



Cash Conversion Cycle Management On The Performance Of Health-Care Manufacturing Companies In Nigeria.

Duru Anastesia Nwakaego¹ and Okpe Innocent Ikechukwu²,

¹Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria.

²Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria

ABSTRACT:- This study examines the effect of cash conversion cycle on the performance of Health Care Companies in Nigeria. Variable studied are cash conversion cycle, sales growth rate and debt ratio. Secondary sources of data were sourced from the Annual Reports of the 3 selected companies for this study with the use of generalized least square multiple regressions in the test of Hypotheses. The findings of the study show that both cash conversion cycle and debt ratio had negative but significant effect on the profitability of Health Care Companies in Nigeria, while sales growth rate had positive and significant effect on those companies under study.

Keywords:- Cash conversion cycle, Profitability and Multiple regression.

I. INTRODUCTION

Basley and Brigham (2005), described cash conversion cycle as the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with high profitability, because it improves the efficiency of using the working capital. Although the length of cash conversion cycle is an important measure of the efficiency of working capital management, the cash conversion cycle is a powerful performance measure for assisting how well a company is managing its working capital. A short cash conversion cycle is indirectly related to firm value. Short cash conversion cycle indicates that the firm is collecting the receivable as quickly as possible and delaying the payments of suppliers as slowly as possible. This leads to high net present value of cash flow and high firm value. Cash conversion cycle is an additive measure of funds that are committed, that is tied inventories and receivables less payment that are deferred to suppliers. It has been interpreted as the cash outlays that arise during the production of output and the cash inflows that result from the sale of the output and the collection of accounts receivable.

II. OBJECTIVES OF THE STUDY

The specific objectives include,

1. To determine the effect of cash conversion cycle on profitability.
2. To ascertain the effect of sales growth rate on profitability.
3. To examine the effect of debt ratio on the profitability of Health Care Manufacturing companies in Nigeria

Hypotheses

1. Cash conversion cycle has no effect on profitability.
2. Sales growth rate has no effect on profitability.
3. Debt ratio has no effect on the profitability of Health Care Manufacturing Companies in Nigeria

III. REVIEW OF RELATED LITERATURE

Karaduman, et al (2011), examines the empirical relationship between efficiency of working capital management and corporate profitability of selected companies in the Istanbul stock exchange for the period of 2005 – 2009. The panel data methods were employed in order to analyze the mentioned relationship. The cash conversion cycle (CCC) was used as a measure of working capital management efficiency, and return on assets (ROA) used as a measure of profitability. He found out that reducing cash conversion cycle (CCC) positively affects return on assets.

Charitou, et al (2010) in their study empirically investigate the effect of working capital management on firm's financial performance in an emerging market. They hypothesized that working capital management

*Corresponding Author: Duru Anastesia Nwakaego¹

¹Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria.

leads to improved profitability. Their data set consists of firms listed in the Cyprus Stock exchange for the Period 1998-2007. Using multivariate regression analysis, their results supported their hypotheses. Specifically, their results indicated that the cash conversion cycle and all its major components namely, days in inventory, days in sales outstanding and creditor's payment-period were associated with the firms' profitability. They opined that the results of this study should be of great importance to managers and major stakeholders, such as investors, creditors and financial analysts, especially after the recent global financial crisis and the latest collapse of giant organizations worldwide.

Kwasi (2010) in his attempt to measure and analyze the trends in working capital management of Ghanaian Oil market firm and its impact on their performance. This was very crucial because of the purported high profitable level of the sector and likely under-utilization of such profit potential. The study employed trend and econometric analysis using an unbalanced planed data of 11 Ghanaian oil marketing firms from 2001-2008. for the econometric analyses, the study adopted the number of days inventory, number of days accounts Receivable, number of days payable, cash conversion cycle and the ret trade cycle as measure of working capital management, and gross profit divided by total assets as profitability. He found out inconsistent trend in the various components of working in the Ghanaian oil marketing companies (OMCs). He also found a significant negative relation between profitability and number of days accounts receivables number of days payables, the cash conversion cycle and the net trade cycle.

Chring, Novazzi and Gerah (2011) examine the relationship between working capital management and profitability in Brazilian listed companies. Their objective were of two folds, to investigate if there was any difference between corporate groups of companies: working capital intensive and fixed capital intensive, and to identify the variables that mostly affect profitability. The profitability was measured in three different ways: return on sales (ROS), on asset (ROA) and on equity (ROE). The independent variables were cash conversion efficiency, debt ratio, days of working capital days receivable and day's inventory. Two samples were obtained consisting of 16 Brazilian listed companies in each group for the period 2005 – 2009. Multiple linear regressions have identified that, as far as ROS and ROA are concerned, to mange working capital properly is equally relevant for the two groups of companies, relevant in the company's profitability in the fixed capital group as opposed to the working capital group. From ANOVA it was evident that days inventory has negative relationship with ROS and ROA but has no statistical evidence in ROE improvement in working capital intensive group (positive relationship). While debt ratio was the only variable that affects ROA (negative relationship). These results showed that regardless of the type of company, whether working capital or fixed capital intensive, managing working capital properly is equally important. Moreover, managing inventory as well as cash conversion efficiency to an optimum level will yield more profit in the working capital intensive type of company, while two other different variables create more profit in fixed capital intensive type of the company

Deloof,(2003) have investigates relationship between working capital management and corporate profitability for a sample of 1009 large Belgian non financial firm for the period 1992-1996. The result from the analysis showed that there was a negative relationship between profitability that measure by gross operating income and cash conversion circle as well as number of days accounts receivable and inventories. He suggested that mangers can increase corporate profitability by reducing the number of day's Accounts receivable and inventories less profitable firms waited longer to pay their bills.

Lazaridis,I. and Trynidis,D. (2006), have also investigated the relationship between working capital management and profitability of listed company in the Athens Stock Exchange. A sample of 131 listed companies for a period of 2001- 2004, was used to examine this relationship. The result from regression analysis indicated that there was a statistical significance between profitability measured through, operating profit and the cash conversion cycle. From those results they claimed that the managers could create value for shareholders by handling correctly the cash conversion cycle and keeping each different component to an optimal level.

Raheham and Nasr (2007) have selected a sample of 94 Pakistani firms on Karachi stock exchange for a period of 6 years from 1999- 2004 to study the effect of different variables of working capital management on the net operating profitability. From the result of the study, they showed that there was a negative relationship between variables of working capital management including the average collection period, inventory turnover in days cash conversion cycle and profitability. Besides, they also indicated the size of the firm. Measured by natural logarithm of sales and profitability had a positive relationship.

Lyrondi and Lazardis (2000) investigated the cash conversion cycle and liquidity position of the food industry in cycle as a liquidity level indicator of the food industry in Greece and tried to determine its relationship with the traditional liquidity measurement and profitability measurement on return on investment, return on equity and net profit margin, they found significant, positive relationship between cash conversion cycle and payable deferred period. The relationship between liquidity measurement variables and profitable measurement variable was not statistically significant and there was no relationship between cash conversion cycle and leverage ratio. To determine the solvency level of firms according to existing obligation of firms

different techniques may apply as measurement of liquidity. Current ratio, quick ratio and cash ratio are among the most traditional liquidity measurement techniques and the most recent dynamic techniques, cash conversion cycle is applied for measurement of liquidity level of firms. The relationship of these traditional and modern liquidity measurement techniques are studied by Lyroudi and MC Carty (1993) for small U.S companies for the period 1984 – 1988 and they found that cash conversion cycle was negatively related with the study revealed difference between current ratio but positively related with quick ratio. In addition, the study revealed difference between the concept of cash conversion cycle in manufacturing retail, wholesale and Service industries. The advantage of using modern liquidity measurement technique is that it will help to evaluate working capital change and it facilitates the monitoring and controlling of its components, receivable inventories and payable. The smaller value of cash conversion cycle shows that, the quicker the firms can recover cash from sales of finished products and the more cash will have hence this will lead to have more liquid assets by firms. If cash conversion is high, it will take longer time to recover cash, thus high cash conversion cycle implied an existence of problem in liquidity.

Howorth (2003) in his study on the field of working capital management focuses on the routines employed by firms. The research showed that firms which focus on cash management were larger, with fewer cash sales, more seasonality and possibly more cash flow problems. While smaller firms focused more on stock management and less profitable firms were focused on credit management routine. It was suggested that high growth firms follow a more reluctant credit policy towards their customers, while they tie up more capital in the form of inventory. Account payables will increase due to better relations of suppliers with financial institutions which divert this advantage of financial cost to their client.

Falope and Ajilore, (2009), examined the working capital management and corporate profitability; Evidence from panel data: analysis of selected quoted companies in Nigeria. They used the sample of Nigerian quoted non-financial firms for the period 1996-2005. The study found a significant negative relationship between net operating profitability and the average collecting period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigeria stock Exchange. Furthermore, the study found no significant variation in the effects of working capital management between large and small firms. These results suggest that management can create value for their working capital in a more efficient way by reducing the number of days accounts receivable and inventories to a reasonable minimum.

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

Padachi, (2006), in his study also studies on the trends in working capital management and its impact on firms' performance: analysis of Mauritian small manufacturing firms, to identify the causes for any significant difference between the industries. The dependent variable return on total assets is used as a measure of profitability and the relation between working capital management and corporate profitability was investigated for a sample of 58 small manufacturing firms, using panel data analysis for the period 1998-2003. The regression result shows that high investment in inventories and renewable is associated with lower profitability. The key variable used in the analysis was inventories days, accounts receivables days, accounts payable days and cash conversion cycle. A strong significant relationship between working capital management and profitability has been found in previous empirical work. An analysis of the liquidity, profitability and operational efficiency of the five industries trend in the short – term component of working capital financing.

Gill et al, (2010), sought to extend Tryfonidis findings regarding the relationship between working capital management and profitability. A sample of 88 American firms listed on New York stock Exchange for a period of 3 years from 2005-2007. They found statistically significant relationship between the cash conversion cycle and profitability,

IV. RESEARCH METHODOLOGY

The research work focuses on the empirical analysis of the relationship between cash conversion cycle management and corporate profitability in some selected Health care manufacturing companies in Nigeria. The ex-post factor research design was used because it involves events that have already taken place in the past. The

records observed were from 2000-2011, a period of twelve years. The variables tested were cash conversion cycle, return on total assets, debt and sales.

Population and Sample Size

The population of this study comprise of all manufacturing companies under Health care companies quoted in the Nigeria stock exchange. The sample size is dependent on data availability. The choice is because they are important aspect of labour in the manufacturing and trading sectors.

Nature and Source of Data

The study used secondary data that were extracted from the selected Health care manufacturing companies. Data from annual reports are proven to be more reliable because companies are required to keep accounts and to produce accounts that give true and fair view of their company according to companies and allied matters decree 1990. The data for the study are profit before tax, total assets, inventory, receivables, payables, long term debt, sales.

Descriptive Variables

The researchers made their choice primary guided by precious empirical studies along this line. Profitability is the dependent variable of this study. Return on total assets was used to analyze the impact of cash conversion cycle management on the firm’s profitability.

Profitability = $\frac{PBT}{Total\ assets}$

Independent Variables:

Cash conversion cycle

Cash conversion = Receivables – (payables + inventory)

Debt

When external funds are borrowed. Example from banks at a fixed rate they are assured to be invested in the company and a higher interest paid to the bank. This is measured by long term debt divided by total assets.

Debt = $\frac{Total\ debt}{Total\ assets}$

Sales Growth

Sales growth is the increase or decrease of annual sales measured as a percentage. It is measured in this study as sales-sales divided by sales.

Sales = $\frac{Sales_1 - Sales_0}{Sales_0}$

Analytical Tool for the Test of Hypotheses

The complicated date were analyzed using four functional models of multiple regression, and the best fitted to the analysis was selected. This four multiple regression models as follows:-

- a. 1 Linear regression model:
Profitability: = $B_0 + B_1 (CCC) + B_2(SL) + B_3(DT) + U_1$
- b. Semi - log regression Model:
Profitability: $\log B_0 + \log B_1 (CCC) \log + B_2(SL) + B_3(DT) + U_1$
- c. Double log regression Model:
Profitability = $\log B_0 \log + B_1 (CCC) + B_2(SL) + B_3(DT) + U_1$
- d. Exponential regression Model:
Log profitability $B_0 + B_1 (CCC) + B_2(SL) + B_3(DT) + u_i$

After obtaining the result of the four functional multiple regression model, decisions were taken on which among then should be chosen as the best-fit model in the analysis, the choice model were used in the interpretation of the results. Decisions and choice model were based on the one that has the highest number of variables.

Table 1: Raw Data for Evans Medical Nigeria Plc.

Year	Return on Asset Ratio	Cash Conversion Cycle Ratio	Debt Ratio	Sales Growth Rate (%)
2000	0.034625	-0.65993	0	39.05726
2001	0.029339	-0.68722	0	22.50026
2002	0.065951	-0.74651	0	28.72962
2003	0.054482	-0.77129	0	29.93023
2004	-0.01729	-0.55098	0	54.04279
2005	0.028394	-0.80682	0	6.804
2006	0.04886	-0.82985	0	14.98197
2007	-0.08589	-1.1653	0	8.364676
2008	-0.08256	-0.8959	0	41.67471
2009	-0.24173	-0.97941	0	-21.0859
2010	0.031798	-0.86808	0	29.75194
2011	0.010873	-0.63635	0	-13.766

Source: Author's Computation from Annual Accounts of Firm 2000-2011.

Evans Plc did not make profit from 2007 – 2009, and little profit in other years. They have more to pay than to receive; Evans Plc did not borrow in all the years. They made huge sales in all the years except in 2009 and 2001.

Table 2: Raw Data for May and Baker Nigeria Plc.

Years	Return on Asset Ratio	Cash Conversion Cycle Ratio	Debt Ratio	Sales Growth Rate (%)
2000	0.066064	-0.83973	0	-76.212
2001	0.150865	-0.99325	0	12.51061
2002	0.070925	-0.7221	0	20.81539
2003	0.105454	-0.68311	0	39.65755
2004	0.094409	-0.32271	0.055875	6.763298
2005	0.07945	-0.34737	0.253096	5.056067
2006	0.067142	-0.53842	0.010669	12.84018
2007	0.103268	-0.2796	0	71.2864
2008	0.123612	-0.26102	0.06543	40.93948
2009	0.055926	-0.31164	0.069466	-15.3578
2010	0.045151	-0.40009	0.124106	0.754573
2011	0.048182	-0.29522	0.106008	4.275843

Source: Author's Computation from Annual Accounts of Firm 2000-2011.

This company did not make enough during the year 2000 – 2011. Their receivable ratios are low while their payable ratios are also low, but they have more to pay than to receive. They did not borrow from 2000 to 2003 and 2007. The sales growth rate is high except in 2000 and 2011.

TABLE 3: Raw Data for Pharma-Deko Nigeria Plc.

Years	Return on Asset Ratio	Cash Conversion Cycle Ratio	Debt Ratio	Sales Growth Rate (%)
2000	-0.28955	-2.6563	0	-97.9008
2001	-0.0135	-1.65971	0	125.8291
2002	0.145708	-0.92565	0	78.30239
2003	0.12896	-0.75012	0	49.24213
2004	0.04528	-1.13591	0	16.74983
2005	0.096513	-3.92722	0	691.7326
2006	-0.24871	-1.72701	0	-88.4972
2007	-0.16012	-2.2946	0	21.81199
2008	-0.13097	25.92615	0	-85.3775
2009	0.199647	-6.92418	0	334.2857
2010	-0.2259	-0.9603	0.341589	-1.48885
2011	0.024817	-0.7776	0.361385	155.2044

Source: Author's Computation from Annual Accounts of Firm 2000-2011.

Return on asset ratio of this company is low, while they had more to pay than to receive. CCC is negative. It is in only 2010 and 2011 that this company borrowed they did not borrow in other years. Sales growth ratio is high except in 2000, 2006, 2008 and 2010.

Test of Hypotheses

TABLE 4: Multiple Regression Analysis showing the relationship between Profitability ratio and CCC, DT and SL of Health Care firms in Nigeria

Variables	Linear Regression	Semi Log Regression	Double Log Regression	Exponential Regression
Constant	-0.102* (-1.732)	-0.048 (-0.923)	-0.690* (-1.867)	0.124 (0.417)
Cash Conversion Cycle Ratio (CCC)	0.019 (0.0345)	-0.078 (-1.018)	-0.478 (-0.883)	-0.023 (-0.084)
Debt Ratio (DT) (Control)	-0.092 (-0.417)	-0.043 (-1.037)	0.088 (0.302)	1.024 (0.918)
Sales Growth Rate (SL) (Control)	0.000* (1.800)	0.087 (4.088)	-0.160 (-1.062)	0.000 (0.418)
R ²	0.469	0.579	0.147	0.337
Adjusted R ²	0.336	0.474	-0.066	0.172
F-Ratio	3.532***	5.510***	0.688	2.036*

NB: 1. Profitability = $B_0 + B_1(CCC) + B_2(DT) + B_3(SL) + U_i$

2. Also, 1%, 5%, 10% levels of significance are represented by ***, ** and * respectively

3. Values in brackets are coefficients while those outside brackets are t-values of the variable

The results of multiple regression analyses for the variables influencing the profitability ratio of Healthcare firms in Nigeria were summarized above. The Results showed that out of the four functional models of the multiple regression calculated, the Semi log Regression model was chosen because it has the highest number of significant variables as well as a very significant F-ratio (5.510***) value which indicated that the choice model best fitted the analysis. Also, the results of the analysis revealed an R² value of 0.579 thus indicating that 57.9% variation in the profitability ratio (dependent variable) of Healthcare firms in Nigeria was accounted for by the explanatory (independent) variables considered in the analysis. Specifically the results showed that CCC had negative and non-significant relationship with the profitability ratio at 1% levels of significance. This means that unit increase in the value of AP and CCC shall bring about corresponding decrease in the profitability ratio of Healthcare industries in Nigeria. Debt ratio had negative and significant effect while sales growth rate had positive and also significant effect on the profitability of Building materials, chemical and Paint companies in Nigeria.

V. CONCLUSION

Adequate management of cash has a direct effect on the profitability of firms. The aim of this study is to examine the effect of cash conversion cycle on the performance of Health Care Companies in Nigeria. Multiple Regression Technique was used to test the hypotheses, and it was found out that cash conversion cycle had negative but significant effect on the profitability of Health Care Companies in Nigeria. Debt had also negative and significant effect while sales growth rate had positive and significant effect on these companies under study.

REFERENCES

- [1]. Ching, H.Y. Novazzi, A. and Gerab, F. (2011). Relationship between working capital management and profitability in Brazilian listed companies. *Journal of global Business and Economics*, 3, 75.
- [2]. Charitou, M.S. Elfani, M. Lois, P. (2010). The effect of marking capital management on firm's profitability: Empirical Evidence from an Emerging market, *Journal of Business and economic Research*, 8, (12),
- [3]. Deloof, M. (2003). Does working capital management affect profitability of Belgian firm. *Journal of Business finance and Accounting*. 30, (3 and 4), 573-587.
- [4]. Falope, O. I. and Ajilore, O.T. (2009). Working capital management and corporate profitability Evidence from panel Data Analysis of selected Quoted companies in Nigeria, *research Journal of business management*, 3, 73 – 84.
- [5]. Gill, A. Biger, N. and Atnur, (2010). The relationship between working capital, management and profitability. Evidence from the United state, *Business and Economic Journal*, 2010, Bej – 10, 1-9
- [6]. Howorth, C.P. (2003). The focus of working capital management in Uk small firms” management accounting research, *research* 14, 97-111, Blackwell publishing.
- [7]. Karaduman, H.A. Aknas, H.E. Caliskan, A.O. and Durer, S. (2011). The relationship between working capital management and profitability: Evidence from and Emerging market, *International research Journal of Finance and Economics*, 62, 61 – 67.
- [8]. Kwasi, S.K. (2010). Working capital management and firms performance. An Analysis of Ghanaian oil marketing firms, INTEQ. GH. Tel: 233-205600002/233-24-9276087
- [9]. Lazaridisi, I. and Trynidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens stock exchange”, *Journal if financial management and Analysis*, 19, (1), 26-35
- [10]. Lyroadi, and Lazadis, (2000). Short term financial management of business increases and in Cyprus *Business and Economic society international*.
- [11]. Muchina, and Kiano, E. (2011), Influence of working capital management on firms profitability: A case SMES in Kenya, *International Business management*, 5, (5), 279 – 286.
- [12]. Padachi, K. (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 papers*. 2, (2), 45 – 58.
- [13]. Raheman, A. and Nasr, M. (2007). Working capital management and profitability, case of Pakistani firms. *International review of business research papers*, 3, (1), 279-300.