9.91% in 2012 respectively. Furthermore, there was an average growth of 26% for Return on Assets (ROA) while cash conversion cycle has an average growth of 4.16% respectively. The fluctuations could be as a result of instability on the part of the firm paying for inventories purchased from their creditors, and the debtors paying for sales made to them on time. Size had a steady and impressive increase from 7.28 in 2010 to 9.83 in 2019. Growth which stood at 52% in 2010 sharply dropped to 4% in 2013 with a drastic increase to 91% in 2014 and 219% in 2019 respectively.

TABLE 2: Descriptive Statistics

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard Deviation</i>
<i>ROA</i>	10	.01	.29	.0895	.08351
<i>AR</i>	10	52.71	127.69	89.2665	31.34848
<i>AP</i>	10	90.16	234.85	143.7306	39.58959
<i>CCC</i>	10	5.78	7.63	6.9131	.78572
<i>GROWTH</i>	10	-.04	9.19	1.5448	3.07741
<i>SIZE</i>	10	7.28	8.53	7.9238	.50014

Sources: Researchers Computation (2020)

Table 2 presents a descriptive statistic of the study for Beta Glass Nig. Plc. (2010-2019) with a total observation of 10years. The main variables for this study are the ROA (independent variable), cash conversion cycle (independent variable), Size and Growth (the control variables). All variables were calculated using the financial position values. The measurement of performance could only be based on income values, and not on so-called market values. When market values are considered in studies, there is always rather a legitimate question of the date for which the market value refers. Hence the study relied on book values as at the date of the financial report.

From the table, Beta Glass Nig. Plc observed have a mean cash conversion cycle (CCC) of 6.91 days with a minimum and maximum of 6 and 8 days and SD of .78572. The mean of ROA (0.0895) shows that Beta Glass Nig. Plc, by considering inflation rate, have poor performance over the study period of 2010-2019. Growth has a mean of 1.54 with minimum and maximum of -0.04 and 9.19 with SD of 3.08, while Return on Assets has an average of 8% with a minimum and maximum of 1% and 29% and SD. of 0.08 respectively. Size has an average of 7.92 with minimum and maximum of 7.28 and 8.53 and SD of 0.50 equally.

Test of Hypothesis

H₀: Cash conversion cycle management has no significant effect on return on asset (ROA) of manufacturing firms in Nigeria.

Table 3: OLS REGRESSION RESULT

Dependent Variable: LOG (ROA)
 Method: Least Squares
 Date: 06/22/20 Time: 20:38
 Sample: 2010 2019
 Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.551914	4.257050	0.364552	0.7396

Log (CCC)	-0.424941	0.245994	-3.507905	0.0315
Log (SIZE)	-0.228267	0.958428	-0.238168	0.8271
Log (GROWTH)	0.468105	0.128256	3.649765	0.0355
R-squared	0.819789	Mean dependent var	2.519129	
Adjusted R-squared	0.639578	S.D. dependent var	0.864742	
S.E. of regression	0.519149	Akaike info criterion	1.822308	
Sum squared resid	0.808548	Schwarz criterion	1.791400	
Log likelihood	-2.378079	Hannan-Quinn criter.	2.09845	
F-statistic	4.549058	Durbin-Watson stat	1.572085	
Prob(F-statistic)	0.122609			

Source: E-view 10.0

Discussion of Findings

The linear regression result shows the value of the coefficient of the determination, $R^2 = 0.819$ indicating that 82% of almost all the variations in the dependent variable was explained by the regressors. The significant value of the F-Statistic is greater than 0.05, which means that the variation explained by the model is due to chance ($f = 4.55$, $P > 0.05$). This also tests for overall significance of the independent variables. The independent variable, which is the cash conversion cycle (CCC), has a negative impact on Return on Assets [ROA], [Coefficient of CCC = -0.42, $t = -3.51$, $P = 0.03$; $P < 0.05$]. This implies that a percentage decrease in CCC will result into a 2.5% increase in ROA. The moderator variables, size, have no significant impact on ROA, (Coefficient of Size = -0.23, $t = -0.24$, $p = 0.83$; $P > 0.05$); while Growth have a significant positive impact, (Coefficient of Growth = 0.47, $t = 3.64$, $p = 0.04$; $P < 0.05$). The Durbin-Watson (D.W) is 1.57 showing an acceptable level of autocorrelation. The D-W statistics is usually between 0 and 4. A value of 2 shows complete absence of autocorrelation. Since the coefficient of cash conversion cycle has a negative sign (-0.424941) and p-value is 0.0315 ($p < 0.05$), we accept the alternative hypothesis and reject the null hypothesis. The multiple regression model becomes: $ROA = 1.55 - 0.42CCC - 0.23Size + 0.47Growth$. We can then say that Cash Conversion Cycle has a negative significant impact on Return on Assets of Nigerian firms. Based on the result which states that Cash Conversion Cycle (CCC) has a negative effect on ROA, the null hypothesis is rejected while the alternative hypothesis is accepted. From the above result, it could be explained by the fact that when the cash conversion cycle is relatively shorter, the firm may not need external financing. This leads to incurring less borrowing cost, thereby increasing profitability. This agrees with the findings of Deloof (2003), Uyar (2009), (Padachi, 2006), Shin & Soenen (1998); Jose (1996), Rehaman and Nasir (2007), etc. It showed that cash conversion cycle decrease is one of the key and most important factors for profitability increases and consequently company value increase.

Furthermore, Shin and Soenen (1998) argued that the negative relationship could be explained by the market power or the market share due to a shorter CCC, and because of bargaining power by the suppliers and/or the customers as well as higher profitability due to market dominance. Another implication for the negative relationship can also be explained by the fact that minimizing the investments in current assets can help in boosting profits. This ensures that liquid assets are not maintained in the business for too long and that it is used to generate profits for the firm (Mathuva, 2009). In other studies, Lyrondi & Lazardis (2000) found a positive significant relationship between CCC and profitability. Their view was that resources are blocked at different stage of supply chain, thus prolonging operating cycle, thereby leading to profit increase due to sales increase. This occurs mostly where cost of tied up capital is lower than the benefits of holding more inventories and granting more trade credit to customers. Also, small manufacturing firms may be able to obtain trade credit from suppliers and this is supported by the higher proportion current liabilities to total assets.

CONCLUSION AND RECOMMENDATIONS

Working capital management necessitates short-term decision on working capital and financing of all aspects of both firm's short-term assets and liabilities. The aim of efficient and effective working capital management is to ensure growth in firms, increase in size, enhance the liquidity profile of firms as well as optimal leverage. This study empirically analyzed the impact of working capital management on performance of Beta Glass Nigeria Plc. performance was measured by Return on Assets. The results showed that cash conversion cycle had a significant negative impact on return on assets, implying that decrease in CCC leads to increase in profitability of Nigerian firms. From the above result, it could be concluded by the fact that when the cash conversion cycle is relatively shorter, the firm may not need external financing. This leads to incurring less borrowing cost, thereby increasing profitability.

Based on the conclusion of these findings the study recommends that;

- i. Firms should shorten the period between purchase of goods to pay for their purchases as to enhance profitability. They can also reduce the period between converting of raw materials into finished goods as to sell them.
- ii. The firm should engage in long term borrowing so as to introduce cash to improve its liquidity or position slightly. This is because the selected firm has a good reputation with its banks and lenders. This is in line with Merchant (2005), that the firm can also use its assets to secure loan from financial institution.
- iii. The firms minimize their inventory and keep it for a short period of days as possible. The firm operation and stock holder depends on the inventory management. It recommends that the company should make efforts to maintain inventory management policies, since the findings reveals that the Beta Glass Plc have a substantial part of working capital tied down on the inventory. It is believed that by adopting the above recommendation selected firms will solve working capital management problems.

References

- Abuzayed, B. (2012). Working capital management and firms' performance in emerging markets: the case of Jordan. *International Journal of Managerial Finance*, 2(4), 1-7
- Aregbeyen, O. (2013) the effects of working capital management on the profitability of nigerian manufacturing firms. *Journal of Business Economics and Management*, 14(3)520-534
- Axel, T. (2009). "The Influence of Working Capital Management Components on corporate Profitability: A Survey on Kenyan Listed Firms. *Research Journal of Business management*. 1(2) 3-9
- Boisjoly, R.P. (2009). The cash flow implications of managing working capital and capital investment. *Journal of Business and Economic Studies*, 15(1), 98 - 108.
- Bort, R. (2004). *Corporate cash management hand book*, 2nd edition, Warren Gorman and Larmont RIA Group, New York.
- Brealey, R.A., Mayers, S.C., Allen, F., (2006). *Corporate Finance*. 8th edition. New York: McGraw-Hill/IrwiN.
- Charlton, W.T., Lancaster, C., & Stevens, J.L. (2002). Industry and liquidity effects in corporate investment and cash relationships. *The Journal of Applied Business Research*, 18(1), 131-142.
- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting*, 30(3/4), 573-587.
- Dolfe, M., & Koritz, A., (1999). *European Cash Management: a guide to best practice*. 1st edition. Chichester: Wiley, Cop.

Impact of Working Capital Management on the Performance of Manufacturing Firms in Nigeria

- Eljelly, A., (2004). *Liquidity Profitability Trade off: An Empirical Investigation in an Emerging Market*. *International Journal of Commerce and Management*. 14(2), 48-61.
- Ganesan. Z., (2007). An Analysis of Working Capital Management Efficiency in telecommunication Equipment Industry. *Revier Academic Journal*, 3(2), 1-10.
- García-Teruel, P.J., & Martínez-Solano, P. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance*, 3(2), 164-177.
- Gitman L. J. (2008). *Principles of managerial finance*, 5th Edition, Harper and Raw Publishers, United Kingdom.
- Horne, J. Y. & Wachow, D., (2000). “*Fundamentals of Corporate Finance*”. www.library.binus.acidlecolls/ethesisd...
- Jeng-Ren, C., Li, C., & Han-Wen, W. (2006). The determinants of working capital management. *Journal of American Academy of Business*, Cambridge, 10(1), 149- 155.
- Lamberson, M. (1995). Changes in Working Capital of Small Firms in Relation to Change in Economic Activity. *Mid-American Journal of Business*. 10 (7).1-6
- Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens stock exchange. *Journal of Financial Management and Analysis*, 19(1), 26-35.
- M.K, F. G. (2005). An Analysis of Working Capital Management Results across Industries. *Mid-American Journal of Business*, 20, (2), 11-18.
- Maina, F. G, & Sakwa, M.M (2010). *Scientific conference proceedings*. Retrieved 2014, from Jomo Kenyatta University of Agriculture and Technology.
- Maness, T.S. & Zietlow, J.T. (2005). *Short-term financial management*. 3rd edition. Ohio: South-Western/Thomson Learning.
- Mdey, S. (2006). Working Capital Management: A case study on British American Bangladesh Company Ltd. *Journal of Nepal ese Business studies*, 3(1), 78-84.
- Moise, T. P. (2007). Effect of Working Capital Management on SME profitability. *International Journal of Managerial Finance*, 3, (2) 164-177.
- Musa, K. M. (2018) examines the effect of working capital management on profitability of quoted bottling companies in Nigeria. *International journal of Business and Management*, 4, (10), 10 - 18.
- Nyabwanga, R. N., & Ojera, P. (2012). Inventory management practices and business performance for small-scale enterprises in Kenya. *Journal of business managment*, 4.(2) 1- 12
- Nwachukwu, A., T. & Odo, F. (2017) effect of working capital management on the profitability of Flour Mills of Nigeria Plc. *International journal of Business and Management*, 3(2) 23-29.
- Ondiek, G. O. & Odera, O. (2012). Assessment of material management in Kenya manufacturing f firms. *Journal of business studies quarterly*, 3, (1) 40-49.
- Oruc, S. M. (2009). Relationship between Efficiency Level of Working Capital Management and Return on Total Assets. *International journal of Business and Management*, 4, (10), 109-114.
- Padach, W. (2006). “*Trends in Working Capital Management and its Impact on Firm’s Performance: An Analysis of Mauritian Small Manufacturing Firms*”. *International Review of Business Research Paper*, 2(2). 45-58.

- Panda, A. (2012). The status of working capital and its relationship with sales: An empirical investigation of Andhra Pradesh Paper Mills Ltd. *International Journal of Commerce and Management*, 22 (1), 36 –52.
- Pass, C., L. & Pike, R.H. (2007). *An Overview of Working Capital and Corporate Financing, Managerial Finance*, 10 (3), 1-11.
- Peter, D. H. (2010). The Relationship between Working Capital Management and profitability. *International Research Journal of Finance and Economic*, 2 (49) 12-19.
- Raheman A., T. (2010). Working Capital management and Corporate Performance of Manufacturing Sector in Pakistan. *International research Journal of Finance and Economics*, 3 (47). 12 - 25.
- Raheman, A., T.& Naser J. (2013). “Working capital management and profitability”. Evidence from Ghanaian listed manufacturing firms. *International research Journal of Finance and management*, 3 (7). 21-33.
- Raheman, A.& Nasr, M (2007). “*Working Capital and Financial Management and Profitability*”. Case of Pakistani Firms. *International Review of Business Research Paper*, 3 (1), 279 -300.
- Ross, A., S. (2000). *Fundamentals of Corporate Finance*, 5th Edition Irwin McGraw Hall.
- Samiloglu, F., &Demirgunes, K. (2008). The effect of working capital management on firm profitability: Evidence from Turkey. *International Journal of Applied Economics and Finance*, 2(1), 44-50.
- Tobias, O. & C. N. (2014). Effect of Working Capital Management on performance of Firms Listed at the Nairobi Securities Exchange. Nairobi Kenya. *International research Journal of Finance and Economics*, 3 (47). 12-25.
- Uguru, T., Chukwu, B., O. &Elom, F. R. (2018). effect of working capital management on the profitability of brewery firms in Nigeria. *International Journal of Applied Economics and Finance*, 2(1), 44-50.
- Vanhorne, J., C. (2001). *Principles of Financial management*, 5th Edition, McGraw publishers, United Kingdom.
- William, H., & McAfee, B. (2009). *Producing a Healthy Cash Flow for your Business, Business and Economic Review*, 55 (3), 24-25.
- Yazdanfar, D. (2014). "The impact of cash conversion cycle on firm profitability: An empirical study based on Swedish data. *International Journal of Managerial Finance*, 10 (4), 442 – 452.