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Working Capital Management and Firm Performance: Evidence from Nigerian Listed Firms

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Abstract:

This paper examines the impact of working capital management on firms' financial performance of thirty manufacturing firms listed on the Nigerian Stock Exchange for the seven-year period 2004-2010. Panel data methodology was employed and pooled OLS was used to estimate the coefficients of the explanatory variables. Results reveal that working capital management (Cash Conversion Cycle) is negatively and significantly related with firm's financial performance (ROA). Thus, efficient management of working capital items would bring about increase in profitability level of firms. Our findings are consistent with prior empirical studies and finance theory.

Key words: Working Capital Management, Cash Conversion Cycle, ROA, Nigeria

1. Introduction

Working capital refers to the portion of total funds used for the day-to-day running of the affairs of the organization. Funds are needed for current asset items such as purchase of raw materials, management of receivables, cash, bank, short-term financial assets and the management of current liability items, such as account payables, tax liabilities, etc.

For the smooth running of the business enterprise, the organization should be able to determine the optimum working capital requirement and maintain the same throughout the operating cycle. Having either excess or under working capital affects the liquidity and profitability of an organization adversely. Eljelly (2004) posits that effective working capital management will eliminate the risk of inability to meet due short term obligations on the one hand and avoid excessive investment on these assets on the other hand. Inefficient working capital management, according to Berryman (1983) induces small firms' failures. It can also lead to a situation whereby the firm will be showing overtrading (undercapitalization) signs (Appuhami, 2008).

Profit maximization is one of the primary objectives of a business concern. Business survival usually depends on profits and they are a definite standard against which to measure success, efficiency as well as growth of the enterprise. In the same manner, liquidity is also vital for the smooth running of the operation of the business. A firm with liquidity challenge will not be able to meet up with its short-term financial obligations within its operation and to its creditors, among others. This suggests that a business should be run both efficiently and profitably by maintaining a balance between liquidity and profitability at all times. If there is a mismatch between liquidity and profitability, a firm may be profitable in the short run but at a risk of its continued survival as an enterprise in the long run. Thus, working capital management, according to Raheman and Nasr (2007), has its effect on both liquidity and profitability.

Various attempts have been made in the literature in the study of long-term finance, such as investment decision, dividend decision and capital structure decision but short-term finance has been neglected for a very long time. Such neglect is unacceptable because short-term finance, particularly, working capital management is relatively important to the survival of any firm. Of recent, attention has been shifted to the study of working capital management. However, many of these studies were conducted in the developed nations, specifically in the USA and European countries. In the developing/ emerging economies, limited studies have been carried out so far. This has created a huge knowledge gap. To the best of our knowledge, an attempt was made by Falope and Ajilore (2009) and Nwidobie (2012) but our study aims at extending their works through increased sample size and study time frame as well as using an improved empirical statistical tool in the analysis of data. We also intend to show the importance of industrial sector classification in working capital management.

The primary objective of this study is to examine the relationship that exists between working capital management and firm financial performance. The outcome of the study will enable managers to take steps that will improve the management of their

entities' resources and create wealth for their shareholders. In order to achieve this objective, we make use of thirty manufacturing firms listed on the Nigerian Stock Exchange between 2004 and 2010.

The rest of this paper is organized as follows. In section 2, we discuss the literature review. Section 3 provides the methodology of the study. The empirical results and discussion are presented in section 4, while we conclude the study in section 5.

2. Literature Review

In financial management literature we have many studies, both theoretical and empirical, that have been conducted by researchers from different business environments using different techniques. The most common empirical finding suggests a negative relationship between working capital management variables and financial performance. This provides evidence in support of the traditional belief (that is, aggressive policy) of working capital management. The following studies provide evidence in support of the negative relationship:

Shin and Soenen (1998) analyse a sample of USA firms and conclude that a well managed working capital will have a significant impact on the profitability of the firms.

Deloof (2003) conducts his study using sample of Belgian firms. Results reveal that the way the working capital is managed has a significant impact on the profitability of firms. Thus, an increase in profitability will result from reduction in number of day's accounts receivable and inventories. Specifically, the study concludes that a shorter cash conversion cycle and net trade cycle (working capital proxies) is related to better performance of the firms.

Eljelly (2004) studies working capital management using 929 Saudi Arabian firms. He concludes that the size of working capital variables have significant effect on profitability at the industry level.

Padachi (2006) looks into the trends in working capital management and its impact on firms' performance of a sample of 58 Mauritian small manufacturing firms between 1998 and 2003. The regression results show that high investment in inventories and receivables is associated with lower profitability. More importantly, an analysis of the liquidity, profitability and operational efficiency of the 5 industrial sectors used in the study shows significant changes toward performance. The findings also reveal an increasing trend in the short-term component of working capital financing.

Raheman and Nasr (2007) examine the effect of working capital management on liquidity as well on profitability of a selected sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years (1999-2004). The results show that there is a strong negative relationship between variables of the working capital management and profitability of the firm. It means that as the cash conversion cycle increases, it will lead to the decreasing profitability of the firm. It also reveals a negative relationship between liquidity and profitability.

Ganesan (2007) analyses the relationship between working capital management efficiency and profitability using a sample of 349 telecommunication equipment companies covering the period 2001-2007. The result reveals that "days working capital" (working capital management proxy) is negatively related to profitability but not significant.

Falope and Ajilore (2009) study the effects of working capital management on profitability of 50 non-financial firms listed on the Nigerian stock exchange for the period 1996-2005. They report a negative relationship between working capital proxy (cash conversion cycle) and financial performance proxy (return on assets, ROA).

Sen and Oruc (2009) investigate the relationship between efficiency level of 49 firms being traded on the floor of the Istanbul Stock Exchange, Turkey in working capital management and their return on total assets. Their results reveal in terms of both all the firms involved in the study and sectors, a significant and negative relationship between cash conversion cycle and working capital level, current ratio, accounts receivable period, inventory period and return on total assets.

Kaur (2010) studies working capital management in Indian tyre industry for the period 1999-2007. The result reveals a stand-off between liquidity and profitability and the sample firms have been achieving a trade-off between risk and return. Efficiency management of working capital and its component have a direct effect on the profitability level of the tyre industry.

Dong and Su (2010) attempt to investigate the relationship between working capital management and profitability using data collected from Vietnam stock market for the period 2006-2008. Their findings show that there is a strong negative relationship between profitability measured through gross operating profit and the cash conversion cycle. They conclude that managers can create a positive value for the shareholders by handling the adequate cash conversion cycle and keeping each different component to an optimum level.

Nwidobie (2012) uses data from 22 listed companies in Nigeria to investigate working capital management efficiency and corporate profitability. The result shows that costs of working capital of the sample firms exceed returns on working capital investments thereby affecting their profitability.

Other studies conducted by Narasimham and Murty (2001), Garcia-Teruel and Martinez-Solano (2007), Hofler (2009) and Raheman, Afza, Qayyum and Bodla (2010) found a negative relationship between profitability and firm's cash conversion cycle.

In contrast to the traditional belief, there are limited studies that conclude that a higher investment in working capital will result in high financial performance. This is theoretically referred to as conservative policy. Blinder and Maccini (1991) affirm that when high inventory is maintained, it reduces the cost interruptions in the production process, decreases the supply cost, and serves as protection against price fluctuation and loss of business due to scarcity of products. All these will eventually lead to increase profitability.

Gill, Biger and Mathur (2010) investigate the relationship between working capital management and firm's profitability by taking a sample of 88 American manufacturing firms which are listed on the New York Stock Exchange for the period 2005-2007. Their findings confirm a positive relationship between cash conversion cycle and corporate profitability (gross operating profit).

3. Methodology

3.1. Research Design

The study is empirical in nature. Secondary source of data gathering was utilized. Data were specifically sourced from the annual reports of the sample firms and publications of the Nigerian Stock Exchange.

The study makes use of 30 non-financial firms listed on the floor of the Nigerian Stock Exchange for the period 2004-2010. This represents 210 firm-year observations.

3.2. Variable Description And Hypothesis Formulation

The following variables are used in this study:

Dependent variable: Return on Asset (ROA) which is viewed as a measure of management's efficiency in utilizing all the assets under its control, regardless of source of financing, is used as the dependent variable.

Independent variables: In line with previous studies (see Deloof, 2003; Padachi, 2006; Falope and Ajilore, 2009 and Raheman et al, 2010) we utilize Cash Conversion Cycle (CCC), Average Collection Period in days (AC), Inventory Turnover in days (IT) and Average Payment Period in days (AP) to proxy for working capital management. It is also pertinent to note that the CCC is the best proxy for working capital management because all other proxies, AC, IT and AP are individual components of CCC (see Table 1). The longer the CCC, the larger the funds blocked in working capital. Following the *aggressive* policy of working capital management, CCC is expected to have a negative relationship with profitability proxy, ROA.

Controlled variables: As a result of the fact that firms of different sizes are used in the study, there is tendency for some factors, other than the explanatory variables, to influence the firm performance. This is the reason for the introduction of some controlled variables. These variables will be treated in similar fashion as the explanatory variables. These variables are:

Current asset to total asset ratio (CATA): It shows the proportion of current assets in the total assets. This is expected to have an influence on the profitability of the firm.

Current liability to total asset ratio (CLTA): According to Padachi (2006), this ratio is used to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive.

Current ratio (CR): This is a measure of liquidity. It is generally believed that ratio 2:1 represents best level to operate on. Empirically, it is expected to have a negative relationship with ROA.

Debt ratio (DR): Many studies conducted on capital structure especially on the prediction of Pecking order theory clearly indicate an inverse relationship between this debt ratio and ROA.

Size (SZ): Larger firms can be able to leverage their market power, thereby influencing performance. The need for introduction of SZ, as a controlled variable becomes imperative. This is expected to have a positive relationship with ROA. This is in line with theoretical predictions of pecking order and static trade off theories of capital structure.

<u>Variable</u>	<u>Abbreviation</u>	<u>Measurement</u>
<u>Return on Asset</u>	<u>ROA</u>	$\frac{\text{Profit Before Interest and Tax}}{\text{Total Asset}}$
<u>Average Collection Period in days</u>	<u>AC</u>	$\frac{\text{Accounts Receivables} \times 365}{\text{Net Sales}}$
<u>Inventory Turnover Period in days</u>	<u>IT</u>	$\frac{\text{Stock} \times 365}{\text{Cost of goods sold}}$
<u>Average Payment Period in days</u>	<u>AP</u>	$\frac{\text{Accounts Payable} \times 365}{\text{Purchases}}$
<u>Cash Conversion Cycle in days</u>	<u>CCC</u>	$AC + IT - AP$
<u>Current Asset to Total Asset ratio</u>	<u>CATA</u>	$\frac{\text{Current Asset}}{\text{Total Asset}}$
<u>Current Liability to Total Asset ratio</u>	<u>CLTA</u>	$\frac{\text{Current Liabilities}}{\text{Total Asset}}$
<u>Current ratio</u>	<u>CR</u>	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
<u>Debt ratio</u>	<u>DR</u>	$\frac{\text{Total debt}}{\text{Total Assets}}$
<u>Size</u>	<u>SZ</u>	<u>Logarithm of total assets</u>
<u>Industrial sector</u>	<u>IND</u>	The dummy variable takes the value 1 if the firm is in that sector; otherwise it takes the value 0.

Table 1: Measurement of variables

Source: Empirical literature with Authors' modification

3.3. Model Specification

We adopt (with modification) the framework used by Deloof (2003), Padachi (2006), Dong and Su (2010) and Raheman et al (2010) in our study. However, we introduce a variable which proxy for industrial sector effects. This will enable us to determine

whether industrial sector a firm belongs to have a significant relationship with performance, through management of working capital.

The methodology adopted for this study is panel data. This simultaneously combines time series with cross-sectional data. The coefficient of the variables will be determined through Simple Ordinary Least Squares regression.

Specifically, the models used for the regression analysis are expressed in the following form:

- Model 1 $ROA = \beta_0 + \beta_1 AC_{it} + \beta_2 CATA_{it} + \beta_3 CLTA_{it} + \beta_4 CR_{it} + \beta_5 DR_{it} + \beta_6 SZ_{it} + e_{it}$ (3.1)

- Model 2 $ROA = \beta_0 + \beta_1 IT_{it} + \beta_2 CATA_{it} + \beta_3 CLTA_{it} + \beta_4 CR_{it} + \beta_5 DR_{it} + \beta_6 SZ_{it} + e_{it}$ (3.2)

- Model 3 $ROA = \beta_0 + \beta_1 AP_{it} + \beta_2 CATA_{it} + \beta_3 CLTA_{it} + \beta_4 CR_{it} + \beta_5 DR_{it} + \beta_6 SZ_{it} + e_{it}$ (3.3)

- Model 4 $ROA = \beta_0 + \beta_1 CCC_{it} + \beta_2 CATA_{it} + \beta_3 CLTA_{it} + \beta_4 CR_{it} + \beta_5 DR_{it} + \beta_6 SZ_{it} + e_{it}$ (3.4)

- Model 5 $ROA = \beta_0 + \beta_1 CCC_{it} + \beta_2 CATA_{it} + \beta_3 CLTA_{it} + \beta_4 CR_{it} + \beta_5 DR_{it} + \beta_6 SZ_{it} + \beta_7 IND_{it} + e_{it}$ (3.5)

We represent each of the constituent variables of the CCC (that is, AC, IT and AP) as explanatory variables in Models 1, 2 and 3. However, the CCC is used as the explanatory variable in Model 4, while we add the industrial effect to Model 4 to form Model 5.

Following the views of the aggressive policy of working capital management, we expect a negative relationship between ROA and working capital management proxies (except AP which is expected to be positive).

Thus, the following alternative hypotheses will be tested:

- H1: There is a negative relationship between average collection period (AC) and firm’s financial performance (ROA).
- H2: There is a negative relationship between Inventory turnover (IT) and firm’s financial performance (ROA).
- H3: There is a positive relationship between average payment period (AP) and firm’s financial performance (ROA).
- H4: There is a negative relationship between working capital management (CCC) and firm’s financial performance (ROA).
- H5: Industrial effects have a relationship with firm’s performance.

4. Results and Discussion

Table 2 presents the descriptive statistics of the variables used in the study. From the Table 2 the mean ROA is about 5.7%. This implies that for every N100 total asset of the firm, N5.70 is accounted by the profit before tax. The standard deviation of ROA is about 77%. It shows that the profit can deviate from either side by 77%. The average cash conversion cycle for the sample firm is 122 days. The average collection period is 48 days. It also takes the sample firm on the average 57 days to pay up their outstanding bills with maximum days of 395.

	Mean	Minimum	Maximum	Standard deviation	Skewness	Kurtosis
ROA	0.057	-0.192	0.331	0.769	0.015	1.040
CCC	122.380	-250.220	603.530	128.485	1.080	2.177
AC	48.100	0.830	410.670	50.585	3.205	15.383
IT	133.079	16.710	603.110	105.045	1.856	4.026
AP	57.355	1.060	394.600	65.717	2.601	7.615
DR	0.284	0.000	0.911	0.252	0.497	-0.922
SIZE	9.734	0.133	11.189	1.014	-4.047	37.154
CR	1.368	0.265	4.455	0.638	1.186	2.393
CATA	0.609	0.067	0.994	0.212	-0.381	-0.526
CLTA	0.490	0.058	0.930	0.190	0.331	-0.745

Table 2: Descriptive statistics
Source: Researchers’ computation

It takes about 133 days for the sample firm to sell their inventories. Debt ratio is used as a controlled variable in this study. On the average, the debt ratio of the firms is about 28.4%. This shows that most of the firms used in the study make use of small debt capital in their capital structure. We also have in the sample, firms of different capital structure component. The minimum debt ratio is 0% (no debt financing) and the maximum value is 91.1% (high levered firm). The average current ratio is 1.368 (which is below the acceptable ratio of 2:1). This indicates poor liquidity management by the majority of the firms.

Table 3 presents the correlation matrix. From the Table 3, we observe a negative correlation between ROA and the cash conversion cycle at 10% level of significance. It implies that the higher the firm’s cash conversion cycle, the lower will be the profitability. We also find a negative association between ROA and average collection period at 1% level. This indicates that if a firm has a bad collection of receivables policy (increase in AC), it will affect the firm’s profitability negatively.

	ROA	CCC	AC	IT	AP	DR	SIZ	CR	CATA	CLTA
ROA	1									
CCC	-0.120* (0.084)	1								
AC	-0.195*** (0.005)	0.426*** (0.000)	1							
IT	-0.209** (0.016)	0.778*** (0.000)	0.116* (0.093)	1						
AP	0.163** (0.010)	-0.313*** (0.000)	0.124* (0.074)	0.178** (0.010)	1					
DR	-0.429*** (0.000)	-0.113 (0.130)	0.049 (0.518)	-0.195*** (0.009)	-0.122 (0.105)	1				
SIZ	0.166** (0.016)	-0.306*** (0.000)	-0.115* (0.096)	-0.290*** (0.000)	0.027 (0.698)	0.138* (0.065)	1			
CR	0.263*** (0.000)	0.494*** (0.000)	0.067 (0.334)	0.492*** (0.000)	-0.095 (0.169)	-0.424*** (0.000)	-0.236*** (0.001)	1		
CATA	0.182*** (0.009)	0.279*** (0.000)	0.251*** (0.000)	0.123* (0.077)	-0.114 (0.101)	0.008 (0.920)	-0.164** (0.018)	0.457*** (0.000)	1	
CLTA	-0.177** (0.010)	-0.135* (0.051)	0.245*** (0.000)	-0.316*** (0.000)	-0.043 (0.533)	0.467*** (0.000)	0.069 (0.319)	-0.477*** (0.000)	0.425** * (0.000)	1

Table 3: Pearson correlation matrix of the variables

The p- values are in the form (). *, **, *** indicate significant at 10%, 5% and 1% (2-tailed) respectively.

Source: Authors' computation

In Table 3, we do observe a negative association between inventory turnover (IT) and ROA. This explains the reason why a firm should endeavour to sell its inventory as soon as possible. A firm which fails to sell its inventory will have its capital tied up and this will subsequently impair its profitability. Average payment period (AP) is found to be positively associated with ROA at 5% level. It indicates that a firm which delays its payments to its suppliers of raw materials and other accounts payable will be better off as it will lead to increase in its profitability. For the controlled variables, the coefficients of debt ratio; firm size; current ratio; current to total asset ratio and current liability to total asset ratio are as predicted by financial theory.

It is pertinent to note that the result of the association between variables based on predictions of the correlation matrix alone is insufficient for inferences to be made. This is because correlation matrix will only indicate the direction of association between variables and not the strength of the relationship. This is the main reason why Simple Pooled Ordinary Least Squares is used to determine the strength of the relationship between ROA and the explanatory/ controlled variables used in the study.

Table 4 presents the regression result of model 1. In this model, ROA is the dependent variable, while Average Collection (AC) period is the independent variable. From the Table 4, we observe that there is a negative and significant relationship between ROA and AC. It implies that the higher the average collection period, the lower will be the profitability of the firm. This finding is in line with some previous studies such as Padachi (2006), Sen and Oruc (2009), Falope and Ajilore (2009), Mathuva (2010), Dong and Sue (2010), Rahema et al (2010) and Gill et al (2010).

	ROA
AC	-3.180*** (0.002)
DR	-5.434*** (0.000)
SIZ	4.748*** (0.000)
CR	-1.926* (0.056)
CATA	4.185*** (0.000)
CLTA	-2.537** (0.012)
Adj R Square	0.337
F- Stat	16.067*** (0.000)
DW	1.116

Table 4: Simple pooled OLS regression results of Model 1

The p- values are in the form ().

*, **, *** indicate significant at 10%, 5% and 1% respectively

From Table 4, the relationship between debt ratio, current ratio and current liability to total asset ratio on one hand and the ROA on the other is negative and significantly related. This negative sign is in line with theoretical prediction. In the same vein, the relationship between ROA and Size as well as current asset to total asset ratio, is positive and also in accordance with theoretical

expectation. The alternate hypothesis 1 is hereby validated. Thus, there is a negative and significant relationship between average collection period and profitability.

Table 5 presents the regression result of model 2. In this model ROA is the dependent variable and Inventory Turnover (IT), the independent variable. Table 5 reveals a negative relationship between ROA and Inventory Turnover, but not significant. This finding is similar to the study by Padachi (2006). The relationship between ROA and the other controlled variables are as shown in Table 4 (Model 1). The implication of this finding is that we are unable to validate hypothesis 2. Thus, there is no significant relationship between a firm's inventory turnover and profitability.

	ROA
IT	-0.230 (0.819)
DR	-5.123*** (0.000)
SIZ	4.998*** (0.000)
CR	-1.916* (0.057)
CATA	4.034*** (0.000)
CLTA	-3.259*** (0.001)
Adj R Square	0.299
F- Stat	13.628*** (0.000)
DW	1.132

Table 5: Simple pooled OLS regression results of Model 2

The p- values are in the form ().

*, **, *** indicate significant at 10%, 5% and 1% respectively

Table 6 presents the regression result of model 3. In this model ROA is the dependent variable and Average Payment (AP) period is the independent variable. In line with theoretical prediction, there is a strong positive and significant relationship between ROA and AP. It is significant at 1% level. This implies that if a firm can efficiently and effectively maximise its payment schedule, it will increase its profitability. Studies conducted by Padachi (2006), Lazaridis and Tryfonidis (2006), Raheema and Nasr (2007), Sen and Oruc (2009), Raheman et al (2010), Dong and Su (2010) among others, confirm a negative relationship between AP and firm performance measure. Hypothesis 3 is hereby validated. Thus, there is a positive and significant relationship between average payment period and firm's profitability.

	ROA
AP	3.035*** (0.003)
DR	-4.926*** (0.000)
SIZ	4.355*** (0.000)
CR	-2.249** (0.026)
CATA	4.382*** (0.000)
CLTA	-3.363*** (0.001)
Adj R Square	0.330
F- Stat	15.518*** (0.000)
DW	1.252

Table 6: Simple pooled OLS regression results of Model 3

The p- values are in the form ().

*, **, *** indicate significant at 10%, 5% and 1% respectively

Table 7 presents the regression result of model 4. Cash conversion cycle (CCC) is the independent variable in this case.

	ROA
CCC	-2.730*** (0.007)
DR	-4.976*** (0.000)
SIZ	4.256*** (0.000)
CR	-0.905 (0.367)
CATA	3.905*** (0.000)
CLTA	-2.848*** (0.005)
Adj R Square	0.323
F- Stat	15.173*** (0.000)
DW	1.146

Table 7: Simple pooled OLS regression results of Model 4

The p- values are in the form ().

*, **, *** indicate significant at 10%, 5% and 1% respectively

The Table 7 reveals a strong negative and significant relationship between ROA and CCC. It is significant at 1% level. This implies that the higher the cash conversion cycle, the lower will be the profitability. Hence, finance managers should endeavour to reduce the CCC to the optimum level in order to increase the shareholders value. The negative relationship between these variables depict that the sample firms follow the theoretical prediction of aggressive working capital policy during the period of study. The outcome of this study is in line with previous works of DeLoof (2003), Eljelly (2004), Padachi (2006), Raheeman and Nasr (2007), Falope and Ajilore (2009), Raheman et al (2010), Sen and Oruc (2010), and Dong and Su (2010).

As for the controlled variables, there is a negative relationship between debt ratio (at 1% level), current liability to total asset ratio (at 1% level) and ROA. Positive relationship exists between firm size (at 1% level), current asset to total asset ratio (at 1% level) and ROA.

The relationship between current ratio (liquidity proxy) and ROA is negative but not significant. Hypothesis 4 is hereby confirmed. Thus, there is a negative and significant relationship between working capital management (cash conversion cycle) and firm's profitability.

Table 8 presents the regression result of Model 5. We introduce 14 industrial dummies to represent each of the 14 sectors used in the study. The results in Tables 7 and 8 are similar except for the variable CLTA, which now becomes insignificantly related to ROA. Specifically, the finding in Table 8 shows that when a firm (in whatever sector) optimally manages its cash conversion cycle, its profitability will improve. 8 industrial sectors (1- Agric/ agro-allied; 4- Health care; 5- Textile; 7- Building materials; 8- Chemical & paints; 9- Conglomerates; 10- Construction and 13- Packaging) have a negative and significant relationship with profitability measure, ROA.

This implies that the industrial sector which a firm belongs does influence performance through its management of working capital. The F-statistics of this model is 12.019 and it is significant at 1%. It shows that the model is fit. Hypothesis 5 is hereby confirmed. Thus, industrial sector influences financial performance through efficient management of working capital.

	ROA
CCC	-2.641*** (0.009)
DR	-4.596*** (0.000)
SIZ	3.257*** (0.001)
CR	0.669 (0.504)
CATA	4.099*** (0.000)
CLTA	-1.587 (0.115)
Ind dummy 1	-4.489*** (0.000)
Ind dummy 2	-1.279 (0.203)
Ind dummy 3	1.639 (0.103)
Ind dummy 4	-2.182** (0.031)
Ind dummy 5	-6.467*** (0.000)
Ind dummy 6	-1.316 (0.190)
Ind dummy 7	-1.946* (0.053)
Ind dummy 8	-1.764* (0.080)
Ind dummy 9	-2.655*** (0.008)
Ind dummy 10	-3.396*** (0.001)
Ind dummy 11	-0.646 (0.519)
Ind dummy 12	Excluded
Ind dummy 13	-2.449** (0.015)
Ind dummy 14	-1.493 (0.137)
Adj R- square	0.540
F- Stat	12.019*** (0.000)
DW	1.582

Table 8: Simple pooled OLS regression results of Model 5 (with industrial effects)
The p- values are in the form (). *, **, *** indicate significant at 10%, 5% and 1% respectively.

5. Conclusion

The primary objective of this study is to examine the relationship between working capital management and firm's profitability. The dearth of empirical studies in Nigeria as well as in other developing/ emerging economies is the motivation factor for this study. We achieved our set objective by making use of secondary data obtained from the annual reports of 30 non-financial firms listed on the Nigerian Stock Exchange for the 7-year period 2004-2010.

Generally, our findings provide support for the *aggressive policy* of working capital management. Specifically, four (out of five) of the formulated hypotheses were empirically tested and confirmed.

Firstly, our finding shows a negative and significant relationship between average collection period and profitability. To finance managers, this is very important. It suggests that efforts should be directed to the optimum management of accounts receivables. A longer period for the collection of receivables will lead to adverse profitability of the firm. The organization should not also tighten its collection policy beyond the reach of marginal customers, who are in majority in most business environment of

developing countries. If the policy is too harsh, the marginal customers will look elsewhere and the sales (and profit) of the firm may significantly be affected.

Secondly, a positive and significant relationship between average payment period and firm's profitability was noticed in this study. It implies that when the firm delays its payment to its creditors, it will affect the profitability of the firm positively. Caution has to be employed here because of the possibility of the suppliers (creditors) blacklisting the firm and the extension of credit line might be curtailed in the long run.

Thirdly, we observe a negative and significant relationship between working capital management (cash conversion cycle as a proxy) and profitability. Cash conversion cycle is the most appropriate working capital management proxy because all other components of working capital management, such as average collection period, average payment period and inventory turnover period are part of it. Finance managers should put in place means by which the cash conversion cycle is reduced. This is because the higher the cash conversion cycle, the lower the profitability. The strategy to be employed will be such that will collectively reduce the number of days in collecting receivables from customers, increase the period in making payment to suppliers and in the reduction in number of days of inventory.

Fourthly, we extend the previous work of Sen and Oruc (2009), Dong and Su (2010), Gill et al (2010) and Nwidobie (2012) by showing the relevance of industrial sector classification as an important variable that affects profitability.

Lastly, we were unable to find a significant relationship between inventory turnover and firm's profitability.

Regarding future line of research in this area, attention should be directed at improving this study by considering larger sample size and increasing the study time frame, to say 20 years. Results derived will be considered to be more robust than what we present. Efforts should also be made to study the working capital management of small and medium scale firms, who are considered to be in majority, in the developing/ emerging countries.

• **Appendix I: List of Sample Firms**

S/N	SECTOR	NAME OF FIRM
1.	1: AGRIC/AGRO-ALLIED	AFPRINT PLC
2.	2:AUTOMOBILE AND TYRE	RT BRISCOE PLC
3.	3: BREWERIES	NIGERIAN BREWERIES PLC
4.	3: BREWERIES	GUINNESS NIG. PLC
5.	4: HEALTHCARE	MORISON INDUSTRIES PLC
6.	4: HEALTHCARE	GLAXO SMITHKLINE CONS PLC
7.	5: TEXTILE	UNITED NIGERIA TEXTILE PLC
8.	6: INDUSTRIAL AND DOMESTIC PRODUCT	NIGERIA ENAMELWARE PLC
9	6: INDUSTRIAL AND DOMESTIC PRODUCT	FIRST ALUMINIUM PLC
10.	6: INDUSTRIAL AND DOMESTIC PRODUCT	VITAFOAM NIG. PLC
11.	7: BUILDING MATERIALS	LARFARGE CEMENT WAPCO PLC
12.	7: BUILDING MATERIALS	NIGERIA WIRE INDUSTRIES PLC
13.	7: BUILDING MATERIALS	NIGERIAN ROPES PLC
14.	8: CHEMICAL AND PAINTS	BERGER PAINTS PLC
15.	8: CHEMICAL AND PAINTS	CAP PLC
16.	8: CHEMICAL AND PAINTS	IPWA PLC
17.	9: CONGLOMERATES	PZ INDUSTRIES PLC
18.	9: CONGLOMERATES	JOHN HOLTS NIG PLC
19	10. CONSTRUCTION	JULIUS BERGER NIG. PLC
20.	10. CONSTRUCTION	CAPPA & D'ALBERTO PLC
21	11: PRINTING AND PUBLISHING	UNIVERSITY PRESS PLC
22.	11: PRINTING AND PUBLISHING	LONGMAN NIG PLC
23	12: FOOD/BEVERAGES & TOBACCO	7UP BOTTLING COY PLC
24.	12: FOOD/BEVERAGES & TOBACCO	NIGERIAN BOTTLING COY PLC
25.	12: FOOD/BEVERAGES & TOBACCO	FLOUR MILLS NIG PLC
26.	13: PACKAGING	POLY PRODUCTS (NIG) PLC
27.	13: PACKAGING	BETA GLASS COMPANY PLC
28.	13: PACKAGING	AVON CROWN CAPS CONT PLC
29.	14: PETROLEUM (MARKETING)	CONOIL (EX-NATIONAL OIL) PLC
30.	14: PETROLEUM (MARKETING)	TOTAL NIG PLC

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