

IMPACT OF WORKING CAPITAL ON THE PROFITABILITY OF THE NIGERIAN CEMENT INDUSTRY

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ABSTRACT: *This study empirically examined the impact of working capital management (Measured by: the number of days accounts receivable are outstanding-DAR, the number of days inventory are held-DINV, and the cash conversion cycle-CCC), on profitability (measured by return on assets-ROA) of Nigerian Cement Industry for a period of eight (8) years (2002-2009). Data from a sample of four (4) out of the five (5) cement companies quoted on the Nigerian Stock Exchange (NSE) were analysed using descriptive statistics and multiple regression analysis. The study found an insignificant negative relationship between the profitability (measured by ROA) of cement companies quoted on the NSE and the number of days accounts receivable are outstanding (DAR). The study also found a significant negative relationship between the profitability of these cement companies and the number of days inventory are held (DINV). The study finally revealed a significant positive relationship between the profitability and the cash conversion cycle (CCC). The study concludes that, the profitability of cement companies quoted on the NSE during the study period is influenced by DINV and CCC. The study therefore recommends that managers of these cement companies should manage their working capital in more efficient ways by reducing the number of days inventory are held to an optimal level in order to enhance their profitability as well as create value for their shareholders. Managers of Nigerian cement companies should also improve on their cash flows, through the reduction of their cash conversion cycle.*

KEYWORDS: Working Capital Management, Profitability, Nigerian Cement Industry, Cash conversion cycle, Accounts receivable, Inventory.

INTRODUCTION

Decisions relating to working capital (WC) involve managing relationships between a firm's short-term assets and liabilities to ensure that a firm is able to continue its operations, and have sufficient cash flows to satisfy both maturing short-term debts and upcoming operational expenses at minimal costs, and consequently, increasing corporate profitability. WC refers to the firm's current assets and current liabilities required to be combined with fixed assets for the day-to-day business activities (Barine, 2012). The current assets necessary for the working of fixed assets are accounts receivable, inventories and cash, while the current liabilities necessary for the working of fixed assets are accounts payable. These current assets and current liabilities constitute the components of WC. Management of WC is an important component of corporate financial management because it directly affects the profitability and liquidity of firms.

Padachi (2006) asserts that the management of WC is important to the financial health of firms of all sizes. According to Smith (1980), this importance is hinged on two main reasons. First, the amount invested in WC is often high relative to the proportion of total assets employed and so it is vital that this investment is used effectively and efficiently in order to justify its worth. Secondly, working capital management (WCM) directly affects the liquidity and profitability of firms and consequently their net worth. Van-Horne and Wachowicz (2004) opined that excessive levels of current assets may have a negative effect on a firm's profitability where as a low level of current assets exposes firms to the risk of illiquidity and stock outs, resulting in difficulties in maintaining smooth operations.

The objective of WCM is to maintain an optimal level among each of the WC components. Therefore, in the desire to achieve this objective, most of the financial manager's time and efforts are consumed in identifying the non-optimal levels of current assets and current liabilities with a view to bringing them to optimal levels (Lamberson, 1995). The optimal level of WC, which is a balance between risk and efficiency, is maintained by continuous monitoring of the various components of WC. Business success heavily depends on the ability of the financial managers to effectively manage these components of WC (Filbeck & Krueger, 2005). Therefore, WCM can be considered as all managerial decisions (such as continuous monitoring of the optimal positions of the WC components) taken by the managers in maintaining a balance between liquidity and profitability while conducting day-to-day operations of a business concern (Rahaman & Nasr, 2007).

Efficient WCM is crucial to the financial performance of firms of all sizes and it also serves as an important indicator of sound financial health of firms. A poor or inefficient WCM leads to tying up funds in idle assets and thereby reducing the liquidity and profitability of a company (Akinlo, 2011). Agreeing with this view, Deloof (2003) posited that firms with dwindling profits are expected to properly examine their WCM.

Empirical studies have generated a variety of explanatory variables that are related to WCM and which might potentially be associated or responsible for the profitability of manufacturing firms (Dong and Su, 2010). These explanatory variables are: cash conversion cycle (CCC), number of days accounts receivable are outstanding (DAR), number of days inventory are held (DINV) and number of days accounts payable are outstanding (DAP). These variables are believed to be capable of reflecting the directions of the impacts of WCM on profitability of firms (Dong and Su, 2010).

Although a number of studies about the impact of WCM on profitability of firms have been undertaken in the countries around the world, most of these studies have focused on the aggregate study of non-financial firms across industries. Some of these studies are: Shin and Soenen (1998), Krueger (2002), Deloof (2003), Filbeck and Krueger (2005), Padachi (2006), Rahaman and Nasr (2007), Afza and Nasir (2009), Falope and Ajilore (2009), Gill, Biger & Mathur (2010), Dong and Su (2010), Akinlo (2011), Ogundipe, Idowu and Ogundipe (2012), Barine (2012) and Adediran, Josiah, Bosun and Imuzeze (2012).

The studies that are carried out on specific industrial sectors, which could aid better analysis of the directions of the impacts of WCM on profitability of firms within an industrial sector,

are relatively scanty (Ghosh & Maji, 2004). The few available and known of such studies include: Ghosh and Maji (2004) who used data from Indian cement industry to examine the efficiency of WCM; Ramachandran and Janakiraman (2007) who utilized data from the paper industry in India to analyse the relationship between WCM efficiency and earnings before interest and taxes (EBIT), while Kaur (2010) conducted an in depth study on WCM of Indian tyre industry.

In the light of the above background, it is clear that empirical studies on the impact of WCM on profitability of firms within specific industrial sectors in both developed and developing economies are relatively scanty. This study therefore examines the impact of WCM on profitability of cement companies quoted on the Nigerian Stock Exchange (NSE), in order to ascertain the directions of the impacts on profitability of these cement companies and, most importantly, to fill the lacuna existing in the local literature. The rest of the paper is organized and presented around the following related themes:

- ✓ Conceptual considerations
- ✓ Statement of hypotheses
- ✓ methodology
- ✓ Data analysis and discussion of results
- ✓ Conclusion.
- ✓ Recommendations.

CONCEPTUAL CONSIDERATIONS

The concept WC has been viewed by a number of authors and scholars. For instance, Akinsulire (2005) viewed WC as items (such as stock, creditors and cash) that are required for the day to day production of goods to be sold by a company. To Ramachandran and Janakiraman (2007), WC is the flow of ready funds necessary for the working of a concern. They stated that WC comprises of funds invested in current assets and current liabilities. To Falope and Ajilore (2009), WC is the firm's investment in short term assets. They emphasized that these assets are the lifeblood of a business enterprise largely due to their importance in the production and sales activities. It is the management of these assets that is called WCM.

Efficient management of WC is very essential in the overall corporate strategy in creating shareholders value (Afza and Nazir, 2009), agreeing with this view, Eljelly (2004) states that WCM 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 one hand and avoid excessive investment in current assets on the other hand.

Padachi (2006) opines that the management of WC is important to the financial health of businesses of all sizes. This is because, first, the amounts invested in WC are often high in proportion to the total assets employed and so it is vital that these amounts are used efficiently. Secondly, the management of WC directly affects the liquidity and the profitability of firms and consequently their net worth (Smith, 1980) Raheman and Nasr (2007) consider WCM as striking a balance between the two objectives of a firm, that is, profitability and liquidity. They posited that firms must strive to maximize profits and enhance shareholders wealth but at the same time not sacrifice their liquidity which is necessary for smooth operations and most

importantly, corporate survival. To achieve this dual objective of WCM, most of the financial manager's time and efforts are consumed in identifying the non-optimal levels of the various components of WC and bringing them to optimal levels (Lamberson, 1995). The optimal level of WC components, which is a balance between risk and efficiency, is maintained by continuous monitoring of the various components of WC (Afza and Nazir, 2009).

The basic objective of WCM therefore is to ensure that a firm's current assets and current liabilities are maintained at a satisfactory level. That is, to avoid neither more nor less WC but to ensure that it is just adequate (Dong and Su, 2010). This view supports the observation made by VanHorne and Wachomicz (2004) who observed that excessive level of current assets may have a negative effect on a firm's profitability, where as a low level of current assets may lead to low level of liquidity and stock-outs thereby resulting in difficulties in maintaining smooth operations.

Components of working capital management (WCM):WCM processes involve crucial decisions on multiple aspects, including the investment of available cash, maintaining a certain level of inventories, managing accounts receivable and accounts payable (Hadley, 2006). However, WCM is not limited to these tasks, but is implicated in multiple levels of interactions both internally and between external parties (Suppliers, Customers, distributors, bankers and retailers). For example, credit officers are required to investigate credit history of their clients in order to understand their financial worthiness. For this paper, the components of WCM have been narrowed to four, namely: cash, receivables, inventory and payables management.

Cash Management: The purpose of cash management is to determine the optimal level of cash needed for the nature of business operation cycle (Hadley, 2006).The challenge of cash management is to balance the appropriate level of cash and marketable securities that will reduce the risk of insufficient funds for operations and opportunity cost of holding excessively high level of these resources (Filbeck, Krueger & Preece, 2007). Thus, a company's competency to synchronize cash inflows with cash outflows, by using cash budgeting and forecasting in formulating a cash management strategy is important.

Inventory (INV) Management: Inventories are the product a company is manufacturing for sale and the components that make up the product (Pandey, 2005a)has classified the various forms in which inventories exist in a manufacturing company as: raw materials, work-in-progress and finished goods. Stocks of raw materials and work-in-progress facilitate production, while stock of finished goods is required for smooth marketing operations (Hadley, 2006).In the context of inventory management, Pandey (2005b) opined that a firm is faced with the problem of meeting two conflicting needs. First, to maintain a large size of inventories of raw materials and work-in-progress for smooth production and of finished goods for uninterrupted sales operations. Secondly, to maintain a minimum investment in inventories to maximize profitability. The objective of inventory management should be to determine and maintain optimum level of inventory investment which should normally lie between the two danger points of excessive and inadequate inventories. Inventory, therefore, plays an important role to determine the activities in producing, marketing and purchasing. Since inventory determines the level of activities in a company, managing it strategically contributes to profitability (Filbeck, Krueger & Preece, 2007).

Payables Management: Falope and Ajilore (2009) view accounts payable (AP) as suppliers whose invoices for goods or services have been processed but have not yet been paid. Organizations often regard the amount owing to creditors as a source of free credit because it has no identifiable interest charges. It is in view of this that accounts payable are always regarded as a major source of working capital financing for firms (Pandey, 2005). Therefore, strong alliance between company and its suppliers will strategically improve production lines and strengthen credit record for future expansion.

Receivables Management: Rafuse (1996) views accounts receivable (AR) as customers who have not yet made payment for goods or services, which the firm has provided. The objective of debtors (receivables) management is to minimize the time-lapse between completion of sales and receipt of payments (Hadley, 2006). Profits may be called real profits after the receivables are turned into cash (Srivastarva, 2004). Rafuse (1996) posited that the management of accounts receivable is largely influence by the credit policy and collection procedure.

Cash Conversion Cycle (CCC) Management : CCC is an important tool of analysis that enables us to establish more easily why and how the business needs more cash to operate and when and how it will be in a position to refund the negotiated resources (Elizalde, 2003). CCC is considered as a comprehensive measure of checking the efficiency of working capital management. A business can generate losses during a number of different periods, but it cannot go on indefinitely with poor CCC Management (Dong and Su 2010).

Measures of Profitability:According to Eljelly (2004), profitability is the ability to create an excess of revenue over expenses in order to attract and hold investment capital. Four useful measures of firm's profitability are: the rate of return on firm's assets (ROA), the rate of return on firm's equity (ROE), operating profit margin and net firm income. The ROA measures the return to all firm's assets and is often used as an overall index of profitability, and the higher the value, the more profitable the firm. ROA is therefore an indicator of managerial efficiency as it shows how the firm's management converted the institution's assets under its control into earnings (Falope and Ajilore, 2009).

The ROE measures the rate of return on the owners' equity employed in the firm (Pandey, 2005). ROE indicates how well the firm has used the resources of owners. The operating profit margin measures the returns to capital per naira of gross firm revenue. It focuses on the per unit produced component of earned profit and the asset turnover ratio. The net income comes directly on the income statement and it is calculated by matching firm revenue with expenses incurred to create revenue, plus the gain or loss on the sale of firm capital assets (Gitman, 2006).

Statement of hypotheses

Three hypotheses have been formulated in their null form for this paper they are:

H₀₁: The number of days accounts receivable are outstanding has no significant impact on the profitability of Nigerian cement companies.

H₀₂: The number of days inventory are held has no significant impact on the profitability of Nigerian cement companies.

H₀₃: The cash conversion cycle has no significant impact on the profitability of the Nigerian cement companies

METHODOLOGY

The population of this study consists of all the five (5) cement manufacturing companies quoted on the Nigerian Stock Exchange (NSE) as at 31st December, 2009. The five companies are: Ashaka cement Nigeria plc (ASHAKA); Benue Cement Company Nigeria Plc (BCC); Cement Company of Northern Nigeria Plc (CCNN); Lafarge Cement (West African Portland Cement) Nigeria Plc (WAPCO) and the Nigerian Cement Co. Plc (NCC).

Sample Size of the Study: A sample of four (4) cement companies have been used in the study. The sampled companies are: ASHAKA, BCC, CCNN and WAPCO. The choice of these four cement companies is because they have the relevant data for all the years of the study (2002 to 2009). The sample selection was purposive to exclude the fifth cement company, NCC because it has no performance report for the period of study.

Sources of Data: The data collected for this study were obtained through the Secondary source. The data used for analysis were extracted from the audited annual financial reports and accounts of the sampled cement companies for the period 2002 to 2009.

Data Analysis Techniques : This study is set to ascertain the impact of WCM on profitability of cement companies quoted on the NSE. To achieve this objective, two data analysis techniques are used namely: descriptive statistics and multiple regression analysis. The study utilized the descriptive statistics because it summarized the collected data in a clear and understandable way using numerical approach (Nsude, 2005). The multiple regression analysis was also used to investigate the relationship between the dependent and independent variables. The choice of this technique was because of its ability to account for several predictive variables simultaneously, thus modeling the property of interest with more accuracy (Petrocelli, 2003). A preliminary test for incidences of multi-collinearity of the variables in the study model was used from the regression results. The variance inflation factor (VIF) statistics was used for the test. The advantage of using VIF is that it filters the variables that might distort the results of regression analysis (Gujarati & Sangetha, 2007).

From the regression results, the student t-test was used to test the hypotheses at 5% level of significance (α). The use of student t-test is recommended when a study seeks to ascertain whether two or more continuous variables differ in their mean (Nsude, 2005). For a two tailed test, the critical t-value for a 5% level of significance is $t_{\pm \alpha/2}$, that is, $t_{\pm 0.05/2} = \pm 1.96$. Based on this, the decision rule for testing the hypotheses is to accept (or reject) the null hypothesis if the critical t-value is greater (or less) than the calculated t-value (Agburu, 2001).

Operational Description of Variables

The choice of the variables for this study was primarily guided by previous empirical studies and availability of data. Thus, the variables are defined to be consistent with those of Falope and Ajilore (2009). This study used five (5) variables as follows:

Firm's Profitability

Firm's Profitability is the dependent variable in this study, the return on assets (ROA) is used as a measure of profitability for this study. Therefore, the return on assets (ROA) is used as

the dependent variable in order to examine the impact of WCM on profitability of cement companies in Nigeria. The choice of (ROA) was because it is an indicator of managerial efficiency as it shows how the firm's management converted the institution's assets under its control into earnings. Return on assets (ROA) is defined in this study as earnings before interest and taxes (EBIT) divided by net assets (NA) of a firm (Dong and Su, 2010).

The Number of Days Accounts Receivable is outstanding (DAR)

The number of days accounts receivable are outstanding (DAR) is one of the independent variables in this study. It is used as a proxy for the credit policy of the firm. Accounts receivable (AR) are customers who have not yet made payments for goods or services rendered. The objective of managing AR is to minimize the time-lapse between completion of sales and receipts of payments. DAR is defined here as $(AR \times 365) / \text{sales}$ (Dong and Su, 2010). DAR represents the average number of days that a firm takes to collect payments from its customers.

The Number of Days Inventory are held (DINV)

The number of days inventory are held (DINV) is also one of the independent variables. It is used as a proxy for inventory management policy. Inventory (INV) are stocks – raw materials, work-in-progress or finished goods waiting to be consumed in production or to be sold (Falope and Ajilore, 2009). DINV is defined as $(INV \times 365) / \text{cost of goods sold}$ (Dong and Su, 2010). This variable reflects the average number of days stocks are held by the firm in the store before been sold. Longer storage days represent a greater investment in inventory for a particular level of operations (Falope and Ajilore, 2009).

The Cash Conversion Cycle (CCC)

The CCC is an independent variable used as a comprehensive measure of checking the efficiency of WCM (Falope and Ajilore, 2009). It is the measure of the time between disbursement and cash collection. CCC is simply the number of days that passes before collection of cash from sales, measured from when organizations actually pay for inventories. It is therefore an additive measure of the number of days funds are committed, that is, tied to inventories and receivables less the number of days payments are deferred to suppliers. It has been interpreted as a time interval between 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 the accounts receivable. The CCC is calculated as $(DAR + DINV) - DAP$ (number of days it takes to settle accounts payable) (Dong and Su, 2010). The shorter the CCC, the more efficient the company is managing its cash flow. Also the shorter a firm's CCC, the better a firm's profitability. This shows less of external financing and less of time for cash tied up in current assets (Padachi, 2006).

Debt Ratio (DR)

Debt ratio is a control variable in this study and is defined as total debts divided by net assets (Dong and Su, 2010). It is used as a proxy for leverage. When external funds are borrowed, for instance, from banks, at a fixed rate, they can be invested in the company in order to gain a higher interest than that paid to the bank. The difference is a net income for the shareholders and therefore boosts the return on equity (Dong and Su, 2010).

Model for the research variables

The model for this study is a multiple regression model expressed thus: $ROA = \beta_0 + \beta_1(DAR) + \beta_2(DINV) + \beta_3(CCC) + \beta_4(DR) + e_i$

Where:

ROA = Return on Assets

β_0 = Constant of the model

β_1 - β_4 = Coefficients of the model

DAR = Number of days Accounts receivable are outstanding

DINV = Number of days inventory are held

CCC = Cash conversion cycle

DR = Debt ratio

e_i = Random error term representing factors other than those specified in the model.

Data analysis and discussion of results

The data values for all the study variables in respect to each of the sampled cement companies were computed using the extracted data, from the annual financial statements of these sampled cement companies listed on the NSE.

Table1: Descriptive Statistics of dependent and independent variables

	Observations (N)	Minimum	Maximum	Mean	Std. deviation
Variables	Statistic	Statistic	Statistic	Statistic	Statistic
ROA	32	-0.33	0.38	0.1256	0.16152
DAR	32	0.64	33.06	9.9838	10.24153
DINV	32	53.93	631.67	174.6469	105.65788
CCC	32	-361.08	214.59	64.2616	118.78676
DR	32	0.01	0.87	0.2350	0.24631

a. Dependent variable: ROA

b. Independent variables: DAR, DINV, CCC and DR

Source: SPSS output file (version17.0)

Table 2: Summary of regression results for the study model

R	R ²	Adjusted R ²	Std. error of the Estimate	Change statistics					Durbin Watson
				R ² change	F. change	df1	df2	Sig. f change	
0.828 a	0.686	0.640	0.03694	0.686	14.766	4	27	0.000	1.708

a. Predictors: (Constant), DR, DAR, DINV and CCC

b. Dependent variable: ROA

Source: SPSS output file (version 17.0)

Table 3: Result of regression coefficients for the study model

Variables	Coefficients			t	Sig	Collinearity statistics	
	Unstandardized coefficients		Standardized coefficients		0.05	Tolerance	VIF
	B	Std. error	Beta				
(Constant)	0.248	0.046		5.441	0.000		
DAR	-0.001	0.002	-0.026	-0.235	0.816	0.981	1.019
DINV	-0.001	0.000	-0.252	-2.233**	0.034	0.914	1.094
CCC	0.001	0.000	0.323	2.106**	0.045	0.495	2.019
DR	-0.337	-0.101	-0.513	-3.326**	0.003	0.488	2.049

a. Dependent variable: ROA

b. Predictors: (constant), DR, DAR, DINV and CCC

** Significant at 5%

Source: SPSS output file (version 17.0)

The hypotheses formulated in for this study are tested in this section using the t-values produced by the SPSS output shown in table 3. The level of significance for the study is 5% (two-tailed test). Therefore, the critical value for t is ± 1.96 . The decision rule for this test is to accept (or reject) the null hypothesis if the critical value is greater (or less) than the calculated t value shown in the SPSS output of table 3. These hypotheses are tested in this as follows:

Ho₁: The number of days accounts receivable are outstanding has no significant impact on the profitability of Nigerian cement companies.

Table 3 Provides results for the testing of this null hypothesis (Ho₁) above. The result shows that the calculated value of t for DAR is -0.235. Therefore, the critical value (1.96) is greater than the calculated value of t for DAR as shown in table 3. Thus, the null hypothesis is accepted and it is concluded that the profitability of the Nigeria cement companies during the study period was not significantly influenced by DAR. This position is confirmed when the level of significance for this study (0.05) is compared with the significant level (sig) of DAR (0.816) as shown in table 3

Ho₂: The number of days inventory are held has no significant impact on the profitability of Nigerian cement companies.

Table 3 again provides results for the testing of this null hypothesis (Ho₂) above. The result shows that the calculated value of t for DINV is -2.233. Therefore, the critical value (1.96) is less than the calculated value of t for DINV as shown in table 3. Thus, the null hypothesis (Ho₂) is rejected and the conclusion is that the profitability of the Nigerian cement companies during the study period was significantly influenced by the DINV. This position is also confirmed when the level of significance for this study (0.05) is compared with the calculated significant level (sig) for DINV (0.034) as shown in table 3.

H₀₃: The cash conversion cycle (CCC) has no significant impact on the profitability of Nigerian cement companies.

Table 3 also provides results for the testing of the hypothesis (H₀₃) above. The result shows that the calculated value of t for CCC is 2.106. Therefore, the critical value (1.96) is less than the calculated value of t for CCC as shown in table 3. Thus, the null hypothesis (H₀₃) is rejected leading to the conclusion that the profitability of the Nigerian cement companies during the study period is significantly influenced by the CCC. This position is also confirmed when the level of significance for the study (0.05) is compared with the calculated significant level (sig) for CCC (0.045) shown in table 3.

The results clearly shows that profitability (measured by ROA) of the Nigerian cement companies is not significantly influenced by the number of days accounts receivable are outstanding (DAR) during the period of study. The factors that significantly influenced profitability (measured by ROA) of Nigerian cement companies during the period of study are the number of days inventory are held (DINV) and the cash conversion cycle (CCC).

INTERPRETATION OF RESULTS

The results from the regression coefficients for the study model shown in table 3 and test of the research hypotheses on the impact of WCM on profitability of Nigerian cement companies are interpreted as follows:

The impact of DAR on profitability: The result of the regression coefficients indicates that DAR has an insignificant (0.816) negative (-0.026) relationship with the profitability (measured by ROA) of the sampled Nigerian cement companies for the study period. The negative relationship for the present study is consistent with previous empirical studies such as Lazaridis and Tryforidis (2006), and Ramachandran and Janakiraman (2007) who also found an insignificant negative relationship between profitability and DAR. The negative relationship between DAR and profitability of the sampled Nigerian cement companies implies that the profitability of these cement companies will be impacted negatively if the number of days it takes debtors to settle their accounts is increased and vice-versa. However, the insignificant negative relationship between DAR and profitability (ROA) indicates that DAR does not sufficiently explain the variation in the profitability of cement companies in Nigeria.

The impact of DINV on Profitability: The result of regression coefficients also revealed that DINV has a significant (0.034) negative (-0.252) relationship with the profitability (proxy by ROA) of the sampled Nigerian cement companies during the study period. This implies that when inventories stay longer in stores before they are sold, it leads to tie down of cash and increase in costs of storage, insurance, spoilage and obsolescence. These costs impact negatively on the profitability of cement companies in Nigeria. The negative relationship between profitability and DINV is consistent with the previous empirical findings of Shin and Soenen (1998), Deloof (2003), Padachi (2006), Shah and Sana (2006), Rahaman and Nasr (2007), Falope and Ajilore (2009), Dong and Su (2010), and Hayajneh and Yassine (2011) who also found a negative relationship between DINV and profitability. The present finding however, contradicts the findings of Gill, Biger and Mathur (2010), and Akinlo (2011) who found DINV to be positively related to profitability.

The impact of CCC on profitability: The result of the regression coefficients as shown on table 3 also indicates that cash conversion cycle (CCC) has a significant (0.045) positive (0.323) relationship with profitability (measured by ROA). This positive relationship between CCC and ROA during the study period implies that, the longer the CCC, the higher the profitability of the cement companies in Nigeria and vice-versa. This positive relationship between CCC and profitability (measured by ROA) is consistent with the previous empirical findings of Padachi (2006), Ramachandran and Janakiraman (2007), Gill, Biger and Mathur (2010), and Akinlo (2011) who found a positive relationship between CCC and profitability. The finding from this study however, contradicts the findings of Shin and Soenen (1998), Deloof (2003), Lazaridis and Tryfornidis (2006), Rahaman and Nasr (2007), Falope and Ajilore (2009), and Dong and Su (2010) who found significant negative relationship between CCC and profitability of firms.

The impact of Debt Ratio (DR) on profitability: The result of the regression coefficients as shown on table 3 finally indicates a high significant (0.003) negative (-0.513) relationship between profitability (measured by ROA) and the control variable debt ratio (DR). This finding implies that more profitable cement companies in Nigeria prefer lower debts than less profitable ones, since the more profitable ones finance their capital needs from retained earnings and borrow only when capital requirements exceed internal sources. The negative association between debt ratio and ROA is consistent with the finding of Akinlo (2011) who also found a significant negative relationship between DR and ROA. This finding however, contradicts the findings of Falope and Ajilore (2009), Dong and Su (2010), and Gill, Biger and Mathur (2010) who found a positive relationship between DR and ROA.

The negative association between DR and ROA of cement companies in Nigeria is also consistent with the pecking order theory which suggests that firms finance their capital needs first by retained earnings, followed by debt and finally share capital (Myers & Majluf, 1984).

CONCLUSION

This study found only the number of days inventory are held (DINV) and cash conversion cycle (CCC) to be significant factors that can impact profitability of cement companies quoted on NSE during the study period. The number of days accounts receivable are outstanding (DAR) was not found to be a significant factor that impact profitability of cement companies in Nigeria.

RECOMMENDATIONS

The result of this study suggests that the number of days inventory are held and cash conversion cycle are the important factors that affects profitability of the Nigerian cement industry. The study therefore, recommends that the managers of cement companies in Nigeria should continuously monitor their inventory levels with a view to reducing the number of days inventory are held in store before they are sold. This will not only enhance their profitability and liquidity positions but will also maximize returns to shareholders and firm value in general. Secondly, the study recommends that the accounts payable, which is regarded as a major source of working capital financing for firms should be repositioned in order to reduce the cash conversion cycle from its present positive status to a negative one. This will improve their

liquidity position and also reduce their over-dependence on high interest loans, for the financing of day-to-day operations, which can impact profitability negatively (Falope & Ajilore, 2009). Managers of cement companies can achieve this by re-negotiating with their regular and important suppliers for further increase in the number of days accounts payable are due for payments (Pandey, 2005).

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