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WORKING CAPITAL MANAGEMENT ON ECONOMIC GROWTH AND DEVELOPMENT: EMPHASIS FROM LISTED CONGLOMERATES FIRMS IN NIGERIA

Egolum, Priscilla Uchenna, PhD¹, Aroh Nkechi Nympha, PhD² and Okeke Onyekachi Nath³

^{1,3}Department of Accountancy, Faculty of Management Sciences, Nnamdi Azikiwe University, P. M. B. 5025, Awka, Anambra State, Nigeria.

²Department of Accountancy, Faculty of Management Sciences 1Federal Polytechnic Oko, Anambra State, Nigeria.

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ABSTRACT

The study investigates the effect of working capital management on economic growth and development, with emphasis from listed conglomerates firms in Nigeria. Four objectives were employed with coverage of a ten-year period spanning from 2011 to 2020. Secondary data were used in the study with total population based on five (5) conglomerate firms listed on Nigerian Stock Exchange. The tests of the four null hypotheses were carried out using spearman rank correlation analysis and also employed panel least square (POLS) regression analysis. The result of the analyses revealed the following: Cash conversion cycle (Random effect = -0.03 (0.002)) has a negative significant influence on firm profitability. Inventory period (Random effect = 0.02 (0.262)) has a positive insignificant influence on firm profitability. Current ratio (Random effect = 15.55 (0.002)) also has positive but significant influence on firm profitability. Quick ratio (Random effect = -12.45 (0.035)) has a negative significant influence on firm profitability. The study concludes that cash conversion cycle and quick ratio tend to decrease firm profitability while we provide evidence that current ratio improves firm profitability. The study recommends, among others, that Management of these conglomerates companies should advocate for policies that will enhance swift conversion of inventory to cash to improve firm profitability for economic growth and development in Nigeria.

KEYWORDS: Working capital management, Economic growth, Development, Listed conglomerate firms

1. INTRODUCTION

Working capital management (WCM) is a very crucial aspect of financial management in any organization because of its possibility for the firm meet its short-term debt obligations as well as its operational expenses as at when due. It also ensures adequate availability of liquidity and increases the profitability of the organization. Working capital can be invested in the business for a short period,



generally a year. This shows whether a company has short-term assets to cover its short-term debt which invariably measure company's efficiency for economic growth and development. The amount of working capital needed by a company is at times dependent on the industry it operates, the credit days allowed by creditors and credit days given to debtors and the level of stock they need to maintain (Otekunrin, Nwanji, Fagboro, Olowookere, Adenike, 2021).

According to Rawat and Dave, (2017), working capital can be seen as the surplus of current assets over current liabilities, which is required to meet the day to day operating expenses of any organization and for holding stocks of raw materials, spare parts, consumables, work-in-progress, finished goods and overdrafts. It is vital to the operating cycle of the firm. Some examples of current assets include; cash, marketable securities, account receivables and inventories. Current liabilities include; account payables, short-term debt and notes payable, accrued expenses among others.

Profitability is the ability of a company to make profit through efficient utilization of its resources. Universally, profit is the ultimate goal of organizations such that all the policies designed and activities performed are meant to realize this grand objective. However, it does not mean that companies have no other goals. Profitability evaluates the effectiveness and efficiency with which equipment, plant and current assets are transformed into profit (Olaoye, Adekanbi & Oluwadare, 2019). A firm's profitability may be determined by its returns on assets (ROA).

Effective and efficient management of the relationship between a firm's current assets and current liabilities will help to ensure that it remains in business for a long time and continues to exist as a going concern. Empirical studies, both past and recent, have contributed immensely to knowledge on the relationship between working capital management and profitability of organizations. These studies have been conducted on different sectors of the economy as well as firms within various industries. Similarly, the Nigerian banking sector in the past, has witnessed the Central Bank of Nigeria (CBN) taking over the management of some deposit money banks due to their inability to meet with customers' obligations as a result of inadequate liquidity. Profitability is vital to the existence and continued survival of business because any firm that makes no profit is not achieving the objectives it was set up for and in most cases organizations are set up to make a profit (Otekunrin, Nwanji, Fagboro, Olowookere, Adenike, 2021). A business will thrive without income but will remain in continuity, yet it cannot survive when it lacks working capital. Although, profitability may be seen as the dominant factor of a business but if working capital is not effectively managed, the business may come to an end even if it was successful and profitable. Working capital management is very important to all forms and sizes of businesses. Where it is poorly managed, it may result in liquidity problems for the firm which will reduce its profitability and creditworthiness.



Hence, it is against this background that this study is carried out. This study seeks to examine the effect of working capital management on the profitability of selected quoted conglomerate firms in Nigeria.

Statement of the Problem

Effective management of working capital is very important to every form of business. Many businesses have winded up as a result of poor working capital management. The profitability of conglomerate firms in Nigeria has been affected especially by the COVID-19 pandemic crisis and recession has caused investors to make losses as quoted firms struggle with lesser profit margins and naira depreciation has seriously affected the imported raw materials. According to the Nigerian Guardian, 'the challenging business environment has continued to assail the operations of the nation's conglomerate sector, just as the bottom-line of the industry's quoted companies keep heading south due to apathy and low investors' confidence.' Hence, the necessity for conglomerate firms to effectively manage their current assets so that they do not run into liquidity crisis which can take a toll on its profitability (The Nigerian Guardian, 2021).

Many foreign authors have examined the effect of working capital management on the profitability of firms. Makoni & Mabandla (2019), Anton & Anca (2021) and Nastiti, Atahau & Supramono (2019) are some foreign authors who examined the effect of working capital management on firm profitability in South Africa, Poland and Indonesia respectively. Although, these are commendable works on working capital management and firm profitability, however, these studies do not suitably represent the peculiarities of the Nigerian business environment.

On the other hand, there are a cup full of local researches that have tilted towards the direction of the present study. Such studies conducted in Nigeria include; Olaoye, Adekanbi & Oluwadare (2019) and Peter & Nelson (2019) concluded that a positive relationship existed between working capital management and firm performance. In contrast, Osuma, Ailemen, Osabohien & Eriki (2017) reported a negative relationship and Oladimeji & Aladejebi (2020) reported that there was no relationship between working capital management and SMEs' profitability in Nigeria. It is as a result of the inconsistencies and inconclusive results in research findings on working capital management and profitability that this study has been conducted.

Anton & Anca (2021), utilized working capital ratio (WKCR), debt ratio, cash ratio, sales growth and firm size as variables in examining the impact of working capital management on firm profitability. Nastiti, Atahau & Supramono (2019) adopted cash conversion cycle as the only independent variable in their study. However, this study utilizes current ratio, quick ratio, cash conversion cycle and inventory conversion period to examine the subject matter.



Moreover, many authors have also carried out their studies on working capital management using different sectors of the economy (Sulaiman, Abdu & Khadijah, 2018; Osuma, Ailemen, Osabohien & Eriki, 2017; and Otekunrin, Nwanji, Fagboro, Olowookere & Adenike, 2021). However, to the researcher best knowledge, none of the local studies derived its evidence from the Nigerian listed conglomerate firms in Nigeria.

It is against this background that this study seeks to examine the effect of working capital management on the profitability of selected quoted conglomerate firms in Nigeria.

Objectives of the Study

The main objective of the study is to determine the extent of relationship that exists between working capital management and profitability of selected quoted conglomerate firms in Nigeria.

Specifically, the study seeks to:

1. Determine the effect of Cash Conversion Cycle on Returns on Assets of selected quoted conglomerate firms in Nigeria.
2. Examine the effect of Inventory Conversion Period on Returns on Assets of selected quoted conglomerate firms in Nigeria.
3. Identify the extent to which Current Ratio affects the Returns on Assets of selected quoted conglomerate firms in Nigeria.
4. Establish the impact of Quick Ratio on Returns on Assets of selected quoted conglomerate firms in Nigeria.

2. LITERATURE REVIEW

Concept of Working Capital

Working Capital refers to the part of the firm's capital which is required for financing short-term or current assets such as cash, marketable securities, debts and inventories (Ahmed, 2016). Working capital is current assets less current liabilities. It can be positive, negative or nil (on rare occasions). Current assets consist of inventories, receivables, prepayments and cash, while current liabilities include short-term payables, short-term debts and accruals. Working capital can be conceptualized as either Gross working capital or Net working capital. The operating cycle in working capital consists of four major events starting from the purchase of raw materials, payment for raw materials, sale of finished goods and finally, collection of cash from credit sales (Rawat & Dave, 2017).

According to Pandey (2015), the major determinants of working capital include the nature of the business, price level changes, credit policy, operating efficiency, availability of credit from suppliers,



market and demand conditions, technology and manufacturing policy. However, the working capital also has a significant role in the ongoing operations of firms operating in different activities. Working capital is a circulating capital and the business's life will not exist when its circulation has stopped. Working Capital Management is an element of corporate finance as it unswervingly impinges on the profitability of an organization and consequently affects shareholders' value (Orishede, 2021). Umoren & Udo (2015) defined the management of working capital as all management actions and decisions that ordinarily influence the size and effectiveness of the working capital. Effective working capital management ensures maintenance of optimal levels of working capital at any point in time. An optimum level of working capital is that level which supports daily operations without compromising efficiency and does not expose the company to losses associated with excess or inadequate working capital (Sulaiman, Abdu & Khadijah, 2018). The basic theme of working capital management is to provide adequate support for smooth and efficient functioning of the day to day business operations by striking a trade between the three proportions of working capital which are liquidity, profitability and risk (Oladimeji & Aladejebi, 2020). Osuma, Ailemen, Osabohien, & Eriki (2017) identified two major strategies for working capital management which are Aggressive Strategy and Conservative Strategy. According to them, aggressive strategy is characterized with high risk and high profitability. It is important to note that among the resources owned by an organisation, working capital is generally significant for any organizational setting and so requires sound attention, appropriate planning and management. As resources available to organisations are scarce, it is believed that the management of organisations' working capital has a fundamental role to play in the achievement of profitability and overall performance of such entities. It is necessary for companies to maintain adequate working capital because inadequate working capital could impact the operations of the business adversely. Similarly, too much working capital can limit a company's profit earning capacity Working capital management controls existing assets' adequacy and controls current liabilities' risk threat rate (Shuaibu, Muhammad & Isah, 2019).

Components of Working Capital Management Cash Conversion Cycle (CCC) and Profitability

The concept of cash conversion cycle was introduced by Gitman (1974) as a means of managing a firm's working capital and its implications for firm liquidity and profitability According to Egolum and Urom (2021), the main objective of any firm is to maximize profits. However, preserving liquidity of the firm is also an important objective. Increasing profits at the cost of liquidity can bring serious problems to the firm. Therefore, there must be a trade-off between these two objectives of the firm. Generally, cash management is based on cash conversion cycle and is considered as an important factor in enhancing companies' performance, since it shows how efficient a company is in its selling of inventory, payment of bills and collection of payments at the business operations (Sugathadasa, 2018). Companies can enhance profitability by reducing the length of their cash conversion cycle



through decreasing the receivables collection period, decreasing inventory selling period and increasing the credit payment period (Sugathadasa, 2018). Firms are expected to have low CCC because, the shorter the CCC, the more efficient the firm will be in managing its cash flows.

Inventory Conversion Period (ICP) and Profitability

The inventory conversion period is essentially the time period during which a company must invest cash while it converts material into a sale (Bragg, 2017). It is the time required to obtain materials for a product, manufacture it and sell it (Amahalu, Ezechukwu, Egolum & Obi, 2018). The efficient management of inventory is that management which holds enough inventories just for ensuring continuous operations and for satisfying the needs and orders of buyers, because holding too much extra amount of inventory leads to higher costs and therefore, less profitability (Obeidat, 2021). In contrast, the shortage in inventory, especially the shortage in raw materials will increase the likelihood of operation stoppage and a shortage in finished goods will prohibit the firm of profit opportunities, and thereafter, less customer satisfaction. Otekunrin, Nwanji, Fagboro, Olowookere & Adenike (2021), determined the impact of working capital management on the profitability of quoted agricultural and agro-allied companies in Nigeria. Working capital management was measured using, inventory turnover period, inventory turnover period and cash conversion cycle were positively related to profitability. Also, Sulaiman, Abdu & Khadijah (2018), explored the effect of working capital management on the profitability of listed Consumer Goods firms in Nigeria. The independent variables used were Current Ratio, Trade Receivable Period, Trade Payable Period and Inventory Conversion Period, while Return on Assets and Returns on Equity were used as the dependent variable. Inventory Conversion Period had an insignificant effect on Returns on Assets. These results of the analysis appear confusing, **hence, the hypothesis, Inventory Conversion Period has not significantly affected Returns on Assets of selected quoted conglomerate firms in Nigeria.**

Current Ratio and Profitability

Current ratio is one of the major liquidity ratios that are used to measure the liquidity of a company. It is a description of how much the amount of current assets owned by the company is compared to the amount of current liabilities that will be due (Egolum and Urom, 2021). The current ratio reflects the ability of companies to meet their current obligations that are due within one year. Keeping this indicator at an optimum level implies ensuring an adequate level of current assets, which must be above that of short-term liabilities (Pordea, David & Mates, 2020).

Following this reasoning, there is anticipation that an increase in the current liquidity will lead to an increase in the profitability of the activity, however, too high a level of this indicator can be a sign of over liquidity, with possible adverse effects on profitability. In other words, an economic entity can carry out a profitable activity without necessarily being liquid (Pordea, David & Mates, 2020).



Although, ensuring the liquidity of a company is essential for increasing its long-term well-being and performance, both during times of crisis and in favourable economic situations, hence, **the hypothesis: Current Ratio has not significantly affect the Returns on Assets of selected quoted conglomerate firms in Nigeria.**

Quick Ratio and Profitability

Quick ratio is also known as ‘Acid-test’ ratio. This is another major liquidity ratio that is used to measure the liquidity of a company. It uses liquid assets as a measure of liquidity. Current assets other than stock and prepaid expenses are considered as quick assets (Johri & Maheshwari, 2019). A firm’s ability to sustain its short-term debt-paying ability is important to all users of financial statements. Even a very profitable company will find itself bankrupt if it fails to meet its obligations to short-term creditors. The ability to pay current obligations when they are due, is also related to the cash generating ability of the company (Al-Qadi & Khanji, 2018). A company needs to maintain adequate levels of liquidity because liquidity greatly affects profitability as there is a close relationship between them. Consequently, **Quick Ratio has not significantly affect Returns on Assets of selected quoted conglomerate firms in Nigeria.**

THEORETICAL FRAMEWORK

Pecking Order Theory

This theory was first suggested by Donaldson in 1961 and was later modified by Stewart C. Myers and Nicholas Majluf in 1984. Myers & Majluf (1984) argued that the firms most likely preferred to finance the raising of new capital with internally generated revenue (i.e., retained earnings) then with debt and issue equity as a last resort.

Pecking order theory is believed to be an alternate theory to trade-off theory where the firm has perfect hierarchy of financing decisions. It elucidates that the firm tries to utilize its internal financing sources, i.e, retained earnings then issues debt and then would issue equity as a last resort (Ibrahim, Usaini & Elijah, 2021). Pecking order theory predicts that firms prioritize their sources of financing, from internal financing to equity, considering the cost of resources (Anton & Nucu, 2021). As working capital has to do with the capital involved in the daily finance of the business, it is highly imperative for the best financing mix to be used in order to ensure excess of current assets over current liabilities (Osuna, Ailemen, Osabohien & Eriki, 2017). Thus, it ensures the availability of working capital to a firm through the three major financing sources, namely; internal source, debt financing and equity financing respectively (Osuna, Ailemen, Osabohien & Eriki, 2017).

Empirical Review

Otekunrin, Nwanji, Fagboro, Olowookere & Adenike (2021), determined the impact of working



capital management on the profitability of quoted agricultural and agro-allied companies in Nigeria. Working capital management was measured using trade receivables collection period, trade payables payment period, inventory turnover period and cash conversion cycle, while profit before interest and tax measured profitability. Descriptive research design and regression analysis were employed. The study found that working capital management and profitability are related to the agriculture and agro-allied sector in Nigeria. It was discovered that trade receivables collection period and profitability were negatively related, while trade payables payment period, inventory turnover period and cash conversion cycle were positively related to profitability. It recommended that the management of firms should take effective and efficient decisions in managing the company's working capital in order to guarantee the maximization of the firms' profitability, value and shareholders' wealth.

Olaoye, Adekanbi & Oluwadare (2019), ascertained working capital management and firms' profitability in Nigeria. It used panel data research design, with different regression estimators to analyse the relationship. The variables used include return on assets, cash collection period, cash payment period, current ratio and inventory period. The study found that cash collection period and cash payment period had a negative impact on return on assets, while current ratio and inventory period had a positive impact on return on assets. It therefore concluded that working capital management affected firm's profitability in Nigeria. The study recommended that firms should maintain a shorter collection period and that payment to creditors should not be prolonged so as to enjoy cash discount. It also recommended that firms should be proactive in the management of raw materials so as to avoid idle resources that might negatively impact their financial performance.

Oladimeji & Aladejebi (2020), examined the impact of working capital management on the profitability of SMEs in Nigeria. The study adopted the quantitative research method using relevant secondary data from the annual financial reports of selected SMEs. Regression analysis was used to determine if the working capital variables had a significant effect on the profitability of SMEs' profitability. The variables used were Cash Conversion Cycle and Return on assets. It was discovered that there was no relationship between working capital management and profitability of SMEs in Nigeria. The study recommended that the policies of the government should be geared towards enhancing the growth of SMEs and those SMEs should adopt prudent working capital policies and strategic measures aimed at improving working capital structure and ultimately, its profitability.

Sulaiman, Abdu & Khadijah (2018), explored the effect of working capital management on the profitability of listed Consumer Goods firms in Nigeria. The independent variables used were Current Ratio, Trade Receivable Period, Trade Payable Period and Inventory Conversion Period, while Return on Assets and Returns on Equity were used as the dependent variable. Company Size and Company growth were the control variables for the study. The study used Panel data technique and Regression



analysis method. It revealed that Trade Receivable Period had a significant effect on the Returns on Assets, while Current ratio, Trade Payable and Inventory Conversion Period had an insignificant effect on Returns on Assets. It recommended that financial managers should set shorter credit period, negotiate with suppliers for an increase in payment period and monitor inventory levels so as to reduce the number of day inventories are held before they are sold.

Ikpefan, Osuma, Ahire, Evbuomwan, Kazeem & Chimezie (2021), investigated working capital management and the performance of deposit money banks in Nigeria. It utilized Capital Adequacy Ratio, Liquidity Ratio and Loan-to-Deposit Ratio as independent variables. The dependent variable used was Return on Assets. The study utilized a regression analysis in which panel data was used based on the data retrieved from the banks' financial statements. They discovered that the primary reason banks held highly liquid assets was to guard against rise in demand or unforeseen circumstances as well as to finance working capital operations based on the theory of liquid assets. The study recommended that direct policies were to be implemented to ensure that high-volume cash transactions were dramatically reduced.

Abdul-Khadir Musa, Abdul & Aliyu (2021), determined the effect of working capital management on the financial performance of Conglomerate firms in Nigeria. Structural Equation Modeling (SEM) was used for the analysis. The study adopted Account Receivable Period (ARP), Account Payable Period (APP), Inventory Turnover Period (ITP) and Cash Conversion Cycle (CCC) as proxies for working capital management, while return on equity (ROE), return on assets (ROA) and return on investments (ROI) were adopted as proxies for financial performance. It showed that Account Payable Period and Cash Conversion Cycle had a positive effect on financial performance while Account Receivable Period and Inventory Turnover Period have negative effect on financial performance. The general results showed that working capital management had a significant effect on financial performance (ROA, ROE and ROI) of quoted conglomerate firms in Nigeria. It recommended that the companies should ensure quick collection of account receivables; increase account payable period; formulate and implement effective inventory management strategies so as to minimize inventory turnover period. Also, the management should ensure optimum investments in working capital by reducing the length of time from the actual outlay of cash for purchases until the collection of receivables resulting from the sale of goods or services.

Osuma, Ailemen, Osabohien & Eriki (2017), examined working capital management and profitability of selected deposit money banks in Nigeria using the pooled ordinary least squares (OLS) method of analysis. The study used variables such as net interest income, current ratio, profit after tax, monetary policy rate, return on equity and return on assets. Findings revealed that working capital management had a significant negative impact on the performance of selected banks and therefore, recommended



a periodic review of the minimum capital base of the banking sector in order to cushion the effects of inflation and inculcate the time value of money.

Makoni & Mabandla (2019), studied the relationship between working capital management and financial performance of listed food and beverage companies in South Africa. The independent variables used included; Inventory Conversion Period (ICP), Accounts Collection Period (ACP), Accounts Payment Period (APP) and Cash Conversion Cycle (CCC). Return on Assets was adopted as the measure of financial performance and dependent variable. Size of the Firm (proxied by total assets), Current Ratio (CAR) and GDP were adopted as the control variables. It made use of panel data methodology. Using various econometric techniques, it was discovered that a positive relationship existed between average payment period and profitability as well as between inventory collection period and profitability. However, a negative relationship existed between average collection period and profitability. The study recommended that financial managers of firms should adopt aggressive working capital management policies so as to create shareholders' wealth through enhancing the financial performance of the firm.

Nastiti, Atahau & Supramono (2019), examined the effect of working capital management on the profitability of listed manufacturing firms in Indonesia and the effect of this relationship on the sustainable growth of these firms. The study used the Sustainable Growth Rate (SGR) to measure sustainable growth which was the dependent variable. Cash Conversion Cycle was adopted as the proxy for working capital management. Return on assets was used to measure profitability. The control variables were Firm Size (FRSIZE), Sales Growth (SALESGR), Leverage (LEV) and Total Asset Turnover (TATO). It utilized panel data regression with fixed effect estimation model to analyse the data. It was discovered that working capital significantly affected firms' profitability. Also, working capital management did not exhibit a significant direct influence on sustainable growth but a significant indirect influence through firms' profitability. It therefore recommended that firms manage their working capital in order to increase their profits and eventually achieve sustainable growth.

3. METHODOLOGY

This study employed the firm-level approach based on an *expo-facto* and non-experimental research design. The study is longitudinal, covering a period of ten (10) years. That is, from 2012 to 2021 employing conglomerate firms listed on the floor of the Nigerian Exchange Group. However, as of 31st December 2021, the total number of listed conglomerate firms on the floor of the Nigerian stock exchange were five (5). This study employed secondary data which were sourced from relevant Nigerian Stock Exchange Fact Books and related companies' annual financial reports for the periods covered. First, the study made use of Spearman Rank correlation analysis and also employed Panel Least Square (POLS) regression analyses. The study used the assumption of normality of residua,

using Shapiro Wiki test. Second, is the assumption of linearity of model parameters (model specification error). Also, the assumption of homoscedasticity was conducted using *Breusch-Pagan-Godfrey* test for heteroscedasticity. Moreso, test for multicollinearity was carried out using variance inflation factor (VIF) technique as recommended by Gujarati (2003). We also carried out a test for fixed and random effects. The results revealed the presence of random and fixed effect and Hausman specification test was employed to decipher the most appropriate model which in this study is the random effect model.

Model Specification

In this study, we specify our model to capture the effect of working capital management on the profitability of listed non-finance firms in Nigeria. Thus, the study adapted the model specified by Olaoye, Akintola, & Ogundipe (2019) which was modified for the purpose of establishing the relationship between the dependent variables and the linear combinations of several determining variables captured in the study. Succinctly, the econometric form of our model is expressed as:

$$RETA_{it} = \beta_0 + \beta_1 INVD_{it} + \beta_2 CACC_{it} + \beta_4 QUIK_{it} + \beta_5 CUTR_{it} + \mu_{it}$$

Where:

- RETA = Return on Asset
- INVD = Inventory days
- CUTR = Current ratio
- CACC = Cash conversion cycle
- QUIK = Quick Ratio
- β_0 = Constant
- $\beta_1 - \beta_6$ = Slope Coefficient
- μ_{it} = Stochastic disturbance
- i = ith firm
- t = time period

Operationalization/ Measurement of Variables and Apriori Expectation

S/N	Variables	Notation and Sources	Apriori Sign
Dependent Variable			
1	Return on Asset	Return on asset in percentage is computed as profit after tax divided Total asset	
Independent Variables			
2	Inventory days	Inventory Days in days is computed as inventory divided by cost of goods sold multiply by 1/365.	+
3	Current Ratio	Current ratios in numbers is computed as current asset divided by current liabilities	+
4	Cash Conversion cycle	Cash conversion cycle in days is computed as inventory Days + Trade receivable Days - Trade Payable Days	+
5	Quick Ratio	Quick ratios panel data in numbers are computed as current asset minus inventories divided by current liabilities	+

Source: *Author’s Compilation (2021)*

The individual statistical significance test (T-test) and overall statistical significance test (F-test) will also be used. Importantly, the goodness of fit of the model will be ascertained using the coefficient of determination (R²). Our panel analysis will be done after descriptive statistics, normality test, correlation analysis, variance inflation test (test for multicollinearity) and Test for Heteroscedasticity. All analyses will be conducted at 5% level of significance using STATA 14 software.

Data Analysis

In this section, we examine the descriptive statistics for both the explanatory and dependent variables of interest. Each variable is examined based on the mean, standard deviation, maximum and minimum. Table 1 below displays the descriptive statistics for the study.

Table 1: Descriptive Statistics

VARIABLES	MEAN	SD	MIN	MAX	NO OBS
RETA	-0.95	8.78	-41.14	9.54	50
CACC	50.01	197.30	-545.93	539.46	50
INVD	134.36	115.04	17.46	573.50	50
CUTR	1.10	0.43	0.12	2.03	50
QUIK	0.78	0.40	0.06	1.64	50

Source: Author (2022)

The mean of **firm profitability** as proxied by return on asset (RETA) was -0.95 with a standard deviation of 8.78. Return on asset had a minimum and maximum values of -41.14 and 9.54 respectively. In the case of the independent variable of cash conversion cycle (CACC), the table shows that it has a mean of 50.01 and a standard deviation of 197.30. On the minimum, cash conversion cycle was -545.93 with a maximum of 539.46. We also find that the mean of inventory period (INVD) was 134.36 with a standard deviation of 115.04. The minimum value of inventory period was 17.46 with a maximum of 573.50. Current ratio (CUTR) had a mean of 1.10 with a standard deviation of 0.43. Current ratio had a minimum of 0.12 and a maximum of 2.03. Finally, we also find that quick ratio had a mean of 0.78 with a standard deviation of 0.40. Quick ratio had a minimum of 0.06 and a maximum of 1.64.

Normality Test

One of the assumptions of ordinary least squares regression is that the data is normally distributed. In other words, the observations follow a normal (Gaussian) distribution. Therefore, it is assumed that the population from which the samples are collected is normally distributed. However, the null hypothesis is that "the sample distribution is normal." If the test is valid (significant), the distribution is non-normal. We follow the results of Mendes and Pala (2003), and they concluded that the Shapiro-Wilk test is the most powerful normality test. Therefore, we conducted a residual normality test, as shown in the table below:

Table 2: Normality Test

VARIABLES	NO OBS	W	V	Z	PROB< Z
RETA	50	0.73	12.72	5.42	0.00
CACC	50	0.97	1.48	0.83	0.20
INVD	50	0.80	9.40	4.78	0.00
CUTR	50	0.97	1.24	0.45	0.33
QUIK	50	0.93	3.28	2.53	0.01

Source: Author (2022)

From the table above, we find that the dependent variable of return on asset ($\text{prob}>z = 0.00000$) are not normally distributed since the probability of the z-statistics as reveal by the Shapiro-Wilk test is significant at 1% significant level. The same can be said of the independent variables of inventory period ($\text{prob}>z = 0.00000$), and quick ratio ($\text{prob}>z = 0.00570$). However, we find that the independent variable of cash conversion cycle ($\text{prob}>z = 0.20353$) and current ratio ($\text{prob}>z = 0.32610$) are normally distributed since the probability of the z-statistics as reveal by the Shapiro-Wilk test is insignificant at 1% or 5% significant level. However, we proceed with the ordinary least square regression but carefully interpreting the probability statistics against the t-statistics.

Table 3: Correlation analysis

VARIABLES	RETA	CACC	INVD	CUTR	QUIK
RETA	1.00				
CACC	-0.17	1.00			
INVD	0.09	0.70	1.00		
CUTR	0.28	-0.02	0.17	1.00	
QUIK	0.14	-0.40	-0.28	0.69	1.00

Author's computation (2022)

In the case of the correlation between working capital management proxies and firm profitability, the above results show that there exists a negative and weak association between firm profitability and cash conversion cycle (-0.17). There exists a **positive and weak** association between firm profitability and inventory period (0.09). There exists a **positive and moderate** association between firm profitability and current ratio (0.28). There exists a **positive and weak** association between firm profitability and quick ratio (0.14). However, to test our hypotheses a regression results will be needed since correlation test does not capture cause-effect relationship.

Regression Analyses

However, to examine the cause-effect relationships between the dependent variables and independent variables as well as to test the formulated hypotheses, we used a panel regression analysis since the data had both time series (2012 to 2021) and cross-sectional properties (listed conglomerate firms). The panel data regression and an OLS pooled results obtained is presented and discussed below.

Table 4: Regression Result

	Model 1		
	RETA Model (Pooled OLS)	RETA Model (FIXED Effect)	RETA Model (RANDOM Effect)
C	-9.13 {0.011} **	-9.82 {0.042} **	-9.13 {0.008} **
CACC	-0.03 {0.003} **	-0.01 {0.386}	-0.03 {0.002} **
INVD	0.02 {0.268}	-0.00 {0.928}	0.02 {0.262}
CUTR	15.55 {0.004} **	26.24 {0.004} **	15.55 {0.002} **
QUIK	-12.45 {0.041} **	-24.92 {0.010} **	-12.45 {0.035} **
F-statistics/Wald Statistics	4.34 (0.01) **	2.93 (0.03) **	17.38 (0.01) **
R- Squared	0.28	0.22	0.15
VIF Test	3.27		
Heteroscedasticity Test	28.30 (0.00) ***		
Hausman Test	8.05 (0.0899)		

Note: (1) bracket {} are p-values

(2) **, ***, implies statistical significance at 5% and 1% levels respectively

In the table above, we observed from the OLS pooled regression that the R-squared value of 0.28 shows that about 28% of the systematic variations in firm profitability proxied by return on asset in the pooled conglomerate firms over the period of interest was jointly explained by the independent variables in the model. The unexplained part of firm profitability can be attributed to exclusion of other independent variables that can impact on firm profitability but were captured in the error term. The F-statistic value of 4.34 and the associated P-value of 0.0047 shows that the OLS regression of both model on the overall is statistically significant at 5% level, this means that the regression models



is valid and can be used for statistical inference.

Multicollinearity Test

Different statistical instruments were used to test for the degree of Multicollinearity. The variance inflation (VIF) was used for examining this. If the variance inflation result is above 10 then it calls for concern. The table above also shows a mean VIF value of 3.27 which is within the benchmark value of 10, this indicates the absence of multicollinearity in the models, and this means no independent variable should be dropped from the models.

Variable	VIF	1/VIF
quik	4.57	0.218796
cutr	3.84	0.260154
cacc	2.59	0.385465
invd	2.09	0.478764
Mean VIF	3.27	

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of reta

chi2(1) = 28.30

Prob > chi2 = 0.0000

Heteroskedasticity Test

Heteroscedasticity refers to nonexistence of homoscedasticity and it is a constant variance assumption of OLS estimators. When Breusch-pagan-Godfrey test is carried out, the decision rule therefore, is that there is no heteroscedasticity if the F- statistics and the observed R-square values are in that order greater than the critical values at 5% level of significance. Conversely, if the critical values at 5% level of significance is greater than the F- statistics and the observed R-square values, our conclusion would be that there is homoscedasticity. Specifically, [the assumption of homoscedasticity states that if the errors are heteroscedastic \(i.e. Ordinary Least Square \(OLS\) assumption is violated\), then it will be difficult to trust the standard errors of the OLS estimates. Hence, the confidence intervals will be either too narrow or too wide. The presence of heteroscedasticity tends to produce p-values that are smaller than they should be due to increased variance of the coefficient estimates which unfortunately the OLS estimator will not detect this increase. We employ Breusch-Pagan Godfrey test to ascertain the](#)



presence or absence of heteroscedasticity in the regression result. From the table above, it can be observed that the OLS results had heteroscedasticity problems in the model since its probability value was significant at 1% [28.30 (0.0000)]. The presence of heteroscedasticity in models clearly shows that our sampled firms are not homogeneous. This therefore means that a robust or panel regression approach will be needed to capture the impact of each firm heteroscedasticity on the results. In this study we adopted the panel regression method using both fixed and random effect models.

Fixed and Random Effect Regression

As noted by Ajibolade and Sankay (2013), the fixed-effects model which is the main technique for analysis of panel data is used when it becomes important to control for omitted variables that differ between cases but are constant over time. It allows the use of the changes in the variables over time to estimate the effects of the predictor (independent) variables on the outcome (dependent) variable. On the other hand, the random-effects model is used when there are reasons to believe that some omitted variables may be constant over time but vary between cases, and others may be fixed between cases but vary over time. Specifically, in this study, the F-statistic and Wald-statistic value of 2.93 (0.03) and 17.38 (0.0016) for fixed and random effect regression respectively shows that both models are valid for drawing inference since they are both statistically significant at 5% respectively. In the case of the coefficient of determination (R-squared), it is observed that 22% and 15% systematic variations in firm profitability proxied by return on asset is explained jointly by the independent variables in the models respectively.

Hausman Specification Test

In selecting from the two panel regression estimation results, the Hausman test was conducted, and the test is based on the null hypothesis that the random effect model is preferred to the fixed effect model. Specifically, a look at the p-value of the Hausman test (0.0899), implies that we should accept the null hypothesis and reject the alternative hypothesis at above 5% or 1% level of significance. This implies that we should adopt the random effect panel regression results in drawing our conclusion and recommendations. This also implies that the random effect results tend to be more appealing statistically when compared to the fixed effect. Following the above, the discussion of the random effect results became imperative in testing our hypotheses. The below is a specific analysis for each of the independent variables using the random effect regression.

Fixed-effects (within) regression **Number of obs = 50**
Group variable: croid **Number of groups = 5**

R-sq: **Obs per group:**
within = 0.2221 **min = 10**



between = 0.0285 avg = 10.0
overall = 0.1025 max = 10

F(4,41) = 2.93
corr(u_i, Xb) = -0.5499 Prob > F = 0.0322

reta | Coef. Std. Err. t P>|t| [95% Conf. Interval]

cacc | -.0097122 .011074 -0.88 0.386 -.0320765 .0126522
invd | -.0016959 .0187074 -0.09 0.928 -.0394763 .0360844
cutr | 26.24229 8.646487 3.04 0.004 8.780354 43.70422
quik | -24.92245 9.227145 -2.70 0.010 -43.55705 -6.287855
_cons | -9.818533 4.681805 -2.10 0.042 -19.27363 -.3634374

sigma_u | 6.2454108
sigma_e | 7.4960772
rho | .40973382 (fraction of variance due to u_i)

F test that all u_i=0: F(4, 41) = 1.88 Prob > F = 0.1322

Random-effects GLS regression Number of obs = 50
Group variable: croid Number of groups = 5

R-sq: Obs per group:
within = 0.1529 min = 10
between = 0.9051 avg = 10.0
overall = 0.2786 max = 10

Wald chi2(4) = 17.38
corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0016

reta | Coef. Std. Err. z P>|z| [95% Conf. Interval]



cacc	-.0280741	.0090781	-3.09	0.002	-.0458668	-.0102814
invd	.0156737	.0139701	1.12	0.262	-.0117072	.0430546
cutr	15.54799	5.106993	3.04	0.002	5.53847	25.55752
quik	-12.44889	5.906298	-2.11	0.035	-24.02502	-.8727585
_cons	-9.130201	3.4307	-2.66	0.008	-15.85425	-2.406152

sigma_u	0
sigma_e	7.4960772
rho	0 (fraction of variance due to u_i)

---- Coefficients ----

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.

cacc	-.0097122	-.0280741	.018362	.0063421
invd	-.0016959	.0156737	-.0173696	.012442
cutr	26.24229	15.54799	10.6943	6.977131
quik	-24.92245	-12.44889	-12.47356	7.089136

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{chi2}(4) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 8.05$$

$$\text{Prob}>\text{chi2} = 0.0899$$

Test of Hypotheses

H01: Cash conversion cycle has no significant effect on profitability of listed conglomerate firms in Nigeria

Cash conversion cycle (Random effect = -0.03 (0.002)) as an independent variable appears to have a negative significant influence on firm profitability. This therefore means we should reject the null



hypothesis (H0₁: Cash conversion cycle has no significant effect on firm profitability of listed conglomerate firms in Nigeria). This implies that an increase in cash conversion cycle of conglomerate firms in Nigeria significantly decreases profitability of such firms.

H0₂: Inventory period has no significant effect on profitability of listed conglomerate firms in Nigeria

Inventory period (Random effect = 0.02 (0.262)) as an independent variable appears to have a positive insignificant influence on firm profitability. This therefore means we should accept the null hypothesis {H0₂: Inventory period has no significant effect on firm profitability of listed conglomerate firms in Nigeria}. This result agrees with prior empirical results which show that inventory days has no significant effect on firm profitability.

H0₃: Current ratio has no significant effect on profitability of listed conglomerate firms in Nigeria

Current ratio (Random effect = 15.55 (0.002)) as an independent variable appears to have a positive significant influence on firm profitability. This therefore means we should reject the null hypothesis {H0₃: Current ratio has no significant effect on firm profitability of listed conglomerate firms in Nigeria}. This implies that an increase in current ratio of conglomerate firms in Nigeria significantly improves profitability of such firms.

H0₄: Quick ratio has no significant effect on the profitability of listed conglomerate firms in Nigeria

Quick ratio (Random effect = -12.45 (0.035)) as an independent variable appears to have a negative significant influence on firm profitability. This therefore means we should reject the null hypothesis {H0₄: Quick ratio has no significant effect on profitability of listed conglomerate firms in Nigeria}.

DISCUSSION OF FINDINGS

This study provides evidence on the effect of working capital management on firm profitability of listed conglomerate firms in Nigeria. Specifically, we document that only the variable of inventory period insignificantly impacts firm profitability. The result shows that an increase in inventory period of conglomerate firms in Nigeria insignificantly improves firm profitability of such firms. This result agrees with prior empirical results which show that inventory days has an insignificant positive effect on firm profitability (Otekunrin, Nwanji, Fagboro, Olowookere & Adenike, 2021). Most specifically, the results did not tally with previous findings of various researchers that report that inventory period has a significant positive impact on firm profitability (Makoni & Mabandla, 2019). The results did not also tally with previous findings of various researchers that report that inventory period has a significant negative impact on firm profitability (Olaoye, Akintola, & Ogundipe, 2019).



However, an increase in cash conversion cycle of conglomerate firms in Nigeria significantly decreases firm profitability of such firms. This result agrees with prior empirical results which show that cash conversion cycle has a significant negative effect on firm profitability (Olaoye, Adekanbi & Oluwadare 2019; Most specifically, the results did not tally with previous findings of various researchers that report that cash conversion cycle has a significant positive impact on firm profitability (Otekunrin, Nwanji, Fagboro, Oleworookere & Adenike, 2021; Abdul-Khadir Musa, Abdul & Aliyu, 2021).

For the variable of current ratio, we find that an increase in current ratio of conglomerate firms in Nigeria significantly improves firm profitability of such firms. This result agrees with prior empirical results which show that current ratio has a significant positive effect on firm profitability (Olaoye, Akintola, & Ogundipe, 2019). Most specifically, the results did not tally with previous findings of various researchers that report that current ratio has a significant negative impact on firm profitability (Osuma, Ailemen, Osabohien & Eriki, 2017). The results did not also tally with previous findings of various researchers that report that current ratio has an insignificant negative impact on firm profitability (Sulaiman, Abdu & Khadijah, 2018).

The study also document evidence that an increase in quick ratio of conglomerate firms in Nigeria significantly decreases firm profitability of such firms. This result agrees with prior empirical results which show that quick ratio has a significant negative effect on firm profitability (Abiodun, Olademeji & Aladejebi, 2020). Most specifically, the results did not tally with previous findings of various researchers that report that quick ratio has a significant positive impact on firm profitability. The results did not also tally with previous findings of various researchers that report that quick ratio has an insignificant negative impact on firm profitability (Sulaiman, Abdu & Khadijah, 2018); and Olaoye, Akintola, & Ogundipe (2019).

CONCLUSION AND RECOMMENDATION

A rapid increase in the cost of working capital investments relative to the benefits of holding larger inventories or allowing for trade credit to customers lowers the firm's profitability levels. Recently, a few authors argued that there is a non-linear interrelation between investment in working capital and firm profitability. The non-linear relationship supposes that investments in working capital have a positive influence on corporate profitability until a certain point, called the optimum level of working capital (or the break-even point). Above the optimum, working capital may become a negative determinant of firm performance. An increase in working capital may result in the opportunity cost of cash tied-up in the unproductive assets such as inventory and accounts receivable. This will result in lower profitability because of lower risk. While firms adopting aggressive approach will gain higher profitability that results from a higher risk and lower working capital. This approach would positively affect the profitability of the firm by reducing the proportion of its total assets in the form of net current



assets. The results show that an increase in inventory period of conglomerate firms in Nigeria insignificantly improves firm profitability of such firms.

Based on the findings, this study carefully recommends that Management of these conglomerates companies should also advocate for policies that will enhance swift conversion of inventory to cash to improve firm profitability. This could range from the provision of cash discount to customer to encourage purchase.

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