# Working capital management and financial performance of listed cement companies in Nigeria

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## Abstract

The article examines the effect of working capital management on the financial performance of Nigeria's listed cement companies. The study's population consists of all listed cement companies in Nigeria, with two companies chosen as the sample. The data was analyzed using ordinary least squares regression (OLS) and correlation. The study's findings show that the inventory turnover period (ITP) has no significant effect on return on assets (ROA), while the average collection period (ACP) has significant effects on return on assets (ROA). The average payment period (APP) has significant impact on return on assets (ROA). The average payment period (APP) has significant impact on return on assets (ROA). The study recommends that to improve the returns gained by cement companies in Nigeria, less emphasis should be placed on inventory turnover, which contributes little to such companies' profitability. However, much more focus should be given to average collection duration and average payment period because they have more impact on the success of listed cement firms in Nigeria. Keywords: Working Capital Management, Financial performance, Inventory turnover period, Average collection period, Average payment period.

## 1. Introduction

A business organization will always maintain working capital intact to be able to run its operations smoothly because the absence of working capital may lead to insolvency. Working capital management (WCM) is the decision made by the business organization to keep working capital within the acceptable limits, which are not too much nor too little because too much working capital may lead to resource idleness and too little working capital may create insolvency.

A company must have working capital in order to be considered a going concern, meaning it must be able to generate a profit that is both acceptable and sustainable for the foreseeable future. It is the asset required to pay off a business's debt as it becomes due. Insolvency will come from a corporate organization's failure to finance both its short-term and long-term debt due to a lack of working capital. Working capital management is recognized as an efficient and successful method of planning and controlling the firm's short-term finance and investment decisions (Michael, Ajayi, Segun, & Taiwo, 2017).Similarly, a business organization should maintain the current asset-to-liability ratio at its ideal level. This is because if the current asset ratio is higher than the current liability ratio, idle cash will be available for investments and potential returns; conversely, if the current liability ratio is higher than the current asset ratio, this could result in insolvency and possibly even bankruptcy.

Financial performance is the return on investment from productive resources; it shows the overall financial health of an entity over a specified period of time; it provides results as assets

are acquired and used; it shows how the firm's resources, assets, sales, and return on capital are optimally used; and it shows how well the firm is performing.

Numerous studies on working capital management and financial performance have been conducted; some of these are from Nigeria, including Oladimeji and Aladejebi (2020); Olaoye, Adekanbi, and Oluwadare (2019); Olaoye, Olatunji, Adeboboye, Roseline (2019); Egiyi and Sabina (2017); Adagye (2015); Angahar and Alematu (2014); Owolabi and Alu (2012); Ajibolade, Solabomi, Sankay, and Collins (2013); Yakubu, Alhassan, Mubarik, Fuseini, and Abdul-aziz (2019); Lung'aho and Omagwa (2018); Philip (2015). Although there have been few studies that focus on particular industries, such as Kurawa and Garba (2010); Angahar and Alematu (2014), working capital and financial performance have been sparsely discussed in relation to specific industries, particularly cement manufacturing companies in Nigeria. Furthermore, this study will employ a different methodology and variables, which will serve as motivation for this research. The main objective of this research is to examine the working capital management and financial performance of listed cement companies in Nigeria.

## 2. Literature review

## 2.1 Theoretical Framework

The cash conversion cycle refers to the time between actual cash expenditures on productive resources and actual cash collections from product or service sales. The cash conversion cycle, on the other hand, has been defined as the duration between cash outlays during output production and account receivable collection (Olaoye et al. 2019). The longer the cash conversion cycle, the more working capital is required; similarly, the shorter the cash conversion cycle, the less working capital is required (Olaoye & Okunade, 2020).

Furthermore, the cash conversion cycle theory is used to estimate how many days it takes a company to convert its resource intake into cash. The cycle is essential for businesses because it gauges how quickly they can convert their resource intake into cash. Longer cycles result in longer capital commitments and detrimental effects on corporate operations, and vice versa (Olaoye et al. 2019). The hypothesis of the currency conversion cycle was first presented by Richard Laughlin in 1980. They examine the components of working capital management. Since it covers every idea and element, from raw materials to completed goods and outputs that represent inventory level to receivables and payments that represent the cash portion, cash conversion cycle theory is the most important theory for understanding working capital management. In addition, they noted that maintaining short-term assets and obligations takes up a significant portion of a financial manager's time (Oladimeji & Aladejebi, 2020).

The cash conversion cycle is the number of days that pass between when the company pays for its purchases of the simplest type of inventory and when it receives payment for the sale of its final product. It should be noted that a shorter cash conversion cycle means that the business

needs less money, and as a result, a longer cycle means a larger working capital investment. It states that it functions as a comprehensive assessment of working capital since it shows the time lag between the input from the sale of completed items and the outflow for the purchase of raw materials (Olaoye & Okunade, 2020). It describes the interval of time between the receipt of raw materials and the money received from the sale of the final product. Working capital requirements increase with the length of the cash conversion cycle and vice versa. This idea is better suited to describe working capital management. Thus, the cash conversion cycle serves as the theoretical foundation for this study's explanation of working capital management.

# 2.2 Review of empirical study

Makori and Jagongo (2013) discovered a negative and significant relationship between the number of days account receivable, the cash conversion cycle, and profitability, as well as a positive relationship between the number of days of inventory, the number of days payable, and profitability, using ordinary least square regressions to analyze Kenyan data. Similarly, Ikpefan et al (2014) use Nestle Nigeria Plc and Cadbury Nigeria Plc as case studies to examine the connection between working capital management and profitability. Using correlation and regression analysis to analyze the data collected in Nigeria, the study discovered that the quick ratio, current ratio, trade receivable collection period, and trade payable payment period had a negative relationship with Nestle Nigeria PLC's profitability while they had a positive relationship with Cadbury Nigeria PLC's profitability. In support of the aforementioned, Iqbal et al (2014) used regression analysis to examine data collected and discovered that operating profitability was significantly impacted negatively by average collection time, inventory turnover in days, average payment time, and cash conversion cycle.

Furthermore, Yakubu et al. (2017) discovered that average payment period and current ratio have a positive relationship with firm performance, whereas average collection period, inventory turnover, cash conversion cycle, and firm size have a negative relationship with firm performance when using the random effect model to analyze data collected in Ghana. In the same spirit, Kawakibi and Hadiwidjojo (2019) discovered that good working capital management can increase financial performance by using ordinary least square regression to analyze data collected in Indonesia. Olaoye et al. (2019) discovered a positive and significant association between working capital management and profitability in Nigeria by analyzing data using panel data methods.

On the global stage, Bagh et al. (2023) look into how working capital management affects the financial performance of fifty (50) non-financial companies that are listed on the Pakistani Karachi stock exchange. The results of the multiple regressions utilized show that average payment period (APP), inventory turnover (ITO), and cash conversion cycle (CCC) have a negative and significant influence on return on assets (ROA), whereas average collection period (ACP) has a positive and substantial impact on ROA.

#### **3.** Methodology of the study

The research employed an ex-post facto (correlational research design) approach since the data will be derived from a previously created annual report and the study would look into cause and effect relationships. The research will last eleven (11) years, from 2013 to 2023, and will only include listed cement companies in Nigeria. Secondary sources of data will be used, including the financial statements of qualified companies and the Nigeria stock market Factbook. The study's population consists of all listed Nigerian cement companies. The study's population is the entire set of cases from which sampling is drawn (Saunders et al. 2009).

S/NO	Company	Date of Incorporation	Date of Listing					
1	Ashaka Cement PLC	1974	1990					
2	Cement Company of Northern Nigeria	1962	1993					
	PLC							
3	Dangote Cement PLC	1992	2010					
4	Lafarge Cement Wapco Nigeria PLC	1959	1979					
5	BUA cement PLC	2014	2020					
~		1.0						

#### Table 3. Listed Nigeria cement company

Source: Nigeria Stock Exchange Factbook 2013

In order to prevent missing data, any company that meets the requirements for having readymade financial statements during the study period and is/is listed on the Nigerian stock exchange at that time would be eligible to be selected and added to the study's sample. In this instance, the financial report of the cement company of Northern Nigeria PLC will not be released because BUA Cement PLC acquired a majority interest in the company in 2009 and 2020. Since BUA Cement was incorporated in 2014 and went public on the Nigerian stock exchange in 2020, the firm will not be eligible for this study. In 2015, the Nigeria Stock Exchange delisted Ashaka Cement PLC.

#### 3.1 Measurement of variables

The measurements of variableswere modified from those of Oladimeji and Aladejebi (2020), Olaoye et al. (2019), Sabo (2017), Egiyi and Sabina (2017), and Kurawa and Garba (2014). The variables for the study were computed as follows:

Return on Assets (ROA) =  $\frac{\text{Net Income}}{\text{Total assets}}$ Inventory Turnover Period (ITP) =  $\frac{\text{Average inventory}}{\text{Cost of sales}}$  x 365 Average Collection Period (ACP) =  $\frac{\text{Average debtors}}{\text{Sales}}$  x 365 Average Payment Period (APP) = Average creditors x 365

Average Payment Period (APP) =  $\frac{\text{Average creditors}}{\text{Cost of sales}} \times 36$ 

Firm Size (FS) = Log of total assets

#### 3.2 Model of the study

From this regression equation a model will be developed to test the hypothesis

ROA i,t =  $\beta 0 + \beta 1$ ITP i,t +  $\beta 2$  ACPi,t +  $\beta 3$ APP i,t +  $\beta 4$ FS i,t +  $\mu$ it Where: ROA i,t = Return on assets for firm i in year t  $\beta 0$  = intercept of the regression model ITP i,t = Inventory turnover period for firm i in year t ACPi,t = Average collection period for firm i in year t APP i,t = Average payment period for firm i in year t FS i,t = Firm size for firm i in year t  $\mu$  = Error term i = Firm t = Year

## 4. **Results and discussion**

#### **Table 1. Correlation**

	ROA	ITP	ACP	APP	FS
ROA	1.0000				
ITP	0.1932	1.0000			
ACP	-0.5561	-0.0752	1.0000		
APP	0.3391	0.3623	0.0776	1.0000	
FS	0.0418	-0.5193	-0.1564	-0.4273	1.0000

Source: Generated by the author from annual data of the sample companies (2013-2023) using STATA software version 16.

The table displays the coefficient of the association between the dependent variable (ROA) and the explanatory factors (ITP, ACP, APP, FS) of Nigeria's listed cement businesses. The sign (+ or -) denotes the direction of the connection, which might be positive or negative. The diagonal of the correlation shows that each variable is perfectly associated with itself.

The return on assets is positively correlated with the inventory turnover period. This means that if the return on assets increases by 19%, the inventory turnover period will most likely increase by 19%. The return on assets is negatively correlated with the average collection period. This suggests that if return on assets increases by 55%, the average collecting period will reduce by 55%. The return on assets is positively connected to the average payment period. This means that increasing the return on assets by 33% will result in a 33% increase in the average payment period. With a N100 rise in return on assets, the firm's size will grow by 4%.

The inventory turnover period correlates negatively with the average collecting period. This suggests that if the inventory turnover period increases by 7%, the average collection duration

will shorten by 7%. The inventory turnover period is positively associated with the average payment period. This means that increasing or decreasing the inventory turnover period by 36% will result in an increase or decrease in the average payment period. The inventory turnover period has a negative correlation with business size. This suggests that increasing the inventory turnover interval by 51% will most likely result in a 51% drop in company size.

The average collection period correlates positively with the average payment period. This means that increasing the average collection duration by 7% will result in an increase in the average payment period. The average collecting period correlates inversely with company size. This indicates that increasing the average collection duration by 15% will result in a 15% decrease in the average payment period. The average payment period correlates negatively with firm size. This suggests that increasing the average payment period by 42% will result in a 42% drop in the business size.

ROA	Coef.	Std. Err.	t	p>[t]	95% Conf. Inter	val
ITP	0.00025	0.000611	0.41	0.685	-0.0011	0.00155
ACP	-0.00255	0.00089	-2.88	0.012	-0.0045	-0.0007
APP	0.00058	0.000285	2.04	0.060	-0.00003	0.00119
FS	0.011313	0.014158	0.80	0.437	-0.01887	0.04149
Cons.	-0.0385	0.168620	-0.23	0.823	-0.3979	0.32094
F-Stat	3.44					
Prob > f	0.0348					
R-squared	0.4785					
Adj R-squared	0.3394					

#### Table 2. OLS regression

Source: Generated by the author from annual data of the sample companies (2013-2023)

Table 2. shows the regression analysis of the dependent variable (ROA) and explanatory variables for Nigerian listed cement businesses. The model's least square regression yields an R-squared of 0.4785, indicating the coefficient of determination. It has demonstrated the overall variation of the dependent variable as explained by the explanatory variables combined. Thus, ITP, ACP, APP, and FS account for 47% of the overall variation in ROA across Nigeria's listed cement companies.

The ITP is positively and insignificantly connected to ROA, as evidenced by the p-value of 0.685 and coefficient of 0.00025. This means that increasing the ITP will have little effect on the return on assets of Nigeria's listed cement companies. The ACP has a substantial impact on the ROA of Nigeria's listed cement companies. This suggests that a rise in ACP must result in a considerable increase in ROA, as demonstrated by the p-value of 0.012 at the 5% significance level.

At the 10% level, the APP has a positive and significant relationship with ROA. This suggests that with an increase in APP, the ROA will increase greatly, as indicated by the p-value of 0.060 and coefficient of 0.00058. The firm's size has a favorable but insignificant relationship with

ROA. This suggests that as FS increases, the ROA increases positively but insignificantly, as evidenced by the p-value of 0.437 and coefficient of 0.011313.

# 5. Conclusion and recommendations

The paper concludes that the inventory turnover period (ITP) has little impact on return on assets (ROA), while the average collection period (ACP) has a substantial impact on return on assets (ROA). The average payment period (APP) has a substantial impact on the return on assets (ROA) of listed cement businesses in Nigeria. The study recommends that to improve the returns gained by cement companies in Nigeria, less emphasis should be placed on inventory turnover, which contributes little to such companies' profitability. However, much more focus should be given to average collection duration and average payment period because they have more impact on the success of listed cement firms in Nigeria.

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