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### WORKING CAPITAL EFFICIENCIES AND FIRM VALUE OF INDUSTRIAL GOODS COMPANIES IN NIGERIA

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#### **Abstract**

*The study examines the effect of working capital efficiency on firm value of listed industrial goods firms (Building materials sub-sector) in Nigeria. Multiple regression method was used to analyze the data extracted from annual reports and accounts of five (5) sampled firms for the period 2006- 2015. The results found that cash conversion cycle is one of the major determinants of working capital efficiency and working capital efficiency has a significant positive effect on firm value of listed industrial goods companies in Nigeria. The study concludes that efficient working capital management has a tendency to increase firm value. The study therefore, recommends that management should increase firm value by decreasing inventory conversion cycle and debtors collection period due to their positive effect on cash conversion cycle.*

**Keywords:** Working Capital Efficiency, Firm Value, Tobin Q and Nigeria

#### **1. Introduction**

Current assets constitute a significant proportion of manufacturing companies' assets. It consists of raw materials, work-in-progress, stock of finished goods, accounts receivable (e.g. debtors, bills receivables) and cash and its equivalents among others. These assets are maintained for the purpose of production and sales. For instance, raw materials are converted into finished goods, finished goods into debtors and debtors turned into cash and bills receivables. These are utilized in using the fixed assets for day to day operations. Current liabilities on

the other hand, are claims against the business. These include accounts payable and other claims that are short-term in nature. The net asset (current assets less current liabilities) is referred to as working capital. Working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of business (Mukhopadhyaya, 2004). The purpose of working capital management is to manage firm's current assets and liabilities to maintain satisfactory level of working capital. Working capital management plays an important role in firm's profitability, liquidity and risk, as well as its value (Smith, 1973). Efficient management of working capital plays an important role in overall corporate strategy in order to create shareholder value. Efficient working capital management is very important to create value for the shareholders (Shin and Soenen, 1998) while Smith *et al* (1997) emphasized that profitability and liquidity are the salient goals of working capital management. Most organizations therefore, are forced to cease operations due to inability to meet short-term obligations (recurrent, debt and interest commitments). In order to sustain the business, it is essential for any organization to efficiently manage its working capital.

In Nigeria, there is a growing interest in the area of working capital efficiency/investment on profitability. However, profitability is a short-term measure of performance (Samiloglou and Demirgunes, 2008) and its role as an indicator of firm well-being is doubted partly due to its manipulative ability. For example, Tung *et al.* (2008) find that managers practice the granting of extended credit at the end of the fiscal year in order "to accelerate customer purchases and thus avoid reporting losses to meet annual financial reporting targets". Hence, an investigation into the effect of working capital on profitability may not give a clear picture of its actual impact since one or more of its components may have been used to manipulate earnings. On the other hand, firm value is a long-term measure of performance (Samiloglou and Demirgunes, 2008). The efficient management of working capital helps increase free cash flows used to value a firm, thus maximizing firm value. Tobin Q is a popular measure of market value. Tobin's Q was introduced by Tobin as an appropriate measure of performance in 1969. Tobin's Q is defined as Market value of equity plus book value of debt divided by book value of assets.

The study examines the effect of working capital efficiencies (working capital management) on the firms' value of listed industrial goods sector in Nigeria. Specifically, the study seeks to determine the extent to which working capital efficiencies affects firms' value. The study covers the industrial goods sector based on the Nigerian stock exchange listing 2015.

The remaining parts of the paper is structured as follows: section two presents the literature review, section three discussed the methodology section four presents the empirical results and discuss the findings and finally, the last section concludes and proper recommendations.

## **2. Literature Review**

This section reviews relevant literature on working capital management and profitability in order to establish a base for the study. Research on the working capital management has attracted researchers attention due to its importance to users of accounting information especially investors and firm management. Prior studies do not only establishes common opinion on its usefulness, but further emphases the need to assess the efficiency of working capital management and firm value.

The essence of management at any level and function is to achieve the corporate objectives of the firm concerned. Expectedly, efficient working capital management should enhance the achievement of certain operational, tactical and even strategic objectives of the organization. Working capital management refers to a company's managerial strategy designed to monitor and utilize the current asset and current liabilities (components of working capital) to ensure the most financially efficient operation of the company. The primary purpose of working capital management is to ensure maintaining adequate cash flow to meet short-term operating costs and debt obligations. The goal of efficient working capital management is to ensure that a firm is able to continue its operations and possess sufficient ability to satisfy both maturing short-term debt and operational expenses. The management of working capital involves managing inventories, accounts receivable, payable and cash.

### **2.1 Working Capital Efficiency (WCE) and Firm Value**

The results of the studies on the interaction between working capital management, firm value and profitability spares around divergent views of significant and insignificant impact. For instance, Ademola and Kemisola (2014) found significant positive impact of working capital management on market value in a study that examines the effect of working capital management on market value of quoted food and beverages manufacturing firms in Nigeria. The study utilises Account Collection Period, Inventory Conversion Period, Account Payment Period, Cash Conversion Cycle and Aggressive Investment Policy as proxy of working capital management, while Tobin Q proxy market. Pearson Product Moment Correlation and multiple regression analysis were used as tools of analyses to ascertain the effect of working capital management on firm value. On

investigation of the impact of working capital management on firm value using panel data of 47 companies from Airline industry in Netherlands for the period 2003-2011, Vural, Sokmen and Cetenak (2012) found mixed results, negative effect of gross operating profit and leverage on firm profitability, insignificant effect of other working capital management components, significant positive effect of firm size, cash conversion cycle, leverage and firm value. Samiloglou and Demirgunes (2008) significant negative impact of working capital management on form value in the study that investigates the relationship between working capital management and firm performance from a sample of 75 listed manufacturing firms in Istanbul Stock Exchange covering the period 2002-2009. In line with this, Sunday, Abiola and Lawrence (2012) examine the impact of working capital management on firm performance and market value with a sample of 54 non-financial quoted firms in Nigeria. The result shows significant negative relationship of cash conversion cycle on market value and firm performance. It also shows that debt ratio is positively related to market valuation and negatively related with firm performance.

Furthermore, Lai (2012) found significant negative relationship between cash conversion cycle and firm value. However, the negative relationship becomes weaker on introducing current ratio as control variable. This may be due to how working capital management affects firm's liquidity and value. The study recommend to the managers reducing cash conversion cycle to create firm value. In support, NorEdi and Noriza (2010) in the study sample 172 listed companies of Bursa Malaysia main board for the period 2003-2007 examine the effects of working capital component (cash conversion cycles, current ratio, current asset turnover ratio, current liabilities to total asset ratio and debt ratio) on the firm's performance utilizing firm's value (Tobin Q, return on asset and return on invested capital). The study applied correlations and multiple regression analysis, the result shows significant negative associations between working capital variables and firm performance. Ben-Caleb (2009) empirically investigated the predictable power of working capital efficiency on profitability of listed companies in Nigeria. A cross sectional survey design was adopted using 50 firm-year observations from 25 non-financial service listed firms for the period 2005 and 2006. The study employs OLS regression for analysis. The results document significant impact of combined practicable power of working capital components on profitability. The result also reveals negative effect on profitability of the working capital components, except debtor's collection period with significant effect.

Padachi (2006) examined the trends in working capital management and its impact on firm's performance samples 58 Mauritian small manufacturing firms

during 1998 to 2003. The findings suggest that high investment in inventories and receivables is associated with low profitability and increasing trend in the short term component of working capital financing. This portrays that a well designed and implemented working capital management is expected to contribute positively to the creation of firm's value.

The results of the aforementioned studies on working capital efficiency and firm value provide mixed results, some studies found positive and significant relationship while others found negative relationship. We can also deduce that working capital is the lifeblood of any economic unit and its management may be considered among the most important function of corporate management. In view of the importance of the working capital management, this seeks to empirically examine the effects of working capital efficiencies and firms' value of Building Materials Firms in Nigeria. The study therefore hypothesis that, H<sub>1</sub>: Working capital management has significant positive impact on firm value of Building materials companies in Nigeria. The result will guide the management of industrial goods firms and other sector of the economy in Nigeria and beyond the contribution of efficient working capital management on firm value.

### **3. Methodology and Data**

The data used in the study was mainly secondary extracted from the audited annual reports and account of five (5) listed Building Materials companies under industrial goods sector in the Nigerian Stock Exchange (NSE) for the period of ten (10) years (2006 – 2015) and were all selected as sample of the study.

#### **3.1 Variables and Measurement**

There are three (3) variables in the study; Firms' Value (FV) is the dependent variable proxy by Tobin's Q. Working Capital Efficiency is the independent variable proxy by working capital components: Inventory Conversion Period (ICP), Debtors Collection Period (DCP), Creditors Payment Period (CPP) and Cash Conversation Cycle (CCC). The Firm Size was selected as control variable (Ademola and Kemisola, 2014; Vural et al, 2012 and NorEdi & Noriza, 2010).

*Firm Value (Tobin Q)*: Tobin Q is market measure of firm's value. The decision rule of Tobin's Q states that; value ranges between 0 and 1 mean, the firm assets value is higher than the value of the firm stocks (suggesting that, the firm stock price is undervalued) and where the Tobin Q value is higher than 1 mean, the firm assets value is lower than the value of the firm stocks (suggesting that, the firm stock price is overvalued). It is calculated as:

$$\frac{\text{Market Value of Equity} + \text{Book Value of Liability}}{\text{Total Assets}}$$

*Inventory Conversion Period:* This refers to the time required for production, distribution and selling of company's product. It is computed as:

$$\frac{\text{Average Stock}}{\text{Cost of Sales per annum}} \times \frac{365 \text{ (days)}}{1}$$

*Debtors Collection Period:* This is the time required to collect the outstanding credit sales made to customers. It is computed as:

$$\frac{\text{Average Debtors}}{\text{Total Credit Sales}} \times \frac{365 \text{ (days)}}{1}$$

*Creditors Payment Period:* This is the period the firm is able to defer payments on various resource purchases to creditors. It is computed as:

$$\frac{\text{Average Creditors}}{\text{Total Credit Purchases}} \times \frac{365 \text{ (days)}}{1}$$

*Cash Conversion Cycle:* This is a comprehensive measure of working capital as it shows the time lag between expenditure for the purchase of raw materials and the collection of sales of finished goods. It is calculated as:

$$\text{Inventory Conversion Period} + \text{Debtors Collection Period} - \text{Creditors Payment Period}$$

*Firm Size:* This is computed as Natural Logarithm of total sales (Deloof, 2003; Akinyele et al, 2012).

### **Model Specification**

The data gathered for the study were analyzed using descriptive statistics and Multiple Regression model. The model is specified as follows:

$$FV_{it} = \beta_0_{it} + \beta_1 ICP_{it} + \beta_2 DCP_{it} + \beta_3 CPP_{it} + \beta_4 CCC_{it} + FS_{it} + \epsilon_{it}$$

*Where:*

FV <sub>it</sub>	=	Firm value (Dependent variable proxy Tobin Q)
β <sub>0it</sub>	=	Constant Intercept
β <sub>1ICPit</sub>	=	Inventory Conversion Period (Independent variable proxy Working Capital Efficiency)

- $\beta_2DCP_{it}$  = Debtors Collection Period (Independent variable proxy Working Capital Efficiency)  
 $\beta_3CCP_{it}$  = Creditors Collection Period (Independent variable proxy Working Capital Efficiency)  
 $\beta_4CCC_{it}$  = Cash Conversion Cycle (Independent variable proxy Working Capital Efficiency)  
 $FS_{it}$  = Firm Size (Control variable proxy Natural Logarithm of Sales)  
 $\varepsilon_{it}$  = Error term (capturing other explanatory variables not explicitly included in the model)  
 $\beta_1, \beta_2, \beta_3$  and  $\beta_4$  = Regression Coefficients  
 $i$  = Sample firm  
 $t$  = Time (period)

#### 4. Result and Discussion

**Table 1: Descriptive Statistics**

Variable	No. of Obs.	Mean	Std. Dev.	Min.	Max.
Firm Value	50	3.48	3.45	0.26	12.65
ICP	50	122.66	49.44	36.05	249.58
DCP	50	28.58	28.65	0.67	179.36
CCP	50	113.23	80.94	12.69	359.59
CCC	50	38.01	95.05	-172.87	230.89
Firm Size	50	23.17	1.51	21.10	26.56

*Source: STATA Output*

Table 1 presents descriptive statistics of the variables. The mean of firm value is 3.48 and standard deviation of 3.35. The maximum and minimum values were 12.65 and 0.26 respectively. Information from descriptive statistics also indicated that the mean value of cash conversion cycle to check the efficiency in managing working capital is 38 days and standard deviation is 95 days having minimum of -173 days and maximum of 231 days. The average number of inventory conversion cycle is 123 days with standard deviation of 49days. Maximum time taken by a firm is 250 days, while minimum time to convert inventory into sales is 36 days. Minimum time taken by a company to collect cash from customers is zero days while the maximum time stood at 179 days. The average time taken is

29days with a standard deviation of 29days. The average time of payment to suppliers is 113days and the standard deviation is 81days. Maximum time taken for a firm to pay for the supplies is 359 days while minimum is 13days. Logarithm of sales that was used as a measure of size of the firm shows an average of 23 and standard deviation of 1.51. The maximum value of log of sales for the year is 26.56 while the minimum value is 21.10. Standard deviation indicates the variability of data across the mean. Therefore, higher standard deviation relative to mean value shows normality of data. However, variables such as Firm value and Debtors collection period means and standard deviation are almost the same.

**Table 2: Correlation Matrix**

Variable	ICP	DCP	CCP	CCC	Firm Size
ICP	1.00				
DCP	-0.09	1.00			
CCP	-0.13	0.33	1.00		
CCC	0.60	-0.03	-0.82	1.00	
Firm Size	0.03	-0.10	0.13	-0.12	1.00

*Source: STATA Output*

Table 2 shows the relationship among the variables. Some variables are negatively related with others while some have positive relationship with others. Variables like ICP and CCP shows negative relationship. The relationship among DCP and CCP shows positive association.

#### 4.1 Result and Discussion

**Table 3: Regression Results**

Variable	Firm Value	
	Coefficient	t-statistics
ICP	-59.68	-0.77
DCP	-59.67	-0.77
CCP	59.66	0.77
CCC	59.65	0.77
Firm Size	-0.85	-3.05
Constant	25.95	4.01

R-Square	0.3956
Adj. R-Square	0.3269
F(5, 44)	5.76
Prob. of F	0.0004

Source: STATA Output

Table 3 present the regression results. The value of R-square is 40% (approximately). This deduces that 40% variation in Firm value is attributable to efficiency of working capital. The prob. of F test is 0.0004 which is  $<0.05$  indicating that the model is fit. The ICP and DCP have same coefficient and the t-value of -59.67 and -0.77 each respectively. This suggest that where ICC and DCP increases by one unit Firm value decrease by 0.77. CCP has a positive relationship with Firm value of 0.77. CCC also has a positive relationship with Firm value at 0.77. The similar values of ICP and DCP may be attributed to the overriding effect of CCP on the negative effect of ICP and DCP on Firm value with the net effect of CCC on Firm value of 0.77 ( $ICP + DCP - CCP = CCC$ ). The resultant effect of a day increase in CCC will result to 0.77 increases in Firm value as measured and confirmed by Tobin's Q. The result shows that CCC (working capital efficiency) is one of the major determinants of firm value. The finding support that of Ademola & Kemisola (2014) and Vural et al (2012), Ben-Caleb (2009) that found positive relationship between Working capital efficiency and Firm Value and contradicts the results of studies such as Lai (2012), Sunday et al (2012) and NorEdi & Noriza (2010) that documents negative relationship between CCC and Firm Value.

## 5. Conclusion and Recommendations

The study examines the effect of working capital management on firm value of Listed Industrial goods firms in Nigeria. The results of the study show that cash conversion cycle being a strong determinant of working capital efficiency has a positive influence on the value of firm. The study concludes that working capital efficiency has significant positive impact on firm value of listed industrial goods (Building materials) firms in Nigeria. In line with the result, the study hypothesis  $H_1$ : Working capital management has significant positive impact on firm value of Building materials companies in Nigeria is accepted. The study therefore, recommends that management of firms should increase their firm value by decreasing inventory conversion period and debtors' collection period due to their positive effect on cash conversion cycle. This deduces that efficient working capital management has the ability of increasing firm value. Managers should also improve the measures of efficient working capital management.

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