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Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions.

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***ABSTRACT**: The purpose of this study is to examine the impact of working Capital Management on firms' performance for non-financial institutions listed in Nigeria Stock Exchange (SEC). Secondary time series panel data has been used in this study for listed non-financial institutions in Nigeria over a period for the year 2009 to 2017. The results are obtained by using Correlation Analysis for identifying the relationship between working capital management and firms' performance. The findings show that working capital management has significant impact on firms' performance and it is concluded that management can increase value of share holder and return on asset by reducing their inventory size, cash conversion cycle and net trading cycle. So Increase in liquidity and time period to supplier will also lead to firms' overall performances.*
***KEY WORDS**: Working Capital Management, Firms' Performance, Non-Financial Institution.*

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I. INTRODUCTION

Working capital management is a very important element to analyse the organizations' performance while conducting day to day operations, through this balance can be maintained between liquidity and profitability. In fact, to maintain liquidity on daily base operation to make sure it's running and meets its commitment is a crucial part required in the management of working capital. It is a very difficult task for management to make sure that the business function running in a well-organized and advantageous way. Though there are chances of inequality of current assets and current liabilities and during this process, firm's growth and profitability will be affected if this occurs and firm management would unable to manage it efficiently. Harris (2005),said working capital management is a simple and straightforward concept of ensuring the ability of the firm to finance the difference between the short term assets and short term liabilities. Nevertheless, complete mean and approach preferred to cover all its company's activities pertaining to vendors, customers and products. (Hall, 2002).According to Lamberson, (1995), presently, working capital management has considered as the main central issues in the firms and financial managers are trying to identify the basic drivers and level of working capital management.

The aim of this study is to identify whether the performance of firms are affected by working capital management in Nigeria Stock Exchange (SEC) Index companies. It is to establish the relationship between liquidity and firm's performance considering Return on Assets (R.O.A) and Return on Equity (R.O.E). This study is very important for the management of non-financial institute of SEC index firms, because it will help them to set trade-off between their liquidity and their firm performance. They would come to know that at what point they should increase their liquidity in order to make their performance up to the target. It will also enable them to know the optimal level of receivables and inventory level that will be helpful for their receivable control management and inventory control management.

The remainder of this paper is organized as follows. A review of the relevant literature constituting working capital management and firm's performance is given in section 2, and section 3 presents the data and methodology to be applied while section 4 contains the empirical results. Finally, the conclusion will be given in section 5.

II. REVIEW OF RELATED EMPERICAL LITERATURE

Nuru Mohammed (2011), examined the effect of working capital investment and firm financing policies on profitability. The study was made on a sample of 11 private limited manufacturing companies in Ethiopia and Tigray region for the period from 2005 – 2009.It used return on assets, return on equity and operating profit margin as dependent variables. Inventory holding period, accounts payables period and accounts receivable period are used as the undependable variables. Then comprehensive measures of working capital

investment policy used in this study are cash conversion cycle, and current assets to current assets ratio. Current ratio and quick ratio are the traditional measures used as liquidity indicators.

Dong (2010), reported that the firms' profitability and liquidity are affected by working capital management in his analysis. Pooled data are sourced for carrying out the research for the period from 2006-2008 for assessing the companies listed in stock market of Nigeria. He focused on the following variables such as profitability, conversion cycle and its related elements and the relationship between them. From his research it was concluded that the relationships among these variables are strongly negative. This indicates that decrease in the profitability occur due to increase in cash conversion cycle. It is also noticed that if the number of days of account receivable and inventories are reduced, then the profitability will increase by the numbers of days of accounts receivable and inventories.

According to Mohammad Neab and Noriza B.M.S (2010), they worked on crating the relationship between Working Capital Management (WCM) and firms 'performance. For their analysis they chose the Malaysian listed companies. They administered the perspective of market valuation and profitability. They used a total of 172 listed companies from the databases of Bloomberg and randomly selected five year data (2003-2007). This research likewise the researches quoted before studied the impact of the dimensions of working capital component i.e. cash conversion cycle (C.C.C), current ratio (C.R.), current asset to total asset ratio (C.A.T.A.R), current liabilities to total asset ratio (C.L.T.A.R.), and debt to asset ratio (D.T.A.R.) in effect to the firm's performance whereby firm's value dimension was taken as Tobin Q (T.Q.) and profitability i.e. return on asset (R.O.A.) and return on invested capital (R.O.I.C). They applied two different techniques for analysing the data that are multiple regression and correlations. They concluded that there is a negative relationship between working capital variables and the firms' performance.

Saswata Chatterjee (2010), focused particularly on the importance of the fixed and current assets in the smooth running of any organization. It poses direct impacts on the profitability liquidity. There are phenomena observed in the business that most of the companies increase the margin for the profits and losses because this act shrinks the size of working capital relative to sales. But if the companies want to increase or improve liquidity, then it has to increase its working capital as well. In the reaction to this policy the organization has to lower down its sales and hence the profitability will be affected due to this action. For this purpose 30 United Kingdom based companies were selected which were listed in the London Stock exchange. The data were taken of three years 2006-2008. It analysed the impact of the working capital on the profitability. The dimensions of working capital management included in this research which are the quick ratios, current ratios, C.C.C, average days of payment, Inventory turnover, and A.C.P (average collection period. on the net operating profitability of the UK companies.

Mathuva (2009), studied the impact of working capital management on the performance. He took almost 30 listed firms as a sample and all these companies were listed in Nairobi stock exchange and the data was taken from 1993 to 2008. There were certain findings of his study by analysing the fixed effects regression models. Firstly, there is a negative relationship between the time when the cash is collected from the customers and the firm's productivity. This indicates that firms that are more profitable enjoys less time period for the collection of cash from their customers as compare to ones which are less profitable.

Secondly, there is a positive relationship between the inventories as of when they were brought in and the period to which they are sold and the firm's profitability. The interpretation of it is that the firms or the organizations which take more time to keep the inventories, it reduces the costs of the disruption in the process of production and usually the business losses as there is insufficiency in the goods. This situation reduces the operating cost of the firm. The third assumption of the study was the association between the average payment period and profitability and found out to be positive ($p<0.01$). The more the time taken to disburse the creditors, the profitability will reduce.

Muthuva, (2010), study in Kennyan firms shows that more profitability firms take shortest time to collect cash from their customers and that high inventory levels reduce cost of possible interruptions in the production process and loss of business due to lack of products. It also found the longer the firm takes to pay its creditors, the more its profitability

Sen. M (2009), examined the ISE (Istanbul Stock Exchange) listed firms and checked out the relationship with the working capital. According to them there is negative relationship among variables. His research uncovered the importance of the finance directors who act as moderators or catalysts to increase the productivity of the firm in other words they positively affect the firm's performance.

The analysis of working capital management of Nigeria firms' shows that a well-designed and implemented working capital management is will contribute positively to the creation of firm's value E. Organdie, (2012). Olufisayo, (2011) study shows that cash conversion cycle, accounts receivables, sales growth and inventory period usually affect firms in a positive manner, while leverages and accounts payables do affect firms' profitability in a negative manner. Other selected firms studies same in Nigeria shows that firms' profitability are reduced by increasing the number of days accounts receivable, payables and inventory.

Adversely it shows that shortening the cash conversion cycle will improve the profitability of the firm Akinlo (2012).

Terual and Martinez–Solano (2007) also provided the empirical relationship between both the variables. But they chose the small and medium sized Spanish firms, a sample of about 8872 small to medium sized enterprises for 1996 to 2002. After the in depth view it was concluded that the negative relationship between the profitability of SME's and the number of days account receivable and days of Inventory. But it did not provide the exact impact of no. of days account payable affect and SME's return on Assets.

Ganesan (2007), selected telecommunication equipment industry study the effectiveness of working capital management. He collected 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001 to 2007. The statistical tests applied are correlation, regression analyses and Analysis of variance (ANOVA). The results showed that days of the working capital negatively affects the profitability of these firms but in reality it does not affect the transportability of firms in telecommunication equipment industry.

Sayaduzzaman MD. (2006), also examined that the management of British American Tobacco and concluded that the company is highly reasonable due to the constructive cash inflows, designed approach in running the major components of working capital by evaluating five years data from 1999-2000 to 2002-2003. Application of multi-dimensional modal of existing assets mix may have optimistic impact on the nonstop expansion & extension of this multinational enterprise. This also depends on collaboration of the stakeholders and business environment in the framework of globalization.

Filbeck G. et al. (2005) examined the data of 26 industries by taking the data of 970 companies during 1996 to 1999. They found out that firms are able to reduce financing cost and/or augment the funds obtainable for development by reducing the amount of funds attached to the current assets. The study reveal the significant difference exist between industries in working capital measures across time. In addition, we determine that these measures for working capital vary extensively with in industry with the passage of time.

It is found that negative relationship was also discovered between profitability and liquidity of companies of United Kingdom. Conversely a positive relationship was seen between debt and firm's profitability. The researchers propose that profitability can be increase by management if reduction in the days of accounts receivable and inventories happened. So the companies whose profitability is less opt to take much longer time to pay their bills. Therefore, the aim of this heading is to discuss the work being done by the researchers and scholars in different industries and firms so as to reveal the contents or the variables and in their dimensions in depth

III. METHODOLOGY

This section provides the methodology adopted for the study of the impact of working capital management on firm performance in listed non-financial institute in Nigeria. The study adopted a longitudinal research design, using secondary time series of Panel Data have been taken from the annual financial statements of the firms; these reports are collected from reliable sources including Federal Bureau of Statistic, and Nigeria Stock Exchange. The data contain all non-financial firms listed in SEC, Nigeria. The analysis will be conducted for the period 2009 to 2017.

The study adopted the multiple regression analysis with the Ordinary Least Square (OLS) econometric technique for data analysis. This technique possesses the unique property of Best Linear Unbiased Estimator (BLUE) as well as the desirable qualities of consistency and efficiency. Collection of the data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables. Degree of relationship is expressed as a correlation coefficient.

The statistical tool used in this research is Canonical correlation. This technique is preferable simply because, research is focused on the effect of two metric dependent variables on number of metric independent variables. Therefore, canonical regression is an extension of multiple regression analysis which the only difference is the number of metric dependent variables is more than one in canonical regression. This statistical technique is more appropriate for this study because, it measures the strength of the overall relationships between the linear composites (canonical variants) for the independent and dependent variables. In effect, it represents the bivariant correlation between the two canonical variants. A Statistical Package for Social Science (SPSS) and Statistical Analysis System (SAS) statistical tools where applied. The Table 3.1 reports the variables description and also tells us on how to measure them? The hypothesis of this study is bellow;

3.1. Research Hypothesis:

H0: Working Capital Management has insignificant impact on Firms' Performance.

3.2. MODEL SPECIFICATION

To achieve the objectives of the study and to test the hypothesis above, the following regression model was developed to measure the relationship between working capital management proxy of the variables stated below and firm performance measures in Return on Asset and Return on Equity;

ROA= f(ACP, ITD, APP, CCC, NTC, GTA, CRT, CLT, CR)

ROE= f(ACP, ITD, APP, CCC, NTC, GTA, CRT, CLT, CR)

In fact, the above model was translated into a specific regression equation as follows;

$$ROA = \beta_0+\beta_1(ACP)+\beta_2(ITD)+\beta_3(APP)+\beta_4(CCC)+\beta_5(NTC)+\beta_6(GTA)+\beta_7(CRT)+\beta_8(CLT)+\beta_9(CR)+e \quad \text{.....eq.1}$$

$$ROE = \beta_0+\beta_1(ACP)+\beta_2(ITD)+\beta_3(APP)+\beta_4(CCC)+\beta_5(NTC)+\beta_6(GTA)+\beta_7(CRT)+\beta_8(CLT)+\beta_9(CR)+e \quad \text{.....eq.2}$$

Where;

ROA= Return on Asset
ROE= Return on Equity
ACP= Average collection Period
ITD= Inventory turnover in days
APP= Average payment period
CCC= Cash conversion cycle
NTC= Net trading cycle
GTA= Gross working capital turnover ratio
CRT= Current assets to total assets ratio
CLT= Current liability to total assets ratio
CR= Current ratio

3.3 Measurement of Variables:

Table 3.1: Measurement of Variables

Variables	How to Measure	Abbreviation	Types of Variables
Average Collection Period	Account Receivable/Net Sales*365	ACP	Independent
Inventory Turnover (in Days)	Inventory/ Cost of Goods Sold * 365	ITD	Independent
Average Payment Period (in days)	Accounts Payable/ Purchases* 365	APP	Independent
Cash Conversion Cycle	ACP + ITD – APP	CCC	Independent
Net Trading Cycle	ACP + (Inventory/ Net Sales*365) - (Accounts Payables / Purchases * 365)	NTC	Independent
Gross Working Capital Turnover Ratio	Net Sales/ Current Assets	GTA	Independent
Current Assets to Total Assets Ratio	Current Assets/ Total Assets	CRT	Independent
Current Liabilities to Total Asset Ratio	Current Assets/ Total Liabilities	CLT	Independent
Current Ratio	Currents Assets/ Current Liabilities	CR	Independent
Return on Assets	Net Income / Total Assets	ROA	Dependent
Return on Equity	Net Income / Total Share Holders Equities	ROE	Dependent

IV. DATA ANALYSIS

Table 4.1: Summary Statistics

Sr. No	Variables	N	Mean	Std. Dev	MIN	MAX
1	Inventory Turnover (in Days	177	29.159	28.003	0.0000	112.889
2	Average Payment Period (in Days)	177	107.294	97.230	8.055	595.292
3	Cash Conversion Cycle	177	-28.778	76.945	-390.561	190.209
4	Net Trading Cycle	177	6.142	69.378	-236.295	211.113
5	Gross Working Capital Turnover Ratio	178	2.261	1,584	0.115	9.194
6	Current Assets to Total Assets Ratio	178	0.539	0.588	0.091	6.623
7	Current Liabilities to Total Assets	177	0.397	0.399	0.042	4.847
8	Current Ratio	177	1.696	1.450	0.142	12.063
9	Return on Assets	178	0.112	0.105	-0.353	0.437
10	Return on Equities	178	0.246	0.293	-1.429	2.157

Note; This table reports descriptive statistics of the variables as defined in Table 1. Std. Div means standard deviation, Max means maximum and Min means minimum

Table 4.2: Correlation Analysis between Working Capital Management and the Firms' Performance

Correlation Analysis between Working Capital Management and the Firms' Performance			
		Return on Assets	Return on Equity
Inventory Turnover (in Days)	Correlation p- Value	-0.288** (0.00)	-0.205** (0.01)
Average Payment Period (in days)	Correlation p- Value	0.053 (0.48)	0.261** (0.00)
Cash Conversion Cycle	Correlation p- Value	-0.067 (0.38)	-0.281** (0.00)
Net Trading Cycle	Correlation p- Value	-0.079 (0.29)	-0.172* (0.02)
Gross Working Capital Turnover Ratio	Correlation p- Value	-0.118 (0.12)	0.001 (0.94)
Current Assets to Total Asset Ratio	Correlation p- Value	0.275** (0.00)	0.131 (0.08)
Current Liabilities to Total Assets Ratio	Correlation p- Value	-0.073 (0.33)	0.042 (0.54)
Current Ratio	Correlation p- Value	0.577** (0.00)	0.161 (0.18)

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

The above table 4.2 displays the correlation analysis between the Working Capital Management variables and the Firms' Performance variables. At the end, result shows that firms' performance variable Return on Assets has a significant effect on Current Ratio with positive correlation of 0.577 and Inventory Turnover with negative correlation of 0.288. These finding are very consistent with that ofSen&Eda (2009). The Net Trading Cycle is also negative correlated by Return on Assets as it was discovered by Soenen (1993). In the other hand, firms' performance variable on Return on Equity is negatively associated by significant correlation with two important dimensions on working capital management, i-e, Cash Conversion Cycle and Inventory Turnover in Days with the value of 0.281 and 0.205 respectively.

Table 4.3 Canonical Correlation Analysis (Test of H0)

Eigenvalues of Inv(E)*H = CanRsq/ (1- CanRsq)			
Eigenvalue	Difference	Proportion	Cumulative
0.6811	0.5445	0.833	0.833
0.1365		0.167	1

	Canonical Correlation	Adjusted Canonical Correlation	Approximate Standard Error	Squared Canonical Correlation
1	0.6365	0.6149	0.0450	0.4051
2	0.3466	0.3076	0.0665	0.1201

Test of H0: The canonical correlations in the current row and all that follow are zero				
Likelihood Ratio	Approximate F Value	Num. DF	Den DF	Pr> F
0.52339253	7.93	16	332	(<.0001)
0.87986304	3.26	7	167	(0.0029)

The table 4.3 shows that first dependent variable Return on Assets (ROA) is positively correlated with independent variables showing value 0.6365 and the remaining correlation with the other dependent variable Return on Equity (ROE) is 0.3466. The adjusted canonical correlation is that value which is obtained after the subtraction of the approximate standard error. The value after deduction of the standard error is the more accurate information about the model fitness if one can further adjust the model on his own. And the values of adjusted canonical value in this table are 0.6149 and 0.3076 respectively. The values of squared canonical correlation are 0.4051 and 0.1201. This depicts how much model is representing the accuracy of data used. The Eigen's value represents the amount of variance that is captured by the component. The column of Eigen value shows 0.6811 which is more than that of other Eigen value that is 0.1365 given in second row. Further

likelihood ratios are 0.52339 and 0.8798 respectively. The F value in the first column shows the value of 7.93 and the p-value is given by 0.0001 which is less than 0.05 and similarly in the second case F- value is 3.26 having p-value 0.0029 which also less than 0.05. So we reject our null hypothesis. This shows that Working Capital Management is significantly correlated with the Firms' Performance.

Table 4.4 Multivariate Statistics and F Approximation

S=2m=2.5n=82					
Statistic	**Value**	**F Value**	**Num DF**	**Den DF**	**Pr> F**
Wilks' Lambda	0.523	7.93	16	332	(<.0001)
Pillai's Trace	0.525	7.44	16	334	(<.0001)
Hotelling-Lawley Trace	0.818	8.44	16	268.07	(<.0001)
Roy's Greatest Root	0.681	14.22	8	167	(<.0001)

The table 4.4 shows the four multivariate statistical test information for all independent variables. The four tests are numbered on top of the output table. For each of the four test statistics, an F statistics and related p- value also demonstrate.

Wilks' Lambda is first of the four multivariate statistics to test the null hypothesis that the canonical correlations are zero (which, in turn, mean there is no linear relationship between two specified groups of variables). The F value of this test in 7.93 and the p- value is 0.0001 which is less than 0.05, so this value assure that our null hypothesis is rejected showing that canonical correlation is not zero and there is a significant relationship between two specific groups. The second test in this table is Pillai's trace. It is the sum of their squared canonical like 0.63652 + 0.34662 that is equal to 0.5253 with the F- value of 7.44 and the p- value is 0.0001 which is also smaller then 0.05 and rejecting our null hypothesis. The third test to test the null hypothesis is HotellingLawley Trace. It is the sum of the value of (canonical correlation 2 / (1 - canonical correlation 2). The value of this test is calculated by 0.63652 / (1- 0.63652) + 0.34662/ (1- 0.34662) resulted in 0.818 with the F- value of 8.44 alongwith p- value of 0.0001. So, we are rejecting our null hypothesis because p- value is smaller than 0.05. The fourth test of Roy's Greatest Root is based on the largest Eigenvalue. The value of test is 0.681 and F value is 14.22 with p- value is 0.001 which is also less than 0.05 and rejecting our null hypothesis. The entire four tests are rejecting our null hypothesis. So, we conclude that there is a significant impact of working capital management on firms' performance.

V. CONCLUSION

The present study has investigated the impact of Working Capital management on firms' performance for non- financial institutes listed in Nigerian Stock Exchange (NSE). Panel data have been analyzed by applying Canonical correlation for the time period of 2001 to 2010. It was found that inventory turnover in days has negative relationship with both indicators of firm performance i.e. Return on Assets and Return on Equity which means that companies performance can be increased by reducing inventory in days. APP is found to be significant positive association with both Return on Assets and Return on Equities, indicating that if time period of supplier's payment is increased then overall firm's performance also improves. Cash Conversion Cycle and Net Trading Cycle shows significant negative relation with Return on Assets and Return on Equities showing that firms' performance can be increased with short size of both of them. Lastly liquidity (Current Ratio) is positively associated with both performance dimensions. These findings are very consistent with the results of Raheman et al (2010) and Zubairi H.J (2010).

This research indicates that there should have proper inventory management system to avoid over stock of inventory resulting efficient outcome of investment. It has to make sure certain standards and levels which will stop us piling up inventory. Companies should engage in relationship with those suppliers who allow long credit time period and those customers who allow short payment period. There is still need in the future to indentify the sector wise relationship between working capital management and firms' performance in Nigeria.

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