Working Capital Management, Firms' Performance and Market Valuation in Nigeria

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Abstract—This study examines the impact of working capital management on firms' performance and market value of the firms in Nigeria. A sample of fifty four non-financial quoted firms in Nigeria listed on the Nigeria Stock Exchange was used for this study. Data were collected from annual reports of the sampled firms for the period 1995-2009. This result shows there is a significant negative relationship between cash conversion cycle and market valuation and firm's performance. It also shows that debt ratio is positively related to market valuation and negatively related firm's performance. The findings confirm that there is a significant relationship between Market valuation, profitability and working capital component in line with previous studies. This mean that Nigeria firms should ensure adequate management of working capital especially cash conversion cycle components of account receivables, account payables and inventories, as efficiency working capital management is expected to contribute positively to the firms' market value.

Keywords—Cash Conversion Cycle, Firms' Performance, Market Valuation, Working Capital Management

I. INTRODUCTION

WORKING capital management, which deals with management of current assets and current liabilities, directly affect profitability and market valuation of firms. References [1]-[6]. Current liquidity crisis has highlighted the significance of working capital management. Management of working capital has profitability and liquidity implications and proposes a familiar front for profitability and liquidity management. To reach optimal working capital management firm manager should control the trade off between profitability maximization and liquidity accurately[7]. An optimal working capital management is expected to contribute positively to the creation of firm value [8],[1] and [9].

An improper management of component of working capital that is, accounts receivables, accounts payables and inventories will result in to the difficulties in firms continued operation and, consequently, market value of the firm will also suffer.

Empirical studies in the developed economies have established that efficient Working capital management improves market value of a firm and consequently makes

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positive impact upon shareholders' value. However, few studies in developing countries are in this direction.

In Nigeria, there are growing number of studies that examined the relationship between Working Capital Management and corporate profitability [10] and [11], aggressive and conservative working capital practices [12], working capital and liquidity level [13] and working capital management as a prerequisite to corporate survival and growth [14]. However, no attempt has been made to verify at empirical level, the effect of efficient Working Capital Management on the market Valuation of a firm in Nigeria, Therefore, this study is to examine working capital management relationship with the non financial quoted firms' profitability and how its efficient management affects the market valuation of a firm in Nigeria.

II. LITERATURE REVIEW

In finance literature, importance of working capital management has been a common view among researchers. Justification for this common opinion about why working capital management is significant for a firm centres on the relationship between efficiency in working capital management and firm profitability and its implications on shareholder's value.

In US firms by [15] researched the relationship between working capital management and value creation for shareholders. The standard measure for working capital management is the cash conversion cycle (CCC). Cash conversion period reflects the time span between disbursement and collection of cash. It is measured by estimating the inventory conversion period and the receivable Conversion period, less the payables conversion period. Their research found strong evidence of a negative relation between profitability and cash conversion cycle meaning that shorter the days of working capital, higher the profitability. Their findings also indicate a positive impact in the shareholder's value. This is similar to [1] findings in Belgium that showed a negative between profitability that was measured by gross operating income and cash conversion cycle as well as number of day's accounts receivable and inventories.

Also, [2] empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) in Saudi Arabia. Using correlation and regression analysis, the result confirmed a significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more pronounced for firms with high current ratios and long cash conversion cycles.

World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:6, No:1, 2012

In Greece, a cross sectional study conducted by[16] by using correlation and regression tests on data collected from 131 sampled firms listed on the Athens Stock Exchange for the period of 2001 - 2004, The research findings showed negative relationship between cash conversion cycle, financial debt and profitability, while fixed financial assets have a positive coefficient. When the authors replaced cash conversion cycle with accounts receivable and inventory, they found negative relationship with these two variables; the opposite occurred with accounts payable. The authors conclude that companies can create more profit by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

In Pakistan, [7] studied the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability of Pakistani firms. They found that as the cash conversion cycle increases, it leads to decreasing profitability of the firm and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level.

Reference [10] utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigerian Stock Exchange.

In [4] study, the independent variables used were current ratio, quick ratio, inventory turnover ratio, working capital turnover ratio, debtor's turnover ratio, ratio of current asset to total asset, ratio of current asset to operating income, comprehensive liquidity index, net liquid balance size and leverage and growth while dependent variable (profitability) was measured in terms of return on investment ROI. From multiple regression analysis, negative association with ROI was established in current ratio, cash turnover ratio, current asset to operating income and leverage. On the other hand, positive association with ROI is in quick ratio, debtor's turnover ratio, current asset to total asset and growth rate.

In another study, [17] analyzed impact of working capital management upon the performance of firms in Telecom industry. The variables used were, days sales outstanding, number of days for payment to vendors, average days inventory held, cash conversion efficiency, revenue to total assets, revenue to total sales, etc. Findings revealed negative & insignificant relationship between profitability and daily working capital requirement in the said industry.

The term profitability is measured in different ways by the researchers. It was measured as Gross Operating Profit (GOP), Net Operating Profit (NOP), Return On Investment, (ROI), and Return On Asset (ROA) while Working Capital Management was measured as cash conversion cycle (CCC) .

III. THE METHODOLOGY AND MODEL

This study covers non-financial quoted companies in Nigeria. The population of quoted companies listed on Nigerian Stock Exchange was 192 companies. Sample of 54 companies was purposively selected which cuts across all sectors for analysis. The data for the measures of the variables are collected from the annual financial statements of the sample companies for the period of 1995-2009. Financial related quoted companies and non-quoted companies were excluded owning to the peculiarity in their working capital management policy and non-disclosure of their financial reports respectively. Data collected were analyzed using regression analysis.

Previous studies on working capital management have influenced the choice of the variables in this study. As regards dependent variables, Tobin's Q was used as proxy for determining the market value of the firm whereas return on assets & return on invested capital; were used to measure financial performance of the firm. Five financial ratios, Cash Conversion Cycle; Current Ratio; Current asset to total asset ratio; Current liabilities to total asset ratio and Debt to asset ratio, were used as independent variables against which changes in dependent variables are measured by applying correlation and multiple regression technique using SPSS.

For the purpose of this study, the following Research Hypotheses shall be tested namely,

$H0_1$-There is no significant relationship between Market value (Tobin Q) and Working Capital components.

$H0_2$-There is no significant relationship between financial performance (Return on Asset) and Working Capital components.

$H0_3$-There is no significant relationship between financial performances (Return on Invested Capital) and Working Capital components

For the dependent variables in the hypotheses, the following were used as proxy:

Tobin Q is used as to measure the market value of the firm. It is measured as market value of equity plus book value of liability divided by total asset

ROA is used as for financial performance which is a ratio of Earning before Interest and Tax and Total Asset.

ROI is used as for financial performance. It is measured as ratio of net income to total capital

A. Regression Model

The regression model will be of the form

$$Y = \alpha + \beta_1 * X_1 + \beta_2 * X_2 + \ldots + \beta_n * X_n \quad (1)$$

Where Y is dependent variable, α is an intercept. $\beta_1 \ldots \beta_n$ are the coefficient of the independent variables X_1 to X_n [18]

Substituting both dependent and independent variables in equation 1 above, we have the following equations

World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:6, No:1, 2012

$$\text{Tobin Q}_{it} = \alpha + \text{ß1CCC}_{it} + \text{ß2CACL}_{it} + \text{ß3CATA}_{it} + \text{ß4CLTA}_{it} + \text{ß5LEV}_{it} + \varepsilon_{it} \quad (2)$$

$$\text{ROA Q}_{it} = \alpha + \text{ß1CCC}_{it} + \text{ß2CACL}_{it} + \text{ß3CATA}_{it} + \text{ß4CLTA}_{it} + \text{ß5LEV}_{it} + \varepsilon_{it} \quad (3)$$

$$\text{ROI Q}_{it} = \alpha + \text{ß1CCC}_{it} + \text{ß2CACL}_{it} + \text{ß3CATA}_{it} + \text{ß4CLTA}_{it} + \text{ß5LEV}_{it} + \varepsilon_{it} \quad (4)$$

Where,

Tobin Q_{it} = market value of firm i for time period t

ROA_{it} = return on assets of firm i for time period t

ROI_{it} = return on invested capital of firm i for time period t

CCC_{it} = cash conversion cycle of firm i for time period t

CACL_{it} = current asset to current liabilities ratio of firm i for time period t

CATA_{it} = current assets to total assets ratio of firm i for time period t

CLTA_{it} = current liabilities to total asset ratio of firm i for time period t

LEV_{it} = total debt to total assets ratio of firm i for time period t

ε_{it} = error term of the model

IV. EMPIRICAL RESULTS AND DISCUSSION

A. Correlation Analysis

Prior to regression analysis, it is important to check the correlation between different variables on which the analysis is built. Correlation explains how two variables react to each other [18]. For the purpose of this study Pearson Correlation Moment will be used. Table 1 below shows that Tobin Q indicate positive relationship with LEV and CATA but negatively related with CCC at 1% significant level. However, positively insignificant with CLTA and negatively insignificant with CACL. As for ROA, results indicate a negative significant coefficient at 1% level with LEV, CCC and CACL but a positive significant coefficient at 1% level with CATA while CACL is not significant though negative. ROI has no significant relationship with all the dependent variables. Hence, null hypothesis 3 is confirmed.

The overall correlations results imply that the null hypotheses 1 and 2 are rejected as there is existence of significant correlations between Working Capital components and market value and firm's profitability.

TABLE I
CORRELATIONS ANALYSIS RESULT

		LEV	CACL	CCC	CATA	CLTA	ROI	TOBINQ	ROA
LEV	Pearson Correlation	1							
	Sig. (2-tailed)								
CACL	Pearson Correlation	.026	1						
	Sig. (2-tailed)	.496							
CCC	Pearson Correlation	.021	.002	1					
	Sig. (2-tailed)	.583	.954						
CATA	Pearson Correlation	.609**	.009	.078*	1				
	Sig. (2-tailed)	.000	.814	.041					
CLTA	Pearson Correlation	.009	-.050	-.043	-.029	1			
	Sig. (2-tailed)	.821	.194	.259	.444				
ROI	Pearson Correlation	-.007	-.004	.031	.042	.016	1		
	Sig. (2-tailed)	.863	.910	.417	.280	.675			
TOBINQ	Pearson Correlation	.175**	-.009	-.149**	.135**	.001	-.011	1	
	Sig. (2-tailed)	.000	.816	.000	.000	.979	.787		
ROA	Pearson Correlation	-.129**	-.022	-.121**	-.102**	.309**	.034	-.017	1
	Sig. (2-tailed)	.001	.561	.002	.007	.000	.376	.656	

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

The absolute value of the correlation results in Table I is low with the highest value of 0.309 thus depict absence of multi-collinearity among variables. As values exceeding 0.80 are regarded as indicator of multi-collinearity. To verify this assertion, a collinearity test was carried out on the 3 models in order to ensure that there was no violation of the assumption underlying the use of regression analysis as regards the existence of multi-collinearity among the independent variables.

As shown in table II below, the Tolerance statistics were very high ranging from 0.623 and 0.997 and the Variance Inflation Factor (VIF) were low ranging from 1.003 and 1.008 for CACL, CCC and CLTA while LEV and CATA have value ranging from 1.580 and 1.607 indicating that there were no multi-collinearity problems among the independent variables in the data.

World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:6, No:1, 2012

TABLE II
COLLINEARITY STATISTICS FOR THE 3 MODEL

MODEL 1-TOBIN Q		MODEL 2-ROA		MODEL 2-ROI	
Tolerance	Variance Inflation Factor (VIF)	Tolerance	Variance Inflation Factor (VIF)	Tolerance	Variance Inflation Factor (VIF)
0.633	1.580	.627	1.594	.997	1.003
O.997	1.003	.997	1.003	.622	1.607
0.992	1.008	.992	1.008	.994	1.006
0.631	1.586	.625	1.601	.624	1.602
0.992	1.008	.992	1.008	.993	1.007

B. Regression Analysis

A major weakness of Pearson Correlations is that they do not allow identifying causes from consequences. To overcome this shortcoming, we use regression analysis to investigate the impact of working capital components on dependent variables: market valuation (Tobin Q), Return On Asset (ROA) and Return On Invested capital (ROI). The results are as presented in Table III and IV below

TABLE III
RESULT OF REGRESSION ANALYSIS

Model	R	R Square	Adjusted R Square	F Change	DF1	DF2	Sig. F Change	Durbin-Watson
TOBIN Q	. 366[a]	.113	.106	16.920	5	666	.000	0.459
ROA	.354[a]	.125	.119	19.178	5	671	.000	1.599
ROI	.068[a]	.005	-.003	.609	5	660	.693	1.735

TABLE IV
RESULT OF VARIABLES COEFFICIENT

	MODEL 1-TOBIN Q			MODEL 2-ROA			MODEL 3-ROI		
	Beta	t	Sig.	Beta	t	Sig.	Beta	t	Sig.
LEV	.299	6.514	.000	-.126	-2.755	.006	-.003	-.073	.942
CACL	-.015	-.418	.676	-.004	-.101	.919	.072	1.461	.144
CCC	-.188	-5.12	.000	-.105	-2.885	.004	.020	.505	.614
CATA	-.045	-.987	.324	-.014	-.299	.765	-.050	-1.027	.305
CLTA	.017	.465	.642	.302	8.320	.000	.029	.732	.464

From Table IIIb above, the result indicates that LEV has positive significant association with Tobin Q and negative significant association with ROA . 1% significant level. There is insignificant association between LEV and ROI. This results that confirm null hypothesis 3 and reject null hypothesis 1 and 2 as Tobin Q and ROA are significantly related with LEV. This shows that any increase in LEV will significantly increase Tobin Q and decrease ROA, which by implication means that reducing debt level will leads to significant increase in firm's performance but reduce the Tobin Q. this is in line with [19] findings.

From the analysis, CCC has a negative association with Tobin Q and ROA at 1% significant level but positively insignificant with ROI. This results that confirm null hypothesis 3 and reject null hypothesis 1 and 2 as Tobin Q and ROA are found to be significantly related with CCC. In Nigeria, the result for ROA (firm's performance) supports the findings of [10] but contradicts [11] findings that established positive relationship. The results are also in line with the findings of [20], [21] and [19]. As observed by [19], published study in term of CCC with Tobin's Q and ROIC could not be found.

The analysis of results, regarding CLTA reveals negative relation with ROA at 1% significant level but insignificantly related with Tobin Q and ROI. This point out that the lowering the ratio will increase the profitability of the firm that reject null hypothesis 2 but accept null hypotheses 1 and 3 as the changes in ROA can be predicted by the changes in CLTA. The results for ROA and Tobin Q confirm the study by[22] and [9].

For CACL and CATA, the results show that there is no significant relationship between them and all dependent variables. These findings ratify the three null hypotheses as the p-values of 0.676, 0.919 and 0.942 for CACL for Tobin q, ROA and ROI respectively and 0.987, 0.765 and o.305 for CATA for Tobin q, ROA and ROI respectively are on the high side. This result on CATA is not consistent with [22], [9], [4] and [19] findings which established are significant relationship

The adjusted R^2, otherwise known as the coefficient of multiple determinations is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The Adjusted R^2 are 10.6%, 11.9% and 3% for Tobin Q ROA and ROI respectively .The F-statistics is used to test significant of R, from the results, we see that the model is fit with Fstatistics 16.920 and 19.178 at p-value of 0.000 for Tobin Q and ROA respectively. It shows highly significance level at 1% while the Fstatistics for ROI of 0.609 at p-value of 0.693 is

World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:6, No:1, 2012

insignificant. So it can also be concluded that at least one of the independent variables related to Tobin Q and ROA. It can be stressed further that the significance of relationship are as the independent variable coefficient explained.

In order to find out the autocorrelation in the residuals in the regression, Durbin-Watson (DW) value of each model was computed. The result shows the value of 0.456, 1.599 and 1.735 for model 1, 2 and 3 respectively. According to [18], the values of Durbin Watson have a upper limit of four and lower limit of zero. If the value of Durbin-Watson is equal to two then there exists no autocorrelation but if the value is less than two then there exists positive correlation and if the value is higher than 2 than there exist negative correlation [18] concluded that there exist no autocorrelation in the regression 3 and 2 since their respective DW value 1.735 and 1.599 is closed to 2, Therefore, the independence of residuals assumption are not violated. However, DW value of 0.456 for model 1indicates existence of positive correlation and independence of residuals assumption in the analysis.

III. Conclusion

Owing to the above and for the fact that Cash Conversion Cycle (CCC) is popularly used to measure efficiency of working capital management [15]. The findings are consistent with the findings of [19], [15] and [16]. Reduction in the length of CCC will lead to realization of profit maximization objective and consequently, the firm's market value. This is in line with [23] suggestion that a well designed and implemented working capital management is expected to contribute positively to the creation of firm's value. The impact of CCC component will be examined in details in subsequent study.

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