

# Working Capital Management and Profitability: A Study of Selected listed manufacturing Companies in Nigerian Stock Exchange

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DOI: 10.6007/IJARBSS/v4-i8/1097 URL: <http://dx.doi.org/10.6007/IJARBSS/v4-i8/1097>

## Abstract

*The present study has investigated the relationship between working capital management on organizational profitability in Nigeria with special reference to manufacturing companies quoted in Nigerian Stock Exchange. The data used for this study were derived from the audited finance statements of the firms listed on the Nigerian Stock Exchange (NSE) between 2005 – 2013 which comprises of twenty (20) manufacturing sectors was finally used as sample size. Panel data methodology was adopted because it combined time series and cross sectional data. The method of analysis is that of Pearson Correlation Moment Coefficient and multiple regressions and the method of estimation is Ordinary Least Squares (OLS). The result showed that working capital has negative and significant relationship with the Return on Assets (ROA) and Return on Equity (ROE) at 5% level. This implies that firms' performance can be increased with short size of Cash Conversion Cycle and the study recommended that cash conversion cycle should be reduced and inventory should be turned out quickly.*

**Key words:** Working Capital, Profitability, Nigerian Stock Exchange, and Manufacturing Companies

## Introduction

Many studies focused on the long term financial decisions whereas, short term assets and liabilities are also play important role in achieving organizational objective. And few research works on working capital management were done in Asia, Europe, and America. Since working capital is very significant in business operations, it warrants a careful investigation in Nigeria. Working capital can be defined as excess of current assets over current liabilities. While working capital management can be accessed in several ways. From its main components can be noted to cash conversion cycle (inventory management, accounts payable and accounts

receivable management), current assets to current liabilities ratio (current ratio), current assets to total assets ratio, Current liabilities to total assets ratio and total debts to total assets ratio (Abbasali and Milad, 2012). According to Harris (2005) Working capital management is a simple and straight forward concept of ensuring the ability of the firm to fund the difference between the short term assets and short term liabilities. Neveu, (2001) referred to working capital management as determination of volume and combination of resources, which leads to increase in shareholder's wealth. The Management of Working Capital plays an important role in maintaining the financial health of the firm during the normal course of business. Smith (1980) asserted that working capital management is important because of its effects on a firm's profitability and risk, and consequently its value. Specifically, a more aggressive working capital policy is associated with a higher return and risk, while a conservative working capital policy supposes a lower return and risk. Vishnani and Shah, (2007) believed that for any firm to survive in a turbulent environment, it must maintain its liquidity, solvency and profitability. Raheman and Nasr, (2007) also agreed with previous researchers that working capital management explicitly impacts on both the profitability and level of desired liquidity of a business. This study set to investigate the relationship between working capital management and organizational profitability in Nigeria with special reference to selected listed manufacturing companies in Nigerian Stock Exchange.

### **Empirical Review**

Previous research on the relationship between working capital management and profitability are mixed. For instance, Seyed and Esmail, (2012) examined the relationship between working capital management and profitability for 147 listed companies on Tehran Stock Exchange for period of 2005-2009. They found that there is a negative significant relationship between working capital management and profitability. Quayyum (2011) attempts to explain the necessity of firms optimizing their level of working capital management and maintaining enough liquidity as it affects the profit-ability, through examining four cement companies of Dhaka Stock Exchange over the period 2005-2009. He discovered that negative relationship exist between working capital management and profitability. Mohammad and Noriza (2010) also examined the relationship between working capital management and performance of firms. They used total of 172 listed companies from the databases of Bloomberg. They randomly selected five year data (2003-2007). They discovered that there is a negative relationship between working capital variables and the firm's performance. Vijay Kumar (2011) examined the relationship between working capital management and firm's profitability in automobile industries in India. He used 20 firms as sample for the period from 1996-2009. The result showed that there is negative relationship between the length of cash conversion cycle and firm profitability.

Izadina and Taki (2010) investigated the impact of working capital management on profitability potential companies listed in Tehran Stock Exchange during the period 2001-2008. The results showed that there is a significant negative relationship between the cash conversion cycle with return on assets. Mohammadi (2009) in their study investigated the impact of working capital management on profitability of listed companies in Tehran stock exchange between the years 1996-2005 in 92 companies as the sample. Research results

suggest that there is a significant inverse relationship between the profitability of the companies and cash conversion cycle and its components. Mohammad and Saad (2010) reviewed the impact of working capital management on profitability and evaluation of companies listed on the Malaysia Stock Exchange during 2003 to 2009. In this study, 172 companies were selected as samples. The results found that there is a negative and significant relationship between variables of working capital with market value and profitability of company.

Izadima and Taki (2010) examined the effects of working capital management on capability of profitability for listed companies on Tehran Stock Exchange for the period of 2001-2008. Their finding indicated that there is a negative significant relationship between working capital and profitability of firms. Rehman (2006) investigated the impact of working capital management on the profitability with 94 Pakistani firms listed at Islamabad Stock Exchange (ISE) for a period of 1999-2004. He concluded that there is a strong negative relationship between above working capital ratios and profitability of firms. Soenen and shin (1998) also investigated the relation between measure of the cash conversion cycle and corporate profitability for a large sample of listed American firms for the 1975-1994 periods. They found a strong negative relation. This result indicates that managers can create value for their shareholders by reducing the cash conversion cycle to a reasonable minimum.

However, Akinola, (2011), Mobeen et al. (2011), Gill et al. (2010), Rezazadeh and Heydarian (2010), and Shakor et al, (2012) had contrary opinion, for example Akinlo, (2011) investigated if there is a long run relationship between working capital measured by cash conversion cycle and profitability, and what is the direction of the causality between those variables in 66 firms in Nigeria for the period 1999-2007. He applied LLC, IPS and Hardi panel unit root test to insure the stationary of the data, which was found stationary at first difference. Then he run the panel regression to detect the long run relationship, the result revealed that there is a long run steady state relationship between working and profitability. Mobeen et al. (2011) also examined the impact of working capital management on profitability and 65 companies in Pakistan were used as sample for the periods between 2005 and 2009. Result showed that there is significant correlation between the components of working capital with market value and profitability of the company and concluded that Pakistani companies correlated heavily on current assets to maximize profits. Gill *et al.* (2010) in their study surveyed the relationship between working capital management and profitability for the 88 U.S. companies listed on the New York Stock Exchange during the years 2005 to 2007. The results suggest that statistically there is a significant relationship between the working capital and profitability. Also,

Rezazadeh and Heydarian (2010) in their study examined the impact of working capital management on profitability of Iranian companies. In this study, they investigated the 1365 year-company of observed number among the companies listed in Tehran Stock Exchange during the years 1998-2007. The research results show that there is a significant relationship between the profitability of companies with receivables collection period and maintenance of inventories. The result of Shakor *et al.*, (2012) is in line with others who investigated the relationship between working capital and profitability. He established a relationship between working capital and profitability based on a sample of 25 Pakistani manufacturing companies listed on Karachi stock exchange over a period of 2001-2010. This indicates that firms must

have adequate current assets in order to keep daily business operations alive, which has no negative effect on profits. Then the following hypotheses are taken for the study.

**H1:** There is a relationship between working capital policies and Return on Assets (ROA) of listed companies in Nigeria.

**H2:** There is a relationship between working capital policies and Return on Equity (ROE) of Listed Manufacturing companies in Nigeria

**H3:** Working capital policies have impact on Return on Assets (ROA) of Listed Manufacturing companies in Nigeria.

**H4:** Working capital policies have impact on Return on Equity (ROE) of Listed Manufacturing companies in Nigeria.

## **Methodology**

### **Data and Sample selection**

The data used for this study were derived from the audited finance statements of the firms listed on the Nigerian Stock Exchange (NSE) between 2005 – 2013 which comprises of twenty (20) manufacturing sectors was finally used as sample size. Panel data methodology was adopted because it combined time series and cross sectional data. The method of analysis is that of Pearson Correlation Moment Coefficient and multiple regressions and the method of estimation is Ordinary Least Squares (OLS).

### **Measurement of Research variables**

This study is to investigate the relationship between working capital and profitability of listed firms in Nigeria. Variables is used according to the study of Abbasali and Milad, (2012); Mobeen et al. (2011) and Mohammad and Saad (2010) Where the dependent variables, Tobin Q ratios (TQ) is used as a measure of market value and return on assets ratio (ROA) and return on equity (ROE) as a measure of profitability of company and independent variables, cash conversion cycle (CCC), current assets to current liabilities (CATCL), current assets to total assets ratio (CATAR), current liabilities to total assets ratio (CLTAR) and total debts to total assets ratio (TDTAR) also is used as working capital management measures. Tobin Q ratios (TQ) (the market value of equity plus the market value of debt divided by the replacement cost of all assets) would not be used in this study because information on the market value of debt issued by Nigerian organizations are not available, since these are not usually disclosed in their financial reports.

**Table 1. Calculate the used variables in research**

Variables	Calculating method	Abbreviation
Cash Conversion Cycle	(Number of days inventories + Number of days accounts receivable) – Number of days account payable.	(CCC)
Return on Assets	Operating profit divided by total Assets	(ROA)
Return on Equity	Net profit divided by total equities	(ROE)
Current Assets to Current Liabilities Ratio	Current assets divided by current liabilities	(CATCL)
Current Assets to Total Assets Ratio	Current assets divided by Total Assets	(CATAR)
Current Liabilities to Total Assets Ratio	Current liabilities divided by Total assets	(CLTAR)
Total Debt to Total Assets Ratio	Total debts divided by Total Assets	(TDTAR)

**Model specification**

The economic model used in the study (which was in line with what is mostly found in the literature) is given as: Profitability = f(working capital management) profitability is measured by the following: (ROA) and (ROE), while working capital is measured by (CCC); (CATCL) ; (CATAR); (CLTAR); and (TDTAR) Thus, this led to formulation of two separate models each representing a measure of Organization Profitability:

Model I:  $ROA = \alpha + \beta_1 CCC + \beta_2 CATCL + \beta_3 CATAR + \beta_4 CLTAR + \beta_5 TDTAR + \beta_6 + U_i$

Model II:  $ROE = \alpha + \beta_1 CCC + \beta_2 CATCL + \beta_3 CATAR + \beta_4 CLTAR + \beta_5 TDTAR + \beta_6 + U_{ii}$

Where:  $\alpha$  is constant and  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5,$  and  $\beta_6$  are coefficient to estimate, and  $U_i$  is the error term.

DATA ANALYSIS AND INTERPRITATION OF RESULT

Table 2: Correlation analysis

Variable	Return on Assets (ROA)	Return on Equity (ROE)
CCC	(-0.230)*	(-0.489)*
CATCL	(0.668)**	(0.062)**
CATAR	(0.317)*	(-0.405)
CLTAR	(-0.391)*	(-0.369)**
TDTAR	(-0.106)	(0.352)*

Table 2 shows the correlation matrix among variables. Correlation results show the negative and significant correlation between the Return on Assets (ROA) with CCC( $r = -0.230$ ,  $P < .05$ ); CLTAR( $r = -0.391$ ,  $P < .05$ ) respectively but the negative and insignificant correlation with the TDTAR ( $r = -0.106$ ,  $P < .05$ ) while CATCL ( $r = 0.668$ ,  $P < .01$ ) and CATAR ( $r = 0.317$ ,  $P < .05$ ) have positive and significant correlation. Also the results of correlation show negative and significant correlation between return on Equity (ROE) with CCC ( $r = -0.489$ ,  $P < .05$ ); and CATAR( $r = -0.405$ ,  $P < .05$ ); but negative and insignificant correlation with CLTAR ( $r = -0.369$ , Pns) while CATCL( $r = 0.062$ ,  $p < .01$ ) and TDTAR ( $r = 0.352$ , Pns) have positive and significant correlation. This implies that working capital has negative relationship with organizational profitability and this result is in line with Seyed and Esmail, (2012); Mohammad and Noriza (2010); and Vijay Kumar (2011)who agreed that there is negative relationship between the length of cash conversion cycle and firm profitability.

Table 3: Regression Analysis

Variable	Return on Assets (ROA)			Return on Equity (ROE)		
	Beta	T	P	Beta	T	P
CCC	-0.056	-0.336	$P < .5$	-0.166	-1.767	$P < .05$
CATCL	2.273	2.451	$P < .01$	0.104	0.808	$P < .01$
CATAR	-0.036	-0.283	$P < .05$	0.213	1.437	Pns
CLTAR	-0.053	-0.263	$P < .05$	-0.045	-0.304	$P < .01$
TDTRA	-1.901	-0.217	Pns	-0.450	-0.433	Pns
R <sup>2</sup>	0.502			0.400		

Adj. R <sup>2</sup>	0.320	0.180
F-Value	2.823	1.867
Probability	P<.05	P<.05

**Note: \*\* P<.01, \*P<.05**

Table 3 shows that the cash conversion cycle (CCC) ( $\beta = -0.056$ ,  $t = -1.767$ ,  $P < .05$ ) has negative and significant relationship with the return of assets (ROA) and return on equity (ROE) at 5% level. This indicates that the higher the length day of cash conversion, the lesser the organizational profitability. This means that managers can use working capital strategies to increase profitability that connects the proper performance of working capital.. The result is conform to Quayyum (2011); Izadinia and Taki (2010); Rehman (2006) ; Rezazadeh and Heydarian (2010) and Mobeen et al. (2011) works who confirmed that cash conversion cycle (CCC) has inverse relationship with organizational profitability.

The result also shows that there is positive and significant relationship between current assets to current liabilities ratio (CATCL)( $\beta = 2.056$ ,  $t = -1.767$ ,  $P < .01$ ), ( $\beta = 0.104$ ,  $t = 0.808$ ,  $P < .01$ ) on return of assets (ROA) and Return on Equity (ROE) respectively. This confirmed the research results of Abbasali and Milad, (2012) Mohammad and Saad (2010). This result implies that an increasing change in return on invested capital can be explained by increasing in current assets to current liabilities ratio. Regression results for current assets to total assets ratio (CATAR) ( $\beta = -0.036$ ,  $t = -0.283$ ,  $P < .05$ ) has negative significant with Return on Assets (ROA), but has positive insignificant relationship with Return on Equity (ROE).

The result also reveals that current liabilities to total assets ratio (CLTAR) and total debt to total assets ratio (TDTRA) have negative relationship with Return on Assets (ROA) and Return on Equity (ROE). This means that reduction in liabilities ratio will impact on company performance and it means that reduction in liabilities ratio would increase return on assets and return on invested capital assets as been confirmed by Abbasali and Milad, (2012).

### Conclusion and Recommendation

The present study has investigated the relationship between working capital management on organizational profitability in Nigeria with special reference to twenty (20) selected quoted manufacturing companies in Nigerian Stock Exchange for the period of 2005- 2013.

The current study revealed that cash conversion cycle (CCC) has negative and significant relationship with the return of assets (ROA) and return on equity (ROE) at 5% level. This indicates that the higher the length day of cash conversion, the lesser the organizational profitability. This implies that firms' performance can be increased with short size of Cash Conversion Cycle. The study also revealed that there is positive and significant relationship between current assets to current liabilities ratio on return of assets and Return on Equity respectively. This result implies that an increasing change in return on invested capital can be explained by increasing in current assets to current liabilities ratio. Findings for current assets to total assets ratio has negative significant with Return on Assets, but has positive insignificant relationship with Return on Equity.

The study found that current liabilities to total assets ratio and total debt to total assets ratio have negative relationship with Return on Assets and Return on Equity. This means that reduction in liabilities ratio will impact on company performance and it means that reduction in liabilities ratio would increase return on assets and return on invested capital assets as been confirmed by Abbasali and Milad, (2012). Based on the findings, is it therefore recommended that cash conversion cycle should be reduced and inventory should be turned out quickly.

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