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## WORKING CAPITAL MANAGEMENT AND THE PERFORMANCE OF LISTED MANUFACTURING FIRMS IN NIGERIA

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### ABSTRACT

Large number of corporate failures is attributable to inappropriate management strategies or controlling working capital management components as it relates to profitability. This study examines the effects of working capital management (WCM) on the profit base of manufacturing firms in Nigeria from 2012-2021. Data were sourced from annual reports of sampled manufacturing firms quoted on the Nigerian Exchange Group (NGX). The study employed Ordinary Least Square (OLS), descriptive statistics, and correlation matrix to analyse the sourced data. The findings show that there is no significant relationship between current ratio and return on asset of manufacturing firms in Nigeria with a p-value of 0.23. Cash Conversion Cycle revealed a coefficient of -0.04 and p-value of 0.01, indicating a negative impact on ROA which is statistically significant. Thus, there is a significant relationship between cash conversion cycle and return on assets of manufacturing firms in Nigeria. Account payable management have an insignificant negative impact on return on asset of manufacturing firms in Nigeria based on the coefficient -0.01 and p-value of 0.54. The findings show that Account Receivable Management was found to be significantly positive associated with Return on Asset with the coefficient 0.03 and p-value of 0.02. More so, manufacturing firms should establish a strong yet mutually beneficial suppliers' base. Additionally, firms should enforce clear credit policies to ensure timely and efficient collection of receivables.

**Keywords:** Current Ratio, Cash Conversion Cycle, Account payable management, Account Receivable Management, Return on Asset.

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## INTRODUCTION

In Nigeria's economy, the manufacturing sector is regarded as the fourth biggest. Nigeria's manufacturing industry contributes around 10% of the country's GDP yearly, yet even with this sizeable contribution, the industry confronts severe hurdles. One of these difficulties is improper working capital management, which leads to both failure and misery. As the link between profitability and liquidity, working capital management (WCM) is seen to be crucial to a company's financial performance. Without a doubt, working capital is essential to a business's capacity to function, particularly in the industrial sector where purchasing raw materials is a regular occurrence (Olaoye, Adekanbi & Oluwadare, 2019). As such, the basis for all of a business's efficient operational operations is its working capital.

The successful and effective preparation and oversight of the business's short-term financial and investment choices is the focus of working capital management. Working capital management, according to Uremadu, Egbide, and Enyi (2012), keeps a balance between current assets and liabilities to guard against problems with liquidity and profitability. Similarly, Nwankwo and Osho (2010) stressed that managing working capital requires the right ratio of current assets to current liabilities in order to maintain the company's efficiency—particularly when it comes to interruptions, energy, and goodwill.

There is something abstract about the concept of performance, and its definition draws upon other concepts that we believe are fundamental to performance. Financial performance in this context refers to how well a company's finances are tracked over time. However, a company's ability to manage both its current assets and liabilities effectively is a major factor in determining how long it can stay in operation and continue as a continuing concern (Kabir, Muhammad, & Sunday, 2021). In this sense, in order to stay relevant, industrial organizations that rely heavily on their current assets for most of their total assets must make sure that their both its current assets and liabilities is managed effectively. Stated differently, solvency needs to be maintained constant throughout.

Additionally, the incapacity of business managers to effectively plan and manage the financial resources with regard to of the present ratio, conversion of cash cycle, account payable, and receivables of their own companies based on their business strategies has also been linked to a significant number of business failures. Similar to this, not much research has been done on the both its current assets and liabilities strategies used by Nigerian manufacturing companies, especially in light of the country's recent and distinctive advancements. In light of this and the increased awareness of the manufacturing sector's potential to boost Nigeria's economy, an attempt to close this knowledge gap by conducting an empirical investigation into the effect of working capital management (both its current assets and liabilities) on the performance of listed manufacturing companies in Nigeria is encouraged. Consequently, the following objectives were developed in order to meet the study's aims.

**H<sub>01</sub>:** Current ratio has minimal effect on ROA of sampled Nigerian manufacturing firms.

**H<sub>02</sub>:** Cash conversion cycle has minimal effect on ROA of sampled Nigerian manufacturing firms

**H03:** Account payable management has minimal effect on ROA of sampled Nigerian manufacturing firms.

**H04:** Account receivable management has minimal effect on ROA of sampled Nigerian manufacturing firms.

## LITERATURE REVIEW

### Conceptual Review

#### Working Capital Management:

In essence, working capital is the amount that remains after current assets are subtracted from short-term obligations. Working capital is defined by ICAN (2014) as the funds required by a business to maintain the assets it utilizes for regular operations. Therefore, it may be inferred that in order for a business to turn a profit, its working capital needs to match its activities. According to Ehiremhen (2017), having the right working capital to operations ratio and being able to manage current assets, accounts receivable, and accounts payable well are important factors that impact a company's success because they help maintain operations and maximize value. These factors also help strike a balance between risk and profitability.

Asghar and Syed (2012) defined WCM as decisions made with regard to current assets. According to Raheman & Nasr (2007), referenced by Ibrahim, et al. (2021), businesses may eventually boost their earnings by managing their cash, receivables, and inventory effectively.

**Current ratio:** The current ratio is the greatest single measure of how well short-term creditors' claims are covered by assets that are anticipated to be turned into cash within a time frame that approximately corresponds to the claims' maturity. When analyzing financial accounts, this ratio is the most often utilized. It provides the analyst with a broad overview of the company's working capital sufficiency and its capacity to fulfill its regular payment commitments. This ratio is appropriately named the working capital ratio since current obligations and commitments are closely linked to working capital.

**Cash Conversion Cycle (CCC):** The elapsed time between the points at which a firm pays for raw materials and at which it receives payment for finished goods is called the CCC (Megginson, Smart, Graham, 2010). The length of the CCC depends on the length of inventory conversion period (ICP), ACP and average accounts payable period (APP). The longer the CCC, the greater the amount of investment required in working capital (Singh & Kumar, 2014). A positive CCC means that trade credit does not provide enough financing to cover the firm's entire operating cycle. In such circumstances, the firms seek other forms of financing like bank lines of credit and term loans. However, the cost of these financing sources tend to be higher than the costs of trade credit. Apparently, the firm will benefit by finding ways to shorten its operating cycle or lengthen its payment period. As a measure of the cash cycle, CCC is calculated as the sum of a firm's inventory days and accounts receivable days, less its accounts payable days.

**Account Payable Management:** Accounts payable includes all the money which a business owes for the purchase already made (Hartman, 2014). It represents the money owed by a business to its supplier which is shown as a liability on a company's balance sheet. Hatman (2015) defines average payment period as the period it takes a firm to pay off maturing obligations. Accounts payables are often referred to as "payables". Most of the information that needs to be reviewed in the accounts payable process are expected to be found in the following documents: -

- Purchase orders used by the company
- Receiving reports used by the company
- Invoices from the company's suppliers
- Contracts and other agreements.

The two primary ways that accounts payables impact on corporate profitability are the company's relationship with its suppliers and the company's cash flow. It is possible that the payables policy is net 30 (Nwude, 2003).

**Account Receivable Management:** Account receivable is one of the three variables in cash conversion cycle (CCC) represented as the average collection period resulting from a company selling its products or services on credit. This period is the average length of time from a sale on credit till the payment becomes usable funds for the firm (Attari & Raza, 2012). ACM involves managing the credit available to the firm's customers, and in receiving, processing and collecting payments. The functions of accounts receivable management emanate from its goal which is stated simply as setting out credit terms, selecting the customers, installing appropriate collection and monitoring system and financing the receivables for maximizing the value of the firm (Hrishikes, 2015).

### **The Concept of Performance**

Performance is considered to be a construction (Henri, 2004) and the purpose of defining this concept is to determine its properties and dimensions. Asmaul and Ibnu (2019) asserted that one important indicator to see the firm value is the extent of the company's profitability. For the purpose of this study, profitability here refers to return on asset. Return on asset is one of the profitability ratios used for analyzing firm's growth, performance and profitability through their financial statement (Rosikah, Dwi, Dzulfikri, Muh & Miswar, 2018). It shows the combination of company assets on profitability of the company. An asset is an economic resource controlled by the specified entity (Rosikah, *et. al* 2018). They are used internally by companies to track asset over time. Return on asset (ROA) can be defined as the net income after taxes over average book value of assets. Note that the higher the ROA of a firm the higher the profitability and performance of the firm because high profitability shows good company prospects and increases its value, this notion by Asmaul and Ibnu (2019).

### **Theoretical framework**

This study is anchored on the cash conversion cycle theory.

#### **Cash Conversion Cycle Theory**

The cash conversion cycle, which represents the interaction between the components of working capital and the flow of cash within a company, can be used to determine the amount of cash needed for any sales level. Gitman (1974) developed cash conversion cycle as part of operating cycle which is calculated by adding inventory period to accounts receivables period and then subtracting accounts payables from it. The implication of the theory to the study is that, an efficient working capital management improves firms' performance.

#### **Empirical Review**

Kabir, et al., (2021) studied the effect of working capital management on business performance using a qualitative research design. They evidenced that, the longer the cash conversion cycle/period and collection periods, the lower the sampled firms' performance.

Rey-Ares, et al., (2021) analysed whether working capital management policies affect the economic & financial profitability of Spanish companies from 2010-2018. The researchers sampled 377 firms over the reviewed periods using the panel regression approach. They

evidenced that, CACC only influenced economic profit minimally but outstanding sales and inventory in days reduce economic profit greatly.

Olaoye, et al., (2019) examined WCM and firms' profitability in Nigeria quoted firms Using a panel data methodology with different regression estimator for the analyses of 10 listed firms between 2008 and 2017. The findings revealed that both cash collection period and cash payment period reduce ROA, though the impact was only substantial for the cash payment period (CPP).

In South Africa, Mabandla and Makoni (2019) studied the nexus of WCM and firm performance with focus on 12 listed food and beverage firms from 2007-2016. They used various econometric techniques to analyse the data that were collected from iress Mc Gregor databases for Johannesburg stock exchange and evidenced that, longer inventory conversion periods improves the sampled firms' profit base while longer average collection periods reduce the profit base.

Ogbo, Onekanma and Wilfred (2014) evidenced that, current ratio has a minimal effects on the performance of the sample firm (seven-up bottling company situated in Enugu state). Similarly, Agbo and Nwankwo (2018) evidenced that, account payable management alongside current ratio, leverage ratio, growth and size reduces the sampled firms' (insurance firms') profit base minimally.

Tibbs (2018) studied the extent account receivable affect the performance of Embu Water and Sanitation Company limited, Embu County in Kenya. The researcher relied mainly on primary data source through the aid of research questionnaire. The researcher confirmed that, a longer account receivable period improves the sampled firms' performance significantly. T

Olaoye and Olaoye (2015) investigated the nexus between stock returns and Financial Ratios with interest on listed Nigerian firms. The researchers evidenced that, higher stock returns improves financial ratios significantly.

The researchers employed cross-sectional design due to the nature of the reviewed variables. Data were sourced from the annual financial reports of the sampled firms from 2012-2021 using the random sampling technique. In order to analyse the sourced data, the Panel Least Square Technique was employed. The study was also subjected to other statistical test such as descriptive statistics and correlation matrix.

**Model Specification**

Generally, the Panel Least Square provides the basis for the panel data analysis. This is represented by the general equation below:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + e_{it} \dots\dots\dots 1$$

Where Y-represents the regressed

Subscript <sub>1-8</sub>-represents the cross-section

Subscript- <sub>t</sub> represents the time series

$\beta_0$  - represents the value of the intercept term of the coefficients

X- represents the vector of the regressors combined and

*e* - represents the idiosyncratic error term

Essentially therefore the functional relationship between the variables is expressed below:

$$ROA = f(CURT, CACC, ACPM, ACRP) \dots\dots\dots 2$$

Expressing the equation in econometric form, we have

$$ROA_{it} = \beta_0 + \beta_1 CURT_{it} + \beta_2 CACC_{it} + \beta_3 ACPM_{it} + \beta_4 ACRM_{it} + \lambda_{it} \dots\dots\dots 3$$

**Where:**

$\lambda_{it}$  = Residual errors of the regression

**Note: All variables are defined in table 1**

Table 1

*Measurement of Variables*

VARIABLES	ACRONYM	MEASUREMENT
<b><u>Dependent:</u></b>		
Return on Asset	ROA	$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \times \frac{100}{1}$
<b><u>Independent Variables:</u></b>		
Current Ratio	CURT	$CURT = \frac{\text{Current Asset}}{\text{Current Liability}} \times 100$
Cash Conversion Cycle	CACC	CACC = Days Inventory outstanding – Days sales outstanding - Days payable
Account Payable Management	ACPM	ACPM = Accounts Payable/(Cost of Sales/Number of Days)
Account Receivable Management	ACRM	ACRM = Net Sales / Average account receivables

Source: Researcher’s Compilation, 2023

**RESULTS AND DISCUSSIONS**

Table 2

*Descriptive Statistics*

	ROA	CURT	CACC	ACPM	ACRM
Mean	6.637300	1.929100	13.29120	141.5014	37.61020
Median	4.935000	0.935000	11.00500	140.2700	42.53500
Maximum	26.49000	30.40000	168.0200	303.1700	145.6200
Minimum	-9.230000	-22.04000	-194.1300	0.440000	-94.40000
Std. Dev.	7.619061	5.250861	85.36065	83.93820	42.79451
Observations	100	100	100	100	100

Source: E-Views 10

**Data Analysis and Interpretation**

The descriptive statistics in Table 2 shows the data from the 10 quoted manufacturing companies that formed the overall sample of the study. As observed, the mean value of the regressed- ROA showed that ROA is skewed towards the positive. Meanwhile, the mean ROA is 6.637300 and a median value of 4.935000 with a highest/maximum and lowest/minimum value of 26.49000and -9.230000 respectively.

The mean value of all the regressors (Current ratio-CURT, Cash Conversion Cycle-CACC, Account Payable Management-ACPM and Account Receivable Management-ACRM) equally showed positive values with mean values of 1.929100, 13.29120, 141.5014 and 37.61020 but

deviated minimally. Also, the mean CURT is 1.929100 with a median value of 0.935000 and a maximum and minimum value of 30.40000 and -22.04000 respectively. Also, the mean CACC value is 13.29120 with a median value of 11.00500 and a highest/maximum and lowest/minimum value of 168.0200 and -194.1300 respectively. Further, the mean ACPM value is 141.5014 with a median value of 141.5014 and a maximum and minimum value of 303.1700 and 0.440000 respectively. Lastly, the mean ACRM value is 37.61020, a median value of 42.53500 was recorded and a highest/maximum and lowest/minimum value of 145.6200 and -94.40000 respectively.

Table 3

*Correlations Analysis*

	ROA	CURT	CACC	ACPM	ACRM
ROA	1.000000				
CURT	0.050005	1.000000			
CACC	-0.357805	0.102512	1.000000		
ACPM	-0.271590	-0.281079	-0.707968	1.000000	
ACRM	0.046659	-0.286392	0.112090	0.473396	1.000000

Source: E-views, 10

The initial patterns of relationship among the variables can be observed based on the correlation among the variables. As observed from the correlation analysis, a positive association is observed between ROA and CURT ( $r = 0.050055$ ). The coefficient is low and the direction of correlation suggests that an increase in CURT may be associated with an increase in ROA.

A negative association is observed between ROA and CACC ( $r = -0.357805$ ), the coefficient is low and the direction of correlation implies that an increase in CACC may lead to downward movement in ROA.

A weak positive association is observed between ROA and ACPM ( $r = 0.271590$ ), the coefficient is low and the direction of correlation suggests that an increase in ACPM may lead to upward movement in ROA.

Lastly, a weak positive association is observed between ROA and ACRM ( $r = 0.046659$ ), the coefficient is low and the direction of correlation suggests that an increase in ACRM may lead to slight upward movement in Corporate ROA.

Table 4

*Panel Regression Analysis (Final Output)*

Dependent Variable	Independent	Coefficient	Standard Error	T-Stat.	Prob.
	CURT	0.173109	0.145181	1.192367	0.2361
	CACC	-0.043463	0.017169	-2.531473	0.0130
	ACPM	-0.012134	0.019796	-0.612961	0.5414
	ACRM	0.035375	0.027637	1.279967	0.2037
ROA	C	6.112196	2.134860	2.863043	0.0052
R-Squared	=	0.15	F-Stat.	=	4.29
Adjusted R- Squared	=	0.12	DW-Statistic	=	0.72

Source: E-views, 10.0.

From table 4, it can be seen that the  $R^2$  statistic is 0.15 while the adjusted  $R^2$  statistic is 0.12%. This is an indication that about 12% of systematic variations in ROA are explained by changes in the explanatory variables of the model. Similarly, the F-statistic, 4.29 is statistically significant at the 5% level. These statistics indicate that our model satisfies the overall goodness of fit statistical test.

The Durbin-Watson statistic of 0.72 shows the absence of autocorrelation. Therefore, our econometric model satisfies both statistical and diagnostic requirements, making it a reliable and consistent estimator that can provide valuable insights for guiding policy decisions.

Based on the coefficient 0.17 and p-value of 0.23, appears to have a positive influence on ROA and was statistically insignificant. This result, therefore, suggests that current ratio improves ROA of manufacturing firms in Nigeria minimally. This result is supported by the finding of Ogbo, Onekanma and Wilfred (2014).

Again, CACC has a coefficient of -0.04 and p-value of 0.01. This suggests that, CACC has negative effect on ROA and this was statistically significant. This result, therefore, suggests that, the longer the CACC, the lower the performance while the shorter the CACC, the higher the performance. By implication, for manufacturing firms in Nigeria to record outstanding successes, the CACC should be reduced. The result is supported by the study of Anser and Malik (2013).

Furthermore, ACPM has a negative coefficient -0.01 and p-value of 0.54. It suggests that, ACPM have a negative influence on our sampled quoted manufacturing firms' ROA and was not statistically significant. This result, therefore, suggests that, ACPM only influence ROA minimally and that, a longer ACPM reduces ROA. This result is supported by the finding of Agbo and Nwankwo (2018).

Lastly, ACRM has a positive coefficient 0.03 and p-value of 0.02. By implication, the longer the ACRM, the higher the ROA and was found to be highly significant. This result is in line with the result of Tibbs (2018).

### **CONCLUSION AND RECOMMENDATIONS**

The objective of this study was to investigate how working capital management relates to the performance of manufacturing firms in Nigeria. Specifically, the study examined the impact of current ratio, cash conversion cycle, account payable management, and account receivable management on the ROA of quoted manufacturing firms in Nigeria. Based the various results, the paper concludes that a unit change in account receivable management may lead to an upward movement in the ROA of manufacturing firms in Nigeria significantly. Consequently, the paper made the following submissions:

1. Manufacturing firms should prioritize other financial management areas that have a more substantial impact. This includes effective cost management, revenue generation strategies, inventory turnover, and investment decisions.
2. Since a longer cash conversion cycle is associated with lower ROA, manufacturing firms should focus on improving their inventory management practices. This includes optimizing inventory levels, implementing efficient ordering and production processes, and minimizing carrying costs. By reducing its inventory periods, manufacturing firms can improve their ROA.
3. Since we observed a negative and insignificant relationship between account payable management and ROA, manufacturing firms are advised to establish strong and mutually beneficial relationships with their suppliers. To achieve this, timely payments, open communication, and collaborative negotiations are needed.
4. Manufacturing firms are advised to establish and enforce clear credit policies to ensure timely and efficient collection of receivables. This includes setting appropriate credit terms, conducting thorough credit assessments for customers, and monitoring



creditworthiness on an on-going basis. By managing credit effectively, firms can minimize the risk of late or non-payment, improving the ROA.

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