

## **Working Capital Management and Firm Profitability: An Empirical Examination**

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**Abstract:** *This study examines the relationship between working capital management and firm performance in Nigeria. To achieve this, we used selected industrial quoted firms in Nigeria that have consistently published their audited financial report between 2014 and 2019. A sample of fifteen (15) firms was used to form the sample of the study to ensure adequate observation for statistical testing. We adopted a panel (balanced) data analysis to identify possible firm's specific types of working capital management in selected Nigerian quoted firms. To this end, we conducted descriptive statistics and correlation analysis to describe the data in the variables in the specified model. Fixed and random effects panel data techniques were conducted as well as the Hausman test which formed basis for selecting the preferred model between fixed and random effects models. Result indicate that debtors management and inventory management both exert negatively and insignificantly on firm performance as proxied by ROA, while cash management show positive but insignificant impact on firm performance. We therefore recommend that efficient management of cash in every business is crucial if the firm is to sustain growth.*

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### **I. Introduction**

Business all over the world exists to carry out several activities in order to profit and foster economic growth of any nation. Whether big, medium or small, business needs finance to carry on its operations and to achieve its target. Hence, this makes financing the operation of every business so indispensable today that it is rightly said to be the life-wire of an enterprise (Deloof, 2003). In view of this, Raheman and Nasr, (2007) observe that operationally, every organization requires necessary amount of financing (working capital) irrespective of their size, or nature of business operations, whether profit oriented or not. Without adequate finance that is necessary for organization to carry out its day-to-day operations, no enterprise can possibly accomplish its objectives. The required capital to meet the day-to-day operational activities, that is, to ensure liquidity is called working capital. Liquidity in essence, implies a pre-condition to ensure that firms are able to meet their short term obligations which guarantees profitable ventures (Padachi, 2006). Working capital management is the efficient management of short term assets and liabilities (Khan, 2002). A firm's value cannot be maximized in the long run unless it survives the short run. There are no specific set of rules or formulae to determine the working capital requirements of firms, this makes efficiency in working capital management a very vital issue in all firms.

According to Mullins (2009), the way a firm manages its working capital could significantly affects its profitability. The working capital of a firm is so essential to its operation that if properly managed it will ensure that the firm is able to continue its operations, which guarantees sufficient cash flow to satisfy both maturing short-term debt, meet upcoming operational expenses and gain competitive advantage. Mullins (2009) notes that working capital management forms a key function and it assumes top priority for every finance manager. To this end, all money managers should but, maintain a mindset that in their strive to keep up liquidity, they ought not to lose sight of the fundamental goal of profit and will not lose sight of the basic goal of profitability and should be able to attain a judicious mix of liquidity and profitability while managing their working capital in order to maintain a balance the two variables (liquidity and profitability) in the course of its day to day operations (Mullins, 2009). Some studies have stressed that to produce the best possible returns, the firm should keep no unproductive assets and should finance with the cheapest available sources of funds. Broadly speaking, it's usually beneficial for the firm to take a short position in terms of assets investment and at the same finance the asset with short term liabilities. The management of assets plays a vital role in sustaining the financial health of the firm throughout the traditional course of business (Scherr, 2007; Rahman, 2011).

At all times a firm is required to strike a balance between liquidity and profitability while conducting its daily operations which includes optimum balance of working capital

Components such as, inventory, payables, receivable and efficient cash management in its daily activities. Maintaining an optimal working capital implies minimizing the working capital requirement when necessary and realizing maximum possible revenues (Ganesan, 2007). There is a resilient bond between firm's profitability and its working capital competence (Shin, 1998).

The term profitability refers to the capability of a firm to earn profit. Profit on the flip page is determined by matching revenue against its associated cost (Salaudhin, 2001). Profit of a firm in absolute figure provides an idea about the result of its operation in terms of its financialthe management of working capital plays an important role in maintaining the financial health of the firm during the normal course of business (Scherr, 2007; Rahman, 2011).performance. Various studies did not provide clear-cut direction of the relationship between working capital and firm's performance as measured by profitability. Further examination of the studies reveals that there is little of empirical evidence on the working capital management and its impact on the firm profitability in Nigeria. Therefore, it is against this backdrop that this study attempts to fill this gap by examining the working capital management and firm performance and to ascertain if their performance (profitability) is as a result of Working Capital Management.

## **II. Literature Review**

### **2.1 Theoretical Review**

Few theories that have existed to buttress the relationship between working capital management and form performance includes: the perking other theory. The hypothesis of pecking-order theory according to Donaldson (1961) is at variance with the Modigliani and Miller pattern (1961) on the financing decision of corporations and has flourished as one of the most dominant theories of corporate leverage gaining a wide range of acceptance among economic experts and accounting scholars (Fama& French, 2002; Obohet, 2012; Sankayet, 2013). Donaldson rejected the view of a firm or corporation having a distinctive capital structure that is peculiar to its operation and which maximizes its revenue generation. Scherr (1989) identifies three main historical stages through which working capital management has passed; systematic approach of control phase, optimality management phase and value measurement phase.

#### **Working Capital Management and Profitability**

According to Deloof (2003), the way working capital is managed has a significant impact on profitability and liquidity of firms. This implies that there is a certain level of working capital requirement which potentially maximizes returns. The level of funds committed as the working capital, most often is huge when proportionally juxtaposed to the total asset engaged and so, it becomes very paramount that the finance is utilized efficiently and effectively so as to generate adequate returns.. A firm can be very profitable but if this is not translated into cash from operations within the same operating cycle, the firm is left with no option than to borrow to finance its operational needs. Several studies have argued on an individual account on how these twin-financial strategies affect corporate profitability. Such studies have provided varied reports, however, more studies have reported positive effects than negative (Khraiwesh, 2010; Hayajneh & Yassine, 2011; Ogundipeet, 2012; Sankayet, 2013). Having established a theoretical perspective and highlighted empirical evidence on the individual WCM efficiency can have a significant impact on profitability of a company (Shin &Soenen, 1998). (Lazaridis & Tryfonidis, 2006). In sharp deviation, there are but handy scholars who recorded different outcomes. For example, Nobanee (2009) concludes a positive relationship between cash conversion cycle, average collection period and inventory turnover period with the firm's profitability whereas average payment period has significant negative impact on the firm's profitability.

#### **Liquidity and Firm Profitability**

Liquidity is an inevitable prerequisite that affirms the preparedness a firm is to meet its short-term financial responsibilities as its going concern can be assured from profitable investment purposes The significance of cash as a pointer to firm's enduring financial health should not be beyond belief because of the vital role it plays in business. This means that all businesses must profitably be carried out in the most efficient way. When this is undermined, a mismatch of asset-liability occurs leading to a shadow profitability in the short-run and exposes the firm to the risk of insolvency. On the flip page, much emphases on liquidity will be at the detriment of firm's profitability. In the findings of Mukhopadhyay (2004) the management of working capital of corporation is undoubtable most paramount if the firm will attain optimal liquidity level that will guarantee that concern exist in the foreseeable future. It is one of the most important decisions for companies when making a trade-off between liquidity and profitability, perhaps, in a way that optimizes the amount and composition of their current assets and how they are financed (Eljelly,2004). This is all part of the classical discussion on liquidity. The basic view of liquidity is that exchange barriers and simply keeping track of allocating the cash flows have increased, as companies have become larger. In order to keep liquidity and profitability from being financing procedures (Polak, 2011).

### **Leverage and Firm Performance**

Banos-Caballero et al. (2010) argue that firms with more debt pay higher risk premium. This means higher cost for working capital, Banos-Caballero et al. (2010) and Chiou& Cheng (2006) found that larger leverage is negatively related to the amount of working capital. Leverage has a negative correlation to the cash conversion cycle in two studies (Dong&Su 2010, Mathuva 2010) and positive in three studies (Deloof 2003, Falope&Ajilore 2009). The justification for this was based on the assumptions of the Pecking-order which holds that the composition of firm's capital structure has no distinct makeup but follows a defined way or order (Donaldson, 1961; Myers, 1984).

### **Current assets and Firm Performance**

Guthman and Dougall, (1948) define working capital management (WCM) as the efficient outcome of managing current assets and current liabilities. According to OkwoUgwunta and Agu (2012), one reason why managers spend considerable time on day-to-day management of working capital is that current assets are short-lived investments that are continually being converted into other asset types. Van Horne and Wachowicz, (2000) posited that excessive levels of current assets can easily result in a firm realizing a substandard return on investment while firms with too few current asset may generate shortfall and difficulties in keeping to hazard-free operations

### **Current liabilities and Working capital**

Credit purchases create accounts payables. Unlike credit from financial institutions, trade credit does not rely on formal collateral but on trust and reputation (Fachamps, 1997). Creditors are a vital part of effective cash management and should be managed carefully to enhance the performance and the cash position of a firm. Cote and Latham (1999) argue, the management of accounts receivables, inventory and accounts payable have tremendous impact on cash flows, which in turn affect the profitability of firms. A number of scholarly articles conclude that account payable in terms of number of days has adverse relationship to firm's profitability. Deloof (2003) opine that the most explanation to this is that fact that less profitable firms do not pay their bills timely.

## **2.2 Empirical Review**

Several works on working capital management have been conducted in both public and private sectors including multinational companies by many scholars. Sayaduzzaman (2006) in his study on "Working Capital Management studied the British American Tobacco Company Limited in Bangladesh, he finds that efficiency of working capital management of British

American Tobacco Company Ltd in Bangladesh is highly satisfactory due to the level of cash inflows and proactive planned majors in managing the vital elements of working capital. He found that adequate working capital management is a key factor to achieve an all-embracing efficiency in operations.

Eljelly (2004) in his article "Liquidity Profitability Tradeoff in an Emerging Market. Empirically investigated the relationship between profitability and liquidity by employing correlation and regression analyses and found that the cash conversion cycle was of more significance in terms of measuring liquidity than current ratio on how it affects profitability. Raheman (2007) in his work, employed Pearson's correlation and regression analysis and empirically examined the effect of different variables of working capital management together with the Cash Conversion Cycle, Average Inventory Turnover in Days, Average Payable Period, Collection Period, and Current Ratio on the Net Operating Profitability of quoted Firms in Pakistani. He found a strong negative relationship between variables of Working Capital Management and Profitability. He also finds that increase in cash conversion cycle leads to decrease in profitability of the firm and suggested that managers can leverage on that to maximize shareholders wealth through the minimization of cash conversion cycle to a possible minimum point

Harris (2005) supported that firm should maintain sufficient level of working capital to produce up to a given capacity and maximize the return on investment in fixed assets. He also asserted that Shortage of working capital leads to lower capacity utilization, lower turnover and hence lower profits (Lazaridis&Tryfonidis, 2006). Working capital in excess of the needed amount required to operate at full capacity level is dormant and most inevitable, leads to reduction in the actual profit realized. Hence the quote or saying "Adequacy is a virtue, surplus is not". According to Lazaridis and Tryfonidis (2006), working capital management is an important aspect of a firm's financial management decision. It refers to a company's Current Assets (Cash and Equivalents), Accounts Receivable, and Inventory. Ani, Okwo and Ugwunta in their findings in (2005) observed that efficiency of the working capital management connotes planning and controlling of current assets and determining the ratio of current asset to current liability in the most efficient way that will strike an optimal balance between liquidity and profitability.

### III. Methodology

This section describes the methods used in collecting and analyzing data for this study, the sampling technique, sample size determination, variables measurement, method of data analysis, model specification, and diagnostics tests conducted. A total of the one hundred and fifty eight listed companies in the Nigerian Stock Exchange constitute the population of the study. The companies include insurance companies currently in operation and listed in the Nigerian Stock Exchange. The secondary source of data employed is obtained from published financial statements and accounts of the sampled deposit money banks listed in the Nigerian Stock Exchange. The outcome of result is analyzed using tables, descriptive statistics and correlations. The statistical tool employed is the Ordinary Least Square (OLS) regression. Data collated are run using Econometric Statistical Software: E-views 8.0.

The descriptive statistics will be used for the purpose of describing the variables used in the analysis, while the correlations is to assess the relationship among the variables captured and the Ordinary least square will be used for testing the hypothesis.

#### 3.1 Model Specification

The model formulated, employs multi-linear regression. It captures the variables comprising of dependent and independent variables. The model is expressed in functional form as;

$$ROA = f(\text{DEBT\_CA}, \text{INVET\_CA}, \text{CASH\_CA}, \text{CURR\_Ratio})$$

While the econometric form of the model is thus:

$$ROA_{it} = \beta_0 + \beta_1 \text{DEBT\_CA}_{it} + \beta_2 \text{INVET\_CA}_{it} + \beta_3 \text{CASH\_CA}_{it} + \beta_4 \text{CURR\_Ratio}_{it} + \omega + U_{it}$$

Where

ROA= Return on asset (proxy for firm performance)

DEBT\_CA represents the debtors' management measured as total debt divided by current assets

INVET\_CA represents inventory management

CASH\_CA represents cash management measured as total cash at hand and bank divided by current assets.

Curr\_Ratio represents the short term solvency or liquidity position of the firm

U<sub>it</sub> represents stochastic error term

### IV. Empirical Results

This study examines the relationship between working capital management and firm performance in Nigeria. To achieve this, we used selected industrial quoted firms in Nigeria that have consistently published their audited annual financial reports between 2014 and 2019. A sample of fifteen (15) firms formed the sample of this study; to ensure adequate observation for statistical testing. We adopted a panel (balanced) data analysis to identify the possible firm's specific type of working capital management in selected Nigerian quoted firms. To this end, we conducted descriptive statistics and correlation analysis to describe the data in the variables in the specified model. Fixed and random effects panel data techniques were conducted as well as the Hausman test which formed basis for selecting the preferred model between fixed and random effect models.

In addition, the variables for this study include return on asset (ROA) which form the dependent variable, while the independent variables include; debtor's management (DEBT\_CA), inventory management (INVET\_CA), cash management (CASH\_CA) and current ratio (CURR\_RATIO) which measures the working capital position of the firm. The table below is the descriptive statistics of the sampled firms over a six year period (2014 – 2019).

**Table 4.1 Descriptive Statistics**

Variables	Mean	Min	Max	Jarque-Bera
ROA	0.0419	-1.01	0.54	633.308(0.00)*
DEBT_CA	0.3014	0	0.74	7.8869(0.01)*
INVET_CA	0.4515	0	0.97	5.5103(0.06)***
CASH_CA	0.1878	0	0.77	19.6915(0.00)*
CURR_RATIO	1.3867	-0.23	6.02	569.954(0.00)*
No of Cross Section	15			
Observations	105			

Source: Author (2020), \* and \*\*\* implies significance at 1% and 10% level respectively

Table 4.1, presents the descriptive statistics which shows a description of the data in the variables in the specified model. The result shows the mean (average) for each of the variables, their maximum and minimum values respectively, and the Jarque-Bera (JB) statistic which is the normality test. The results indicate some insight into the nature of the selected firms used in the study. Firstly, the large difference between the maximum and minimum values of return on assets (ROA) and all other variables, show that the sampled firms were not dominated by either large or small firms. Secondly, we observe that on the average, over the six years period (2014 – 2019), the sampled quoted firms in Nigeria were characterized by firms with strong positive current ratio which implies dominance of their current assets over their liabilities which is very ideal. A further look at the working capital management indicators show that on the average over the six year period, the debtors to current asset ratio (DEBT\_CA) of the sampled firms was 30%, while its minimum and maximum values are 0 and 0.74 respectively. This clearly shows that there is a wide dispersion in the debtors’ management strides among the selected Nigerian firms. The inventory to current asset ratio on the average (0.45) shows the minimum and maximum values of 0 and 0.97 respectively. This implies that a greater proportion of the sampled firms are characterized by high inventory, this could be because of the industry type (industrial). Similarly, on the average, the cash to current asset position which guarantees liquidity, on the average indicate 0.18 which implies that majority of the sampled firms maintain below Basle II recommendation of 20% cash level for such firms. This result also show that majority of the sampled firms ensure prudence in cash management. Overall, the Jarque-Bera statistic indicates that all the variables are normally distributed at 1% level of significance except inventory management which indicates 10% significance level. This means that the data collected to a great extent were free from outlier and is reliable for drawing generalizations in the banking industry. In examining the association among the variables, we employed the Pearson Correlation coefficient analysis and the results are presented in Table 4.2 below.

**Table 4.2 Correlation Matrix**

Variables	ROA	DEBT_CA	INVET_CA	CASH_CA	CURR_Ratio
ROA	1.0000				
DEBT_CA	-0.3661	1.0000			
INVET_CA	-0.1464	-0.5014	1.0000		
CASH_CA	0.4921	-0.3030	-0.4716	1.0000	
CURR_RATIO	0.2990	0.1424	0.3327	0.2171	1.0000

**Source:** Author, (2020)

The above Table 4.2 shows the correlation or degree of association between the sampled firms’ working capital management indicators: debtors to current asset (DEBT\_CA), inventory to current assets (INVET\_CA) and cash to current asset (CASH\_CA) respectively. The result shows that debtors management and inventory management variables are negatively associated with firm performance as measured by return on assets (ROA) with values: (-0.36), and (-0.14) respectively, while firms with high cash to current asset and current ratio indicate weak positive association with the return to asset which captured the firm performance. This implies that firms that manages their cash level stringently to avoid idle cash has the tendency to influence higher returns on assets. Reason being that rather than keep cash idle and loses the opportunity cost, such cash are better invested in current assets which yields more profit. We also observe that with respect to the association of the independent variables among each other, result show mixed results. While INVET\_CA and CASH\_CA variables, both indicate negative association with debtors management variable (DEBT\_CA), while current ratio variable show a weak positive relationship with debtors’ management variable. For the association between inventory management variable and cash management and current ratio variables, the values are -0.47 and 0.33 respectively. This implies weak negative and positive associations respectively. In addition, the correlation results reveal that no two explanatory variables were perfectly correlated, hence, we conclude that there is the absence of multicollinearity problem in our model.

**Regression Results**

The thrust of this study is to determine the relationship between the working capital management indicators and the firm performance as proxied by return on asset (ROA) in quoted industrial firms in Nigeria. The dependent variable is the return on assets (ROA) while the independent variables are the indicators of working capital management as indicated in the specified model. To test our formulated hypotheses, we used

panel data regression analysis since the data has both time series as well as cross sectional properties. The panel data regression results obtained are as presented below:

**ROA Model**

The panel data regression results indicate the nature and magnitude of the impact the explanatory variables exert on the firms’ ability to improve their performance. The results obtained are presented in Table 4.3 below.

**Table 4.3: ROA Model Regression Results**

Variables	Expected Sign	ROA (Fixed effect)	ROA (Random effect)
C	+	0.026 (0.21) [0.82]	0.048 (0.43) [0.66]
DEBT_CA	+	-0.069 (-0.49) [0.61]	-0.212 (-1.71) [0.08]***
INVET_CA	+	-0.057 (-0.39) [0.69]	-0.089 (-0.70) [0.48]
CASH_CA	+	0.003 (0.02) [0.98]	0.158 (1.21) [0.22]
CURR_RATIO	+	0.044 (1.92) [0.05]	0.048 (2.37) [0.01]*
R <sup>2</sup>		0.62	0.14
Adj. R <sup>2</sup>		0.55	0.11
F-statistics		8.0798(0.00)*	4.2436(0.00)*
Hausman Test		-	9.53(0.04)**
N(n)		15(105)	15(105)
D.W.		1.35	1.17

From the above Table 4.3, we observe that the fixed effect result shows R<sup>2</sup> and adjusted R<sup>2</sup> values as (0.62) and (0.55) respectively. This indicates that all the independent variables jointly explains about 55% of the systematic variations in the performance of firms across the 15 sampled quoted industrial firms in this study and over the six – years period. This means that any model that includes the all independent variables in the model may be appropriate in explaining the nature of firm performance as measured by the returns to asset of the sampled firms. The F-statistics (8.0798) and its p-value (0.00) also indicate that the panel fixed regression model is generally significant at 1% level. We conducted the Hausman test and result suggest that we accept H<sub>0</sub> (reject random effect and accept fixed effect) because the chi square statistics show p-value (0.04) which is significant at 5% level. The implication is that all policy formulations and recommendations is therefore based on the outcome of the fixed effect results.

Looking at the fixed effect results, with respect to the DEBT\_CA variable, result indicate a negative impact on firm performance as measured by return on asset (ROA), but the variable failed the statistical significance test. This means that debtors management as an indicator of working capital management does not significantly exert on firm performance. Implying that increase in debtors’ ratio does not necessarily increase firm performance, rather as the debtors ratio decreases, the firm is likely to do better. This conforms toapriori expectation what assumes that reduction in debtors should mean more cash inflow into the firm and thus, increase performance. This result suggests that we accept hypothesis one which states that the effect of debtor’s management on firm performance is not significant.

In addition, the result with respect to inventory management (INVET\_CA) does show the value (-0.057), indicating a negative impact but not significant in driving the firm performance of the sampled firms. This means that a unit increase in firm performance will be accounted for by 5% decrease in inventory management. The implication of this is that efficient management of inventory accounts for a little proportion of increase in firm performance. That is not to say that inventory management is not crucial to improve firm performance, but to guide against reduction in performance. This finding also suggests that we accept hypothesis two which states that the effect of inventory management on firm performance is not significant. This result contradicts the apriori expectation that inventory which forms the bulk of the operating activities is expected directly or positive influence firm performance.

Similarly, the result indicate that cash management variable (CASH\_CA) and the control variable current ratio (CURR\_RATIO) both positively exert on firm performance but only current ratio is statistically significant at 5% level. The implication is that increase in both variables does directly cause an increase in firm performance. This also implies that their management is very crucial. The result with respect to cash management does show that a unit increase in firm performance is influence by less than 1% of cash management efforts as well as about 4% of current ratio. The influence of current ratio shows a significance impact at 5% level. This means that the management of the firm should watch out on the current ratio which is the ratio of current asset to current liabilities, to avoid its adverse effect on the overall performance of the firm.

## V. Conclusion

The monitoring of the composition of working capital in business is a very important decision for management. Each component has its own unique profile, consequently affects business performance differently. A firm with adequate working capital is believed to be highly liquid at all times meaning that business is effectively being carried out on daily basis, on the other hand, if a firm has deficiency in working capital, it implies that its current assets are not sufficient to float its daily operational activities. We observe that effective and efficient management of this working capital is what generates returns which turn out on the aggregate to generate the profit for the firm.

In the light of the above, the management of working capital components has become crucial if a firm must declare reasonable profit. This study has revealed the effect of management of each of the components of working capital in some selected industrial firms in Nigeria. We therefore feel that the outcome of this study becomes an addition to empirical literature as well as reveal that free cash flows should be gainfully invested to avoid operational deficiencies. The companies having good financial performance are in better position to raise debt and expand their business as well as contribute more to the national output, thus enhance has the tendency to engender economic growth.

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