Impact of Working Capital Management on Profitability of Quoted Manufacturing Firms in Nigeria

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Abstract

This study investigates the effect of working capital management on profitability of quoted firms in Nigeria. The study uses 110 firms on Nigerian stock market over a period of 11 years from 2010 to 2020. The statistical approach is Ordinary least squares (OLS) model was employed to address econometric issues and to improve the accuracy of the regression coefficients. The empirical results show positive and significant effects of the working capital management, which measured by cash Ratio and two components of the Cash Ratio including inventory turnover in days, and trade payable turnover in days on the firm's profitability measured Cash ratio. The study assures that there is significant Effect of Working Capital Management on Profitability of quoted firms in Nigeria. Given the R^2 value of 0.024352 of the regression analysis as well as the adjusted R^2 value of 0.003261, which is less than 0.05, there is enough evidence to reject the null hypothesis. This result implies that the overall regression is positive and statistically significant at 5% level of significance, given that the R^2 value is 0.024352 less than 0.05.

Keywords: Working Capital, Profitability, Quoted Firms, inventory, Trade payable

INTRODUCTION

Working capital is defined as the organizations short term current assets and current liabilities. Net working capital means the excess of current assets over current liabilities and it is the reflection of the firm's ability to meet its short term financial obligations. This further affirms by Dougall (1948) as cited in the work of Anh H.H., Thanh P., and Hang T., NN (2020) stating that current assets less current liabilities were known as working capital. The working capital management (WCM) relates to managing current liabilities and current assets to ensure that the firm can remain in a position to pay short-term obligations and meet its operating expenses. This is otherwise referred to firm's liquidity position. Anhe'tal (2020) emphasized the significant role of the WCM because it affects directly the profitability and liquidation of the firm. Therefore, Ricci and Vito (2000) recognized the key target of the WCM is to control the short-term financing resource to make the compatibility between the profitability and the risk of the companies. The risk associated with companies are the risk of liquidity made available through cash receivable, cash conversion cycle, return on investment, return on asset and so on. Profitability reveals the ability to make a profit from all activities of a firm. It shows the efficiency of using all available resources of a firm to make a profit. According to Horward and Upton (1953), "profitability is the ability of a given investment to earn a return from its use". Profitability is divided into two categories including book value (accounting-based measurement) and market value (marketing-base measurement). Book value is the indicator revealed the firm profitability in the past, such as Return on Asset (ROA) Rahman and Saima, (2018). This study therefore aims to assess the impact of working capital management and how it affects the profitability of manufacturing firms in Nigeria. A number of firms were chosen from the Nigerian Stock Exchange for a period of 10 years and tested to see how their profitability is affected.

Working capital management has been an issue to firms not only on certain sectors but all firms that have a business object of profitability. In recent times, profitability form core problems in some Nigerian listed corporate organizations, according to Oluboyede (2007) as cited in Akinyomi (2021). Situations exist where some promising investments with high rate of return and eventually turn firms into distressed because of inadequacy of working capital. Although the effects of working capital management on quoted firms profitability have been a focus of substantial amount of empirical research for many years. This

study intends to measure the relationship of these variables, thus; Cash Ratio (CR), Cash Conversion Cycle (CCC), Inventory (INV) and Trade Payable (TP) to determine their relationship. From the foregoing therefore, the basic hypothesis underlying this study is stated thus;

H_0: Working Capital has no significant impact on firms profitability

LITERATURE REVIEW

Conceptual Framework

Return on Assets (ROA)

Among the items of profitability ratios in the financial statements, this ratio is most often discussed, because it is an indication of company successto in making profits. ROA is an index to measure the company's ability to generate profits in the past and present which will be used to project for the future. Assets are overall company properties realized from the capital or from foreign direct investment that has been converted into company assets used for sustainability.

Cash Conversion Cycle (CCC)

This is the popular and most comprehensive measure of working capital management the optimal level of CCC vis –a-vis profitability differs from firm to firm. The empirical literature indicates that firms that are efficient with WCM recorded increased profitability and vice versa. Therefore improvement in working capital management increases profitability.

Cash and Bank Balances

Cash is a major component of current asset and cash involves and all other liquid securities which can be converted into cash easily. Effective Cash Management goes a long way in keeping the working capital cycle in order and also enhance the business to manage its operating cycle. Also, business efficiency is determined base by the free flow of cash to the firm and how the firm generate the cash. Also, effective utilization of such cash ensures business to garner trade discounts and boost the cash conversion cycle, which is a major commitment to describe the working capital cycle of any business (Altaf & Shah, 2017)

Cash Receivables

The shorter the accounts receivable turnover in days (ARD), the less the firm's working capital is used by the customers. It helps firms to be proactive in settling all payments and to widen the investment opportunities in other projects to make a profit. Almost previous empirical studies tested and concluded that the ARD had a negative effect on the profitability as Deloof (2003); Lazaridis and Tryfonidis (2006); Sharma and Kumar (2011); Vural, Sokmen, and Cenenak (2012)

Empirical Review

Many studies have evaluated the relationship between working capital management and profitability in various parts of the world and the findings are quite divergent. A majority of the studies established an inverse relationship between working capital management and profitability of firms. AkinyomiOladele and TasieChukwumerije (2011) conducted a study involving cases of working capital management problem in some Nigerian corporate firms. Data for the study were from the secondary sources, extracted from the audited annual reports of the selected firms for the five years covering 2006 to 2010 financial years. Preliminary analysis was conducted using descriptive analysis of mean and standard deviation, meanwhile the main analysis was carried out using correlation coefficient. The findings from the review of related literature and data analysis revealed that there is a negative correlation between working capital management and profitability of the firms using cash conversion cycle and average profitability as measures of working capital management and profitability respectively. It was recommended to the management of the firms to strive to reduce their cash conversion cycles so as to enhance profitability and improve shareholders value.

Impact of Working Capital Management on Profitability of Quoted Manufacturing Firms in Nigeria

Olaniyan, Olufemi Samuel Adegboyo, and Dominic (2020) in their study that examined the impact of working capital management on profitability in manufacturing firms in Nigeria between the period of 1988 and 2019. The study disaggregated capital management into trade receivables, inventory, cash and bank balances and trade payables in line with the theories reviewed. The data were secondary sourced, based on the missed level of stationarity of the variables as revealed by the unit root test, the study made use of auto-regressive distributed lag (ARDL) technique to analyze the data. The bound test revealed that; there was presence of co-integration (long-run relationship) among the dependent and all the explanatory variables. The study estimated the ARDLECM. The result further showed the cash and bank balances (CBB), trade payables (TAP) and Trade Receivables (TAR) had a positive and significant impact on profitability of manufacturing firms in Nigeria which is a clear indication that working capital management has positive and significant impact on company profitability in Nigeria both in short and long-run. Thefindings of the study are in tandem with Keynesian Liquidity preference theory. The study recommends that financial managers increase their working capital and ensure that it is properly managed in order to enhance sales revenue, thus increase their working capital and ensure that it is properly managed in order to enhance sales revenue, thus strengthening firm profitability. OmoAregbeyen (2011) empirically investigates the effect of working capital management on the profitability of a sample of 48 large manufacturing firms quoted on the Nigerian stock exchange (NSE) for the period 1993 to 2005. Profitability was measured by gross operating profit (GOI), Net Operating Income (NOI) and return on assets likewise working capital management was measured by the average collection period (ACP), Average Pay Period, inventory turnover days (ITID) and comprehensively by the cash conversion cycle. (CCC). The results indicate that the firms have been inefficient with working capital management and caused significant reductions in profitability. The paper concludes that improving the efficiency of working capital management is essential and recommends that manufacturing firms in Nigeria should shorten the ACP, APP, ITID and reduce their CCC's.

AnhHuu, HuongThanh and Hang (2020) studied the impact of working capital management on firms profitability. The research sample includes 119 non-financial listed companies on Vietnam stock market over a period of 9years from 2010 to 2018. Two statistical approaches include ordinary least squares(OLS) and fixed effects model (FEM) are employed to address econometric issues and to improve the accuracy of the regression coefficients. The empirical results show the negative and significant impacts of the working capital management, which measured by cash conversion cycle (CCC) and three components of the CCC including accounts receivable turnover in days (ARD), inventory turnover in days (INVD) and accounts payable turnover in days (APD) on the firms profitability measured by return on assets (ROA) and Tobin's Q. it implies that firms can increase profitability by keeping the optimization of the working capital management measured by the CCC, which includes shortening the time to collect money from clients, accelerating inventory flow and hold the low payment time to creditors. Besides, the profitability of firms was impacted by the sale growth rate, firm size, leverage and age. Therefore the paper provides a new insight to managers on how to improve the firms profitability with working capital management.

Kwadwo and Amankona (2020) analyses the link between working capital management and profitability of firms in developing economies. A balanced panel consisting of eleven (11) manufacturing firms listed on the Ghana stock exchange covering the period of 2011-2017 was used. The link between working capital management and profitability was examined using dynamic panel regression (Arellano-Bond Estimation) technique. The study revealed that there is a significant positive linear relationship between working capital management and firms profitability. The findings also reveal the existence of a concave quadratic relationship between working capital management and firms' profitability. There is an optimal level at which working capital management maximizes firms profitability, therefore managers need to ensure that they operate within the limits of the optimal level by implementing an effective and efficient working capital management policy. The study concludes that the practice of an aggressive working capital management policy maximizes a firms profitability. Sunnykumar and Prasadand (2017) studied Working capital management that is concerned with the problems that arise in attempting to manage

current assets and current liabilities. The objective of the study is to investigate the relationship between working capital management and the corporate profitability, and liquidity of Indian manufacturing firms for a period of 2009-10 to 2014-15. It aims to analyze the effect of working capital management on liquidity and profitability in the manufacturing firms of India. The variables that are affecting the liquidity and profitability of the firm are identified from the manufacturing firms listed in the database of Centre for Monitoring Indian Economy (CMIE). A total of 1654 companies are selected for analysis. The Researcher uses secondary data from annual audit financial position of the manufacturing firms listed by CMIE. Descriptive analysis, correlation analysis and regression analysis are carried out for a given significance level. Based on the outcome of the analysis a model is built. Descriptive analysis shows the maxima, minima, mean and standard deviation of variables considered. The data are analyzed using SPSS Software. From regression analysis it is found that Size, Cash to current asset ratio, Creditors turnover ratio, Debtors turnover ratio, Inventory turnover ratio, and Asset turnover ratio are significant for all industries.

SenthilmaniThuvarakan (2013) made a research on working capital management. Companies which are effectively using their working capital components are likely to have competitive advantage over their competitors. The research investigates the relationship between the working capital components and corporate profitability in different industries. 60 manufacturing companies, 20 construction companies and 17 telecommunication companies listed on the London stock exchange is used covering the period of 2006-2011. The dependent variable, profitability is measured using gross operating income. The independent variables are receivable days, Payable days, inventory days, cash conversion cycle, debt, and size of the firm. Pearson's correlation and regression analysis was utilized to explore the relationship between the profitability and the working capital components. The results show that there is no significant relationship between the working capital components and profitability. There is a negative relationship between gearing and profitability in manufacturing firms. Sorin and Antonad (2020) investigated the relationship between working capital and firm profitability for a sample of 719 Polish listed firms over the period of 2007–2016. The scarcity of empirical evidence for emerging economies and the importance of working capital efficiency motivated their research on the working capital financial performance relationship. The paper adopts a quantitative approach using different panel data techniques (ordinary least squares, fixed effects, and panel-corrected standard errors models). The empirical results report an inverted U-shape relationship between working capital level and firm profitability, meaning that working capital has a positive effect on the profitability of Polish firms to a break-even point (optimum level). After the break-even point, working capital starts to negatively affect firm profitability. The study brings theoretical and practical contributions. It extends and complements the literature on the field by highlighting new evidence on the non-linear interrelation between working capital management (WCM) and corporate performance in Poland. From the practitioners' perspective, the results highlight the importance of WCM for firm profitability.

Theoretical Framework

Trade-off model

This theoretical model was propounded by Myers In the year 1984 applied when firms express their optimal reason for holding cash by comparing the marginal cost and benefits of holding cash. It involves offsetting the costs of debt against the benefits of debt.

Keynesian Liquidity Preference theory

Keynesian theory is underpinning working capital management which was pronounced by economist John Keynes in 1936. The theory postulated that as other things are kept constant, investors prefer liquid investments to illiquid ones and there is always demand for premium on investments that have longer maturity periods.

Aggressive Theory

This theory is demonstrated where the firm plans to embark on high risk by using short term funds to finance current and fixed assets which earn low interests rates. Therefore, the essence of working capital is to be constantly buoyant to undertake calculated high risk investment with a high return to be able to fund short and long term investment opportunities. This is in line with the aggressive Theory

METHODOLOGY

The study is expost facto research that includes manufacturing firms that are listed in the Stock Exchange. The time frame covers a 10 year period from 2011 to 2020. This is because of the fact that all manufacturing firms listed on the Nigerian Stock Exchange will have available financial record. The population of the study consists of all the quoted manufacturing firms in the Nigerian Stock exchange or stock exchange group.

Models Specification

This study adopts Keynesian liquidity preference theory as its theoretical framework and as such Specifies its model in line with the theory.

$$Y = WC \text{ ……………………………………………………………… (1)}$$

Y means company profitability and WC means working capital In line with the theories and literature reviewed, this study will disaggregate the working capital into Cash Ratio (CR), Cash Conversion Cycle (CCC), Inventory (INVEN). Trade Payable (TP)

As such this study specifies its model below;

$$Y = f (CCC, INVEN, T\text{-}Payable)\text{…………………………………….. (2)}$$
$$CR: \quad \beta_0 + \beta_1 CCC + \beta_2 SR + \beta_3 + INV + \beta_4 TP + \text{€}_{it} \text{………..........……….. (3)}$$

Where:

β_0	= The autonomous parameter estimate (Intercept or constant term)
$\beta_0 - \beta_4$	= Parameter Coefficient of Working Capital Management
CR	= Cash Ratio
SR	= Inventory
CCC	= Cash Conversion Cycle
RP	= Trade Payable
€_{it}	= Stochastic Error Term

RESULT AND DISCUSSION

Table 1: Descriptive Statistics

Date: 03/19/22
Time: 15:15
Sample: 2010 2020

	CASH_R	CCC	INVEN	T_PAYABLE
Mean	14.38404	-52.11906	4.689556	201.6568
Median	7.580300	3.526800	3.783450	154.1534
Maximum	68.75490	230.9986	32.25860	1513.351
Minimum	0.609100	-1345.760	1.617300	12.34570
Std. Dev.	16.19330	239.5694	3.451443	188.6683
Skewness	1.741731	-3.214857	5.123492	3.777990
Kurtosis	5.380774	16.77054	39.05027	23.88442

Jarque-Bera	81.59524	1058.607	6437.852	2260.738
Probability	0.000000	0.000000	0.000000	0.000000
Sum	1582.244	-5733.097	515.8512	22182.25
Sum Sq. Dev.	28582.32	6255889.	1298.458	3879936.
				110
Observations	110	110	110	

Researcher Computation (Eview 9)

Descriptive analysis is primarily used to describe the sample. To test the impact of working capital management on the profitability of listed manufacturing companies in the Nigerian Exchange Group, inferential statistic- correlation and panel regression analysis is used. The descriptive statistics table bellow displays the interpretation of the study statistical summary of analysis. This range from mean, median, maximum, minimum, deviations values of the study variables. The explanatory concern of this study focuses on the skewness, Kurtosis, Jarque-Bera and the probability statistical values of the study. Knowing thickness, and flatness of the distribution of the series, is to have measures of normality using Kurtoises and Skewnes. Skewnes measures the asymmetry of the series and normal skewnes is said to be '0 skew', that is, distribution is asymmetry around its mean value. But if the value is high, it is negatively skew. The variables measurement is as such that Cash Conversion Cycle (CCC) has a long –right tail (positive) skew and leptokurtic because of value 8.33 greater than 3 Inventory (INVEN) has a long-right tail (positive) and leptokurtic with the value of 4.83 greater than 3 While T-payable mirrors normal skewness and platykurtic due to the value of 1.88 less than 3. Again, Jaque-Bera; the test statistics that measures the difference of the skewnes and Kurtoises of the series with those from the normal distribution. While probability is the probability that Jaque-Bera statistics exceeds (absolute values), the observed value leading to the acceptance or rejection of the null hypothesis of a normal distribution.

Table 2: Correlation Matrix

Covariance Analysis: Ordinary
Date: 03/21/22 Time: 13:14
Sample: 1 110
Included observations: 110

Correlation
t-Statistic

Probability	CASH_R	CCC	INVEN	T_PAYABLE
CASH_R	1.000000			

CCC	0.040943	1.000000		
	0.425848	-----		
	0.6711	-----		
INVEN	0.033250	-0.271340	1.000000	
	0.345731	-2.929764	-----	
	0.7302	0.0041	-----	
T_PAYABLE	-0.108292	-0.827905	0.327274	1.000000
	-1.132064	-15.34023	3.599352	-----
	0.2601	0.0000	0.0005	-----

The Pearson correlation coefficient (r) is employed to establish the measures of associations between the variables. Table two shows the Pearson correlation coefficient (r) and the respective probabilities of the relationship between Working Capital variables (CCC, INVEN and TP) and Firm's Profitability variables (Cash Ratio). The results show that the coefficient of the correlation between CCC and CR stood at 0.040943 which is positive and strong. This implies that an increase in CCC would lead to a substantial increase in CR. This is supported by its p-value which is 0.6711 stating that the correlation is not significant at 5%. The coefficient of the correlation between CCC and INVEN stood at -0.271340, which is equally negative but strong. This implies that an increase in CCC would lead to a substantial decrease in INVEN. Furthermore, the coefficient of the correlation between CCC and TP stands at -0.108292, which is negative. This implies that an increase in CCC would lead to a minimal increase in TP.

Table 3: Regression Analysis

Dependent Variable: CASH_R
Method: Panel Least Squares
Date: 03/19/22   Time: 15:40
Sample: 2010 2020
Periods included: 11
Cross-sections included: 10
Total panel (balanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.66989	12.37863	1.831372	0.0699
CCC	-0.000683	0.008884	-0.076848	0.9389
INVEN	4.190823	3.536101	1.185154	0.2386
T_PAYABLE	-2.851168	2.444183	-1.166512	0.2460

R-squared	0.024352	Mean dependent var	14.38404
Adjusted R-squared	-0.003261	S.D. dependent var	16.19330
S.E. of regression	16.21968	Akaike info criterion	8.446014
Sum squared resid	27886.28	Schwarz criterion	8.544213
Log likelihood	-460.5308	Hannan-Quinn criter.	8.485844
F-statistic	0.881907	Durbin-Watson stat	0.246723
Prob(F-statistic)	0.453037		

The regression run above shows the probability value that determine the significance relationship between the independent variables and that of the dependent variable. The probability of Cash Conversion Cycle (CCC) is 0.9389 which is higher than 0.05. It therefore, displayed insignificant independent variable on the dependent variable which is Cash Ratio. The determinant of trade Inventory (INVEN) to ascertain the significant relationship with the dependent variable display the Probability value of 0.2386, showing that it does not significantly determine the cash ratio in an important way. In the case of trade payable (T-payable) as an independent variable with a probability value of 0.2460 did not represent the dependent variable in a significant relationship. Hence the probability value fall above 0.05 level of significant.

R^2 and adjusted R^2 are about the same interpretation of result. However, the fact is that adjusted R^2 is more acceptable than R^2. In other words, the more the value of adjusted R^2, the more fit the model is. Otherwise looking at the value of adjusted R^2 one can determine the goodness of the model. R^2 independent variables cumulatively are 0.024352, it means 024% determinant and adjusted R^2 is 0.003261 that determine the mean of 003% level of fitness or not. A researcher can equally interprets the result using durbin-watson statistical measurement to determine the auto correlation whether it is less than

2, it is positive but greater than 2 refers to negative and if it is absolute 2, it means no autocorrelation in the statistics. In panel regression analysis, the ultimate goal is estimation of the relationship between dependent and independent variables. This goal can be achieve through the estimation of the coefficients of each independent variable in the model.

Decision Rule: The decision rule for accepting or rejecting the null hypothesis for any of these tests will be based on the R square Value and the Adjusted R square. If the value is less than 5% it implies that the regressor in question is statistically significant at 5% level; and if the value is more than 5% or 0.05 (that is, if Value> 0.05), it is categorized as not significant at that level. This implies that the level of significance for the study is at 5% (for the two-tailed test). Thus, the decision rule for accepting or rejecting the null hypothesis is based on both the Probability Values.

Test of Hypotheses

H_o: Working Capital does not have significant effect on Firms Profitability of quoted firms in Nigeria. Given the R^2 value of 0.024352 of the regression analysis as well as the adjusted R^2 value of 0.003261, which is less than 0.05, there is enough evidence to rejectthe null hypothesis of the study. This result implies that the overall regression is positive and statistically significant at 5% level of significance, given that the R^2 value is 0.024352 less than 0.05.

Discussion of Findings

The statistical approaches include Ordinary least squares (OLS) model employed to address econometric issues and to improve the accuracy of the regression coefficients. The empirical results show the negative and significant effect of the working capital management, which measured by cash ratio and three components of the Cash ratio including CCC, inventory turnover in days (INVEN, and Trade payable turnover in days T-payables on the firm's profitability. It implies that firms can increase profitability by keeping the optimization of the working capital management measured by the Cash ratio, which includes shortening the time to collect money from clients, accelerating inventory turnover and hold the low payment time to creditors. Besides, the profitability of firms was impacted by the flow of cash ratio through sale growth rate, leverage. As such the study provides additional insight to firms on how to improve the firm's profitability with working capital management.

CONCLUSION AND RECOMMENDATIONS

This study examines the effect of Working Capital Management on firm's profitability of 110 observable quoted firms in the Nigerian Exchange Group for 11 year period from 2010 to 2020. Research results show the negative and significant effects of the variables (measured by the Cash ratio and three components of the CCC which are CCC, INVEN, and TP) on the firm's profitability. Creating a reasonable working capital policy will enable businesses to increase the profitability and create value for investors. It shows that the optimization of the Cash ratio, which includes (1) shortening the time to collect money from clients, (2) accelerating inventory flow and (3) reducing the payment time to creditors will help increase the firm's profitability.

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