



Working Capital Management and Firms' Profitability (A Study of Selected Consumer Goods Manufacturing Companies in Nigeria)

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Abstract: The importance of working capital management cannot be overstated since ineffectiveness leads to corporate bankruptcies all over the world. The purpose of the research was to see how working capital management affects the profitability of companies in Nigeria's consumer goods manufacturing sector. For a period of six years, relevant secondary data was collected from published annual reports of the 16 publicly traded firms under investigation between 2014-2019. The analysis approach used in this study was the panel least square regression model, which was combined with the Pearson's correlation model. The findings of the research demonstrate that the cash conversion cycle (CCC) has no effect on profitability. The study also discovered that inventory conversion cycle (ICC) and profitability have a negative and significant association, whereas average payment period (APP) and profitability have a negative and insignificant connection. Managers should pay close attention to the working capital components, as shown by this study, to eliminate inefficiency and guarantee optimal levels.

Keywords: working capital management; corporate bankruptcy; profitability of companies

JEL Classification: F38

Contribution to Knowledge

In Nigeria, there is still work to be done in terms of working capital. Profitability will ostensibly increase as Nigerian firms grasp the necessity of efficient working capital management, and the analysis results will improve as other researchers carry out the study. This study's endeavour has added to the body of information on this

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subject as a different approach to the measurement of profitability was used and, it has therefore enriched the literature.

1. Introduction

1.1. Background to the Study

The world is a global village and, it is moving at a fast and competitive pace. If a company has everything set up and working for them without proper management of its assets, all its efforts are in vain. Companies with the right amount of working capital are usually more profitable and more likely to attract investors. Efficient working capital management facilitates the proper running of operations and, it additionally helps to increase the company's earnings and profit. The amount of working capital a company requires is usually defined by the industry it works in, the number of credit days creditors allow, the number of credit days offered to debtors, and the amount of stock it must keep on hand (Kosgey & Njiru, 2016).

Working capital management is one of the most critical aspects of financial decisions and, it can be seen as decisions that involve working capital and short-term financing. Working capital management is an essential aspect of financial management because it ensures a company is liquid enough to meet short-term obligations and unforeseen contingencies (Uguru, Chukwu, & Elom, 2018). It is also vital for business growth as it helps in maximising the wealth of shareholders. Proper working capital management aids in improving the firm's operating performance and in achieving short-term liquidity (Wassie, 2021).

1.2. Statement of the Research Problem

WCM is an essential aspect of financial management (Uguru, Chukwu, & Elom, 2018) and, it is a vital topic that cannot be overemphasized. The success and longevity of a business rightly stand on proper planning and management. The main objective of a firm is to maximize its wealth, therefore, leading to the conclusion that working capital management and liquidity are key factors of firms' profitability (Raheman & Nasr, 2007). Due to the financial crisis happening in the world today, managers of organizations have been forced to wake up and realize the relevance and necessity of effective and efficient resource management, particularly short-term investments, as not much attention is invested in them, unlike long term investments (Jakpar, et al., 2017).

Working capital mismanagement has been one of the major causes of small business failures in Nigeria (Kosgey & Njiru, 2016). A large number of business failures in the past had been blamed on the manager's inability to plan and execute those plans

effectively. Dwommor (2017) noted that poor working capital management is the primary cause of business failure.

Interestingly, such situations are still rising today. It creates more inadequacies in the proper operations of a business, such as high bad debt, mismanagement of funds and reduction of liquidity on a large scale.

The need to protect the interest of stakeholders cannot be overemphasized. There comes the reason for further enlightenment of managers on proper care of resources. More factors and knowledge on financial management are not limited and keep rising as more problems are discovered.

Also, the selected companies being used to conduct this research are some of the nation's biggest companies, but more research needs to be carried out on them regarding this topic.

1.3. Research Objectives

The general objective of this study is to determine the effect of working capital management on the profitability of consumer goods manufacturing companies in Nigeria. However, the specific objectives of this study are as follows;

- i) To ascertain the extent to which cash conversion cycle affects net profit after tax.
- ii) To investigate the impact of average collection period on net profit after tax.
- iii) To determine the impact of inventory conversion cycle on net profit after tax.
- iv) To analyze the effect of average payment period on net profit after tax.

1.4. Research Hypothesis

H₀: There is no significant impact of cash conversion cycle on profit after tax.

H₀: There is no significant impact of inventory conversion cycle on profit after tax.

H₀: There is no significant effect of average payment period on profit after tax.

1.5. Scope of the Study

The study covers sixteen (16) selected consumer goods manufacturing companies which represent the manufacturing sector in the Nigerian economy. This segment of manufacturing companies was selected because it is patronized on a daily and it is assumed by the market that it is profitable. This research covers a period of six (6)

years from 2014 to 2019. This period was chosen to present current and updated data ready for use.

2. Literature Review

2.1. Conceptual Framework

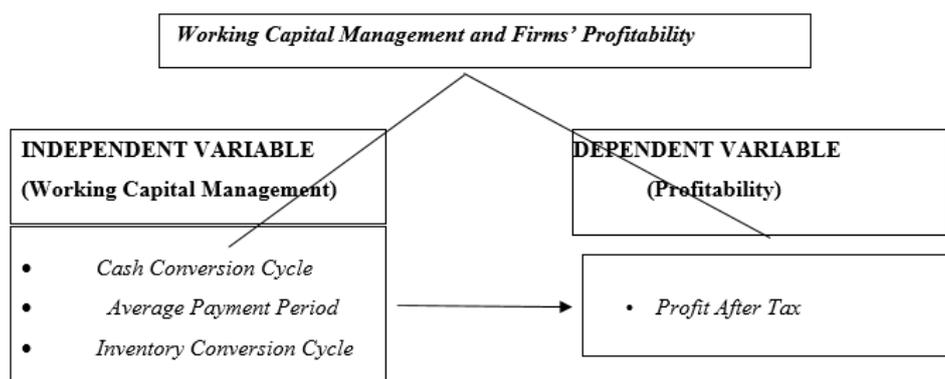


Figure 1. Operationalization of Variables

Source: Researcher's Design

2.1.1. Working Capital

Various authors have defined the phrase “working capital” several times. The term working capital was coined by an old American peddler who would load his wagon with goods and then rush out to exchange them. The goods were referred to as “working capital” since they were what he had sold or “turned over” to make money. According to Mbella (2018), Working capital is utilized to measure a company’s potency as well as its short-term economic health. It meets the short-term financial needs of a company (Song, Yang & Yu, 2020).

2.1.2. The Concept of Working Capital

There are two concepts of working capital;

- i. Gross Working Capital
- ii. Net Working Capital

2.1.2.1. Gross Working Capital

Gross working capital refers to the entire amount of cash available to fund current assets. Cash, inventories, debts, and any other short-term assets that can be easily converted to cash within a year are considered current assets. Debt financing might have been used to obtain current assets, so gross working capital does not reflect a company’s true financial condition. So, as current assets are increasing, current

liabilities are on the increase as well. Gross capital is indicated as total current assets.

2.1.2.2. Net Working Capital

The difference between current assets and current liabilities is known as net working capital. Working capital is the term used to describe this situation. Bills payable, accumulated expenses, creditors, and any other short-term liabilities due within a year are all examples of current liabilities. When the value of current assets rises with little or no increase in current liabilities, net working capital rises. Working capital that is positive shows that the firm can fulfil its short-term obligations, but a negative working capital denotes that short-term obligation would not be met and could eventually affect long-term obligations.

2.1.3. Types of Working Capital

- i. Temporary Working Capital
- ii. Permanent Working Capital

2.1.3.1. Temporary Working Capital

This is the amount of capital used to finance and support changes in production. It is the additional capital needed to cover demand for seasonal products and other unpredictable occurrences. Temporary working capital can be financed using both short and long term funds and, its form is constantly changing. It is also referred to as fluctuating or variable working capital. It is defined as the difference between net working capital and permanent working capital.

2.1.3.2 Permanent Working Capital

This is also known as fixed working capital. This is the amount that must remain invested in the business to facilitate its daily running and operations. It is the minimum amount that must remain in the business despite any fluctuations. It is financed through long-term funds.

2.1.4. Inventory Management

Inventory management refers to the operations involved in generating and controlling inventory levels, whether raw materials, semi-finished materials, or finished goods, to ensure that appropriate supplies are constantly accessible and that the cost of overstocking or understocking is maintained to a minimum (Anichebe & Agu, 2013). Inventory control is a vital component of working capital management. Pandey (2008) noted that in inventory management, a company must continually balance two competing needs: maintaining a large inventory size for efficient and smooth production and sales operations, and maintaining a low inventory level to optimize profits. By reducing inventory levels, managers can produce value for shareholders. Maintaining an insufficient level of inventory, on the other hand, is risky since ordering expenses are too high. It could potentially result in a stockout.

Efficient inventory management allows a firm to create more sales, directly impacting the firms' performance and profitability.

2.1.5. Approaches to Working Capital Management

2.1.5.1. The Conservative Approach

This approach is known to be a risk-free strategy of financing. Under this approach, long-term debts are used to fund permanent assets and a portion of temporary assets, whereas short-term debts are only utilized in emergency situations. Long-term finance, in other words, is for fixed assets, permanent current assets, and a portion of temporary current assets, but short-term financing is just for addressing emergency needs. This causes liquidity to be high and profitability to be low because these funds are not being adequately utilized. The risk associated with this approach is very low because long-term funds are used to finance almost all the assets, and short-term funds are used for contingencies.

2.1.5.2. The Matching Approach

This is a working capital strategy in which short-term needs are fulfilled and funded with short-term debts or funds, while long-term needs are met and funded with long-term debts or finances. Long-term debts are used to fund fixed assets and permanent working capital, whereas short-term debts are used to fund temporary working capital. This approach is also known as the hedging approach. Because of the approach with which working capital is financed, liquidity, profitability, and the risk associated with it are neither high nor low but balanced.

2.1.5.3. The Aggressive Approach

In this approach, short-term financing is used for temporary assets and a part of permanent assets. Long-term funding is for meeting fixed assets and the remaining portion of permanent assets. This approach aims to put as much money into production to speed up production time and increase sales and revenue. Unlike the conservative approach, there is little or no cash in hand; therefore, liquidity is low but profitability is high. The risk associated with this approach is high because short-term funds are used to finance permanent current assets and, high risk leads to increased profitability. Singh (2017) verified that working capital management and profitability are interconnected, which shows that aggressive working capital investment leads to greater profitability.

2.1.6. Profitability

Every company's principal goal is to be profitable. The business will not survive in the long run if it is not profitable. Otekunrin, et al (2021) noted that profit maximization is the organization's driving factor. Every company's skill is its profitability (Agha, 2014). As a result, assessing current and previous profitability and forecasting future profitability is essential. One of the most crucial objectives

for business managers is to increase profitability. Managers are continuously looking for methods to boost profitability by changing the business. Ratios such as Return on Equity, Return on Assets and Net Interest Margin are used to calculate and measure profitability. The ratio of net revenue after taxes to total equity capital is known as return on equity (ROE). It is the rate of return on investment earned by the organization's stockholders. Return on assets is another key statistic for assessing a company's profitability (ROA). It is a percentage of total assets divided by total revenue. It evaluates a company's ability to generate money via the use of its available assets.

2.2. Theoretical Framework

2.2.1. Trade-off Theory

This theory was initiated by Modigliani and Miller (1958), and it says that companies should borrow funds to the point where the tax benefit from debt is balanced with the bankruptcy cost. This means that debt financing should be employed. The amount borrowed should increase to a level where the tax benefit, in whichever form, is either more significant than or equals to the cost that can be occurred through bankruptcy.

2.2.2. Miller-Orr Cash Management Model

This model was developed by Merton Miller and Daniel Orr in the year 1966. This model's approach implies that the manager's underlying goal is to retain enough cash on hand to meet daily transaction demand while reducing the opportunity cost of not retaining a return-generating asset. Because the model assumes that the daily net cash flow distribution is roughly regular, the distribution of net cash flow predicted on a daily basis is either much lower or much greater than the typical distribution amount. The Miller-Orr model is employed to manage cash balances by imposing upper and lower limits of the regular cash level. When the cash level hits the defined upper limit, it indicates that there is excess cash available, initiating a buy action of short-term marketable securities to restore the cash level to its optimal level. When the cash level falls below the predetermined lower limit, it indicates a cash shortage, initiating a sell action in short-term marketable securities to restore the cash level to its optimal level. This theory is important for working capital management in organizations because it demonstrates to managers the most effective way to manage working capital in order to achieve desired organizational objectives and goals, as well as strong performance of the firms under consideration.

2.2.3. Resource-Based Theory

This theory emerged in 1984 and was developed by Birger Wernerfelt, and it deals with strategic management. The analysis of a firm's resources with the goal of

achieving a sustained competitive edge over other firms in the industry is the central concept of this theory. In other words, when the resources of a firm are put into productive use with efficient and effective management, there is long-term viability. Resource based theory examines how those in control of resources use their power to achieve the goals of the organization and ensure that the company's existing assets are managed properly (Alvarez & Busenitz, 2001). Working Capital Management is an element of managing company resources, therefore, it is critical that resource-based theory be used in this study.

2.3. Empirical Framework

Gołaś (2020) examined the causative link between working capital management and profitability in milk processing companies. This research was done using micro-data for Polish dairy companies from 2008-2017 obtained from the Emerging Information Service (EMIS) database. The regression analysis was used. The research used Days Sales of Inventory (DSI), Days Sales Outstanding (DSO), Days Payable Outstanding (DPO), Cash Conversion Cycle (CCC) as the independent variables and Return on Assets (ROA) as the dependent variable. The findings revealed that DSI and CCC had a negative effect on ROA when extended. DSO and DPO had a positive and significant impact on ROA when extended, concluding that working capital management significantly impacted profitability.

Khalid, Saif, Gondal, & Sarfraz, (2018) aimed to work out the impact of working capital management on profitability. For six years, 2007-2012, data from chosen companies in the electrical equipment sector listed on the Karachi stock exchange were acquired. The acquired data was subjected to regression analysis. The tests of normality and linearity were also used. The research used Current Ratio, Debt to Equity Ratio, Operating Profit to Debt Ratio, Inventory Turnover Ratio to measure the independent variable and Return on Assets (ROA) as the dependent variable. The hypothesis was proved correct, and it concluded that working capital management has a significant positive impact on firms' profitability.

Phuong & Hung (2019) looked at the influence working capital management has on the profitability of firms in Vietnam. A sample of 5,295 firms listed on the Vietnam stock market was used, and the data gathered span from 2009-2018. The Generalized Least Squares (GLS) regression method was used. The study used Inventory Turnover, Average Receivables, Average Payment, Cash Conversion Cycle to measure the independent variables and Return on Assets to measure the dependent variable. It was discovered through the study that Inventory turnover, average receivables, average payment, and cash conversion cycle negatively impacted firms' profitability. Working capital should be optimized to increase firms' profitability and avoid a negative impact on the firm performance.

Oladimeji & Aladejebi (2020) examined the impact of working capital management on the profitability of SMEs in Nigeria. This study used secondary data extracted from the annual reports of the selected SMEs for a period of 5 years; 2014-2018. The regression analysis method was adopted. Account Collection Period, Inventory Conversion Period, Average Payment Period, Cash Conversion Cycle, Debt Ratio, Current Ratio, Quick Ratio were used to measure the independent variable and Return on Assets was used to measure the dependent variable. The analysis revealed that there is no relation between working capital management and SME's profitability. It also put forward that government strategies should be directed towards the enhancement of SMEs growth.

3. Research Methodology

3.1. Research Design

Research design is the structure determined by the researcher conducting a research for the aim of obtaining answers to the identified research questions. According to Akhtar (2016), a research design is seen as the framework which holds together all the elements of a research work. It is the plan developed stating the necessary techniques needed to obtain and analyze the needed information. The ex-post facto research design is used because of the nature of this study, which assesses the influence of working capital management on firms' profitability. This research design is used because the data needed for this study is already in existence, therefore, it cannot be manipulated (Lammers & Badia, 2005).

3.2. Population of the Study

Population refers to the sum total of all individuals who are eligible to be part of the study. It is the totality of the number of cases involved when carrying out a research. For the purpose of this research, all twenty (20) consumer products manufacturing companies registered on the Nigerian Stock Exchange (NSE) make up the population.

Table 2. List of Consumer Goods Manufacturing Companies Listed on the Nigerian Stock Exchange (NSE)

NO.	COMPANY	SECTOR
1.	Cadbury Nigeria PLC	Consumer Goods
2.	Dangote Sugar Refinery PLC	Consumer Goods
3.	Guinness Nigeria PLC	Consumer Goods
4.	Unilever Nigeria PLC	Consumer Goods
5.	Champion Brew. PLC	Consumer Goods
6.	DN Tyre & Rubber PLC	Consumer Goods
7.	Flour Mills Nig. PLC	Consumer Goods
8.	Golden Guinea Brew. PLC	Consumer Goods
9.	Honeywell Flour Mill PLC	Consumer Goods
10.	International Breweries PLC	Consumer Goods
11.	McNichols PLC	Consumer Goods
12.	Multi-Trex Integrated Foods PLC	Consumer Goods
13.	N Nig. Flour Mills PLC	Consumer Goods
14.	Nascon Allied Industries PLC	Consumer Goods
15.	Nestle Nigeria PLC	Consumer Goods
16.	Nigerian Enamelware PLC	Consumer Goods
17.	P Z Cussons Nigeria Plc	Consumer Goods
18.	Union Dicon Salt PLC	Consumer Goods
19.	Vitafoam PLC	Consumer Goods
20.	Nigerian Brew. PLC	Consumer Goods

Source: Nigerian Stock Exchange webpage 2021

3.3. Sample Size and Technique

In statistics, a sample is a group of individuals, items or objects selected from a population for measurement or experimentation. A sample size of sixteen (16) listed consumer goods manufacturing companies were selected using judgmental sampling technique, which is one of the types of the non-probabilistic sampling method. These companies were chosen on the basis of their large company size, economic relevance, profitability and data availability.

Table 3. List of Selected Consumer Goods Manufacturing Companies Listed on the Nigerian Stock Exchange (NSE)

NO.	COMPANY	SECTOR
1.	Cadbury Nigeria PLC	Consumer Goods
2.	Dangote Sugar Refinery PLC	Consumer Goods
3.	Guinness Nigeria PLC	Consumer Goods
4.	Unilever Nigeria PLC	Consumer Goods
5.	Champion Brew. PLC	Consumer Goods
6.	Flour Mills Nig. PLC	Consumer Goods
7.	Honeywell Flour Mill PLC	Consumer Goods
8.	International Breweries PLC	Consumer Goods
9.	McNichols PLC	Consumer Goods
10.	N Nig. Flour Mills PLC	Consumer Goods
11.	Nascon Allied Industries PLC	Consumer Goods
12.	Nestle Nigeria PLC	Consumer Goods
13.	Nigerian Enamelware PLC	Consumer Goods
14.	P Z Cussons Nigeria Plc	Consumer Goods
15.	Vitafoam PLC	Consumer Goods
16.	Nigerian Brew. PLC	Consumer Goods

Source: Researcher's selected companies

3.4. Source of Data

This study makes use of secondary data. The secondary data source includes data produced from an existing source used in this study. The annual reports and financial statements of the companies under examination were used in this study. Profit after tax, inventory, accounts receivable, cost of goods sold, sales, and accounts payable for the years 2014-2019 were all retrieved from the financial statements. Other sources include articles, journals, past research work and periodicals.

3.5. Method of Data Analysis

The statistical models adopted for this research are correlation analysis, ordinary least square regression method (OLS), fixed effect regression and random effect regression. The impact of working capital management on the profitability of consumer products manufacturing companies is examined. The data gathered from the annual reports of the selected consumer goods manufacturing companies for the period 2014-2019 will be analyzed using the EViews 10 statistical software in this study.

3.5.1. Model Specification

The study employs net profit after tax as the proxy for measuring profitability, while cash conversion cycle, inventory conversion cycle and average payment period are

used in measuring working capital management. The regression equation can be computed as;

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \mu_{it}$$

Where,

Y = Firms' profitability (dependent variable)

X = Working capital management (independent variable)

B = Coefficient

μ_{it} = Error term

The above model can be specifically applied to this study as;

$$PAT_{it} = \beta_0 + \beta_1 ICC_{it} + \beta_2 APP_{it} + \beta_3 CCC_{it} + \mu_{it}$$

Where;

PAT = Profit After Tax

ICC = Inventory Conversion Cycle

APP = Average Payment Period

CCC = Cash Conversion Cycle

β_0 = Coefficient of the parameter estimate

β_1 - β_3 = intercept

μ_{it} = Error term

t = year or period

i = firm

Table 4. Measurement of Variables

Variable	Variable Type	Unit of Measurement
Profitability	Dependent	Natural Logarithm of Profit After Tax (PAT)
Inventory Conversion Cycle (ICC)	Independent	$\frac{\text{Average Inventory}}{\text{COGS}} \times 365$
Average Payment Period (APP)	Independent	$\frac{\text{Average Account Payables}}{\text{COGS}} \times 365$
Cash Conversion Cycle (CCC)	Independent	ACP + ICC - APP

4. Data Presentation and Analysis

4.1. Preamble

The data acquired through secondary sources are analyzed in this chapter. The information was gathered from the annual reports of sixteen (16) consumer goods manufacturing companies publicly traded on the Nigerian Stock Exchange. To arrive at a decision concerning the stated hypothesis, descriptive statistics, correlation, and panel regression model will be employed.

4.2. Data Presentation

In this section, tables and figures present the data from the descriptive statistics, correlation, and regression analysis. The data highlights the working capital of consumer goods manufacturing companies spanning the period of 2014-2019.

4.2.1 Data Presentation for Working Capital Management and Firms' Profitability

Table 5. Measures and Variables

S/N	Measure	Variable
1	LOG_PAT	Natural Logarithm of Profit After Tax
2	APP	Average Payment Period
3	ICC	Inventory Conversion Cycle
4	CCC	Cash Conversion Cycle

Table 6. Descriptive Statistics

	LOG_PAT	APP	ICC	CCC
Mean	5.913093	185.0638	92.53964	30.87346
Median	9.170950	141.7765	71.19374	-1.462387
Maximum	10.65980	1501.104	382.9223	1084.512
Minimum	-10.44390	9.122827	7.015003	-917.2901
Std. Dev.	7.128011	212.4069	69.80563	213.8575
Skewness	-1.565284	4.026312	2.435892	0.780186
Sum	567.6569	17766.12	8883.805	2963.852
Sum Sq. Dev.	4826.812	4286086.	462918.5	4344828.
Observations	96	96	96	96

Source: Researcher's computation (EViews 10) 2021

Table 4.1.1 presents the descriptive statistics for all variables employed for the purpose of reaching the stated objectives of this study. It shows the mean, median,

maximum and minimum value, standard deviation, variance, skewness, and kurtosis of the variables. From the table, the mean for profit after tax (LOG_PAT) is 5.913093. It had a maximum value of 10.65980 and a minimum value of -10.44390. This means, on average, the profitability of Nigeria's selected consumer goods manufacturing firms is about 591.3093%. It skewed to the left with a value of -1.565284. It revealed a standard deviation value of 7.128011 which means that the value of LOG_PAT can deviate by 7.13 from the mean to both sides. Skewness represents data symmetry. The skewness value of -1.565284 indicates that the profitability of the selected firms is clustered to the left of the minimum value.

The variable of the average payment period (APP) reported a mean value of 185.0638, a maximum value of 1501.104 and a minimum value of 9.122827. This implies that the average payment period of the selected firms is 185 days. It also reported a standard deviation value of 212.4069 which means that the value of APP can deviate by 212.4 from the mean to both sides. The skewness value of 4.026312 indicates that the APP of the selected firms are concentrated towards the right of the maximum value, and it is right-tailed.

The inventory conversion cycle (ICC) shows a mean value of 92.53964, with its highest value as 382.9223 and minimum value as 7.015003. This means that it takes an average of 93 days to convert inventory into sales. The value of ICC can fluctuate by 69.81 from the mean on both sides, according to the standard deviation of 69.80563. The skewness value of 2.435892 indicates that the ICC of the selected firms is skewed to the right.

The cash conversion cycle (CCC) reported a mean of 30.87346. It indicated a minimum value of -917.2901 and a maximum value of 1084.512. This suggests that, on average, the conversion period of cash for the selected firms is 31 days. It is also expressly showing a deviation of 213.9. The skewness value of 0.780186 indicates that the CCC of the selected firms is normally distributed.

4.2. Correlation Analysis

Correlation analysis is a technique for determining the relationship between two variables. The Pearson Correlation result is shown in table 4.2 below;

Table 7. Correlation Analysis

Covariance Analysis: Ordinary

Date: 07/15/21 Time: 18:36

Sample: 2014 2019

Included observations: 96

Correlation				
t-Statistic				
Probability	LOG_PAT	ICC	APP	CCC
LOG_PAT	1.000000			

ICC	-0.466254	1.000000		
	-5.109926	-----		
	0.0000	-----		
APP	-0.348443	0.487977	1.000000	
	-3.604151	5.420264	-----	
	0.0005	0.0000	-----	
CCC	-0.207230	0.629066	0.110297	1.000000
	-2.053748	7.845886	1.075931	-----
	0.0428	0.0000	0.2847	-----

Source: Researcher's computation (EViews 10) 2021

Table 4.2 represents the correlation analysis which shows the association between the variables employed in this study. The table shows the correlation coefficients for the variables used in the study. From the table, the coefficient of correlation of the variables to itself is 1.0. This means that there exists a perfect correlation between the variable to itself. As seen in the table, (LOG_PAT) is negatively correlated to inventory conversion cycle (ICC), average payment period (APP), cash conversion cycle (CCC) with a value of -0.466254, -0.348443 and -0.207230, respectively. This implies that as profitability increases, ICC, APP and CCC decreases. The result also reported that ICC is positively correlated to APP and CCC, with their coefficients being 0.487977 and 0.629066, respectively. This indicates that as there is an increase in ICC, there is also a corresponding increase in APP and CCC. The table also shows a positive correlation between the average payment period (APP) and cash conversion cycle (CCC) with a value of 0.110297. This implies that APP has a very

weak correlation to CCC.

For the majority of the variables, the value of correlations between explanatory variables does not appear to suggest the presence of multicollinearity risks. The most substantial relationship existed between the inventory and cash conversion cycles with a correlation value of 0.629066. Profitability exhibited the weakest relationship with the inventory conversion cycle with a value of -0.466254.

4.3 Regression Analysis

Table 8. Regression Analysis (Panel OLS)

Dependent Variable: LOG_PAT				
Mthod: Panel Least Squares				
Date: 07/15/21 Time: 18:24				
Sample: 2014 2019				
Periods included: 6				
Cross-sections included: 16				
Total panel (balanced) observations: 96				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.01901	1.216271	9.059671	0.0000
ICC	-0.047343	0.014186	-3.337392	0.0012
APP	-0.004468	0.003646	-1.225259	0.2236
CCC	0.003304	0.004066	0.812377	0.4187
R-squared	0.242022	Mean dependent var	5.913093	
Adjusted R-squared	0.217306	S.D. dependent var	7.128011	
S.E. of regression	6.306153	Akaike info criterion	6.561702	
Sum squared resid	3658.616	Schwarz criterion	6.668550	
Log likelihood	-310.9617	Hannan-Quinn criter.	6.604892	
F-statistic	9.791864	Durbin-Watson stat	1.566858	
Prob(F-statistic)	0.000011			

Source: Researcher's computation (EViews 10) 2021

The regression result is presented in Table 4.3. The R-squared shows the variation between the variables. The independent variable could only explain 24.2% in the variation of the dependent variable. Still, it could only explain 21.7% when further adjusted, which shows that other factors affecting profitability are unaccounted for. The table above shows that Inventory Conversion Cycle (ICC) has a negative coefficient of -0.047343 but has a positive significant relationship with profit after tax with a value of 0.0012. However, the average payment period exhibited an insignificant relationship with profit after tax with a positive value of 0.2236. Cash

conversion cycle (CCC) alongside showed an insignificant relationship with profit after tax with a positive value of 0.4187. Prob (F-statistic) shows the general relationship between the variables. With the value of Prob (F-statistic) being 0.000011, it demonstrates that the explanatory variables can have a combined effect on the dependent variable. Durbin-Watson statistic shows autocorrelation between the variables. The result shows a Durbin-Watson value of 1.566858, and according to the rule of thumb, when the value is above 1.5, no autocorrelation exists between the variables.

Table 9. Regression Analysis: Panel OLS (Random Effect)

Dependent Variable: LOG_PAT				
Method: Panel EGLS (Cross-section random effects)				
Date: 07/15/21 Time: 18:31				
Sample: 2014 2019				
Periods included: 6				
Cross-sections included: 16				
Total panel (balanced) observations: 96				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.46808	1.330134	7.869945	0.0000
ICC	-0.037952	0.014731	-2.576396	0.0116
APP	-0.005826	0.003771	-1.545111	0.1258
CCC	0.001143	0.004287	0.266596	0.7904
Effects Specification			S.D.	Rho
Cross-section random			2.224623	0.1260
Idiosyncratic random			5.858746	0.8740
Weighted Statistics				
R-squared	0.202286	Mean dependent var	4.329785	
Adjusted R-squared	0.176273	S.D. dependent var	6.514996	
S.E. of regression	5.912970	Sum squared resid	3216.615	
F-statistic	7.776511	Durbin-Watson stat	1.744153	
Prob(F-statistic)	0.000110			
Unweighted Statistics				
R-squared	0.238278	Mean dependent var	5.913093	
Sum squared resid	3676.688	Durbin-Watson stat	1.525903	

Source: Researcher's computation (EViews 10) 2021

From the table above, the value of R-squared shows that the independent variable could only explain 20.2% in the variation of the dependent variable, which indicates that there are other factors affecting profitability that are unaccounted for, which is taking up 79.8%. According to the data, with positive values of 0.1258 and 0.7904, respectively, the Average Payment Period (APP) and Cash Conversion Cycle (CCC) have an insignificant connection with profitability. However, with a positive value of 0.0116, the Inventory Conversion Cycle (ICC) revealed a substantial association with profitability. The negative ICC and APP coefficients suggest a negative relationship with the dependent variable. An increase in profit after tax will cause a decrease in both ICC and APP and vice versa. Although it is insignificant, the cash conversion cycle (CCC) has a positive coefficient, indicating a positive association between the dependent and independent variables. An increase in CCC will cause an increase in profit after tax and vice versa.

In this study, the Hausman test was used to determine which regression model (fixed effect or random effect) best explained the variables in a standard panel data regression model. The Hausman test rule of thumb suggests that if the p-value is significant, the alternate hypothesis of using the fixed-effect model should be accepted. If the p-value is insignificant, the null hypothesis of using the random effect model should be accepted.

Table 10. Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.710850	3	0.1942

Source: Researcher's computation (EViews 10) 2021

The p-value of the correlated random effect is more than 5%, according to the table. As a result, the random effect model is chosen since it best explains the variables in the study.

4.4. Test of Hypothesis

This study's decision rule for accepting the hypothesis is a 5% level of significance; the null hypothesis is rejected if the probability value (p-value) is less than 0.05. The hypothesis that was tested yielded the following results:

Hypothesis 1

There is no significant impact of cash conversion cycle on profit after tax.

CCC, with an absolute estimated t-value of 0.266596 and a p-value of 0.7904, is less than the critical t-value of 1.99 at the 5% level of significance, according to the panel regression results. As a result, we accept the null hypothesis, which claims that the cash conversion cycle has no substantial impact on profit after tax.

Hypothesis 2

There is no significant impact of inventory conversion cycle on profit after tax.

According to the panel regression results, ICC is less than the crucial t-value of 1.99 at the 5% significance level, with an absolute estimated t-value of 0.266596 and a p-value of 0.7904. As a result, we adopt the null hypothesis, according to which the cash conversion cycle has no significant effect on profit after taxes.

Hypothesis 3

There is no significant effect of average payment period on profit after tax.

According to the panel regression results, APP is less than the crucial t-value of 1.99 at the 5% level of significance, with an absolute estimated t-value of 0.266596 and a p-value of 0.7904. As a result, we adopt the null hypothesis, according to which the cash conversion cycle has no significant effect on profit after taxes.

4.5. Discussion of Findings

Based on the study's empirical analysis, a comparison can now be made with the results obtained from this study and findings of prior studies on working capital management and firms' profitability.

The study's first goal was to determine the impact of the cash conversion cycle on profit after tax. The analysis found a positive and insignificant association between cash conversion cycle and profit after tax, with a coefficient value of 0.001143 and a p-value of 0.7904. This shows that increasing the cash conversion cycle will result in higher profits. As a result, the study accepts the null hypothesis H_0 , stating that there is no significant association between cash conversion cycle and profit after tax, and rejects the alternative hypothesis. This study validates the findings of Phuong and Hung (2019), which found that the cash conversion cycle has an adverse influence on profitability.

With a negative coefficient value of -0.037952 and a p-value of 0.0116, the results revealed a negative and significant association between the inventory conversion cycle and profit after tax. This means that when the inventory conversion cycle lengthens, profitability will suffer. As a result, the study rejects the null hypothesis

H_0 and accepts the alternate hypothesis, which claims that the inventory conversion cycle and profit after tax have a substantial relationship. This result is in line with Mbella and Ngongang (2018) findings which indicated a negative correlation between inventory conversion cycle and profitability.

The study's third goal was to look into the impact of average payment period on profit after taxes. With a coefficient value of -0.005826 and a p-value of 0.1258, the study found that the average payment period has a negative and insignificant association with profit after tax. This indicates that the average payment time and profit after tax have a negative connection, meaning that an increase in the average payment period will result in a decrease in profitability. As a result, the study supports the null hypothesis H_0 , which argues that there is no substantial association between average payment period and profit after tax, while rejecting the alternative hypothesis, which states that there is. The findings of this study are consistent with Gołaś (2020) which found a strong negative relationship between average payment period and profitability.

5. Summary of Findings, Conclusion and Recommendations

5.1. Preamble

This chapter provides a summary of the study carried out and conclusions based on the research findings. This section also contains recommendations, limitations to the study, and suggestions for future research.

5.2. Summary of Work Done

This research aimed to see how working capital management affected the profitability of Nigerian consumer goods manufacturing companies. Complete background on the subject matter was provided in the first chapter. Also included was a statement of the research problem, research objectives, research questions, hypothesis, scope, importance, and a glossary of words.

In chapter two, different pieces of literature relating to the study were reviewed to provide a detailed explanation of the conceptual framework. Working capital and its various varieties, working capital management components, causes and remedies of overcapitalization and undercapitalization, cash management, inventory management, working capital management approaches, and the profitability concept are among the themes covered. Theories like the Resource-Based Theory, Miller-Orr Cash Management Model, and the Trade-Off Theory were employed to provide a theoretical explanation. To build the empirical framework, a review of previous literature was conducted, and gaps were identified.

The approach used in the research is the subject of the third chapter. The research design, data sources, sample size, demographic, and analysis method are all included. The study used an ex-post facto research approach, with the sample size determined by the amount of data available. The data was collected from the companies' publicly available financial statements.

The fourth chapter consists of data analysis and interpretation of results. It is aimed at testing the hypothesis states in the first chapter. EViews 10 evaluated the three (3) hypotheses using Pearson's correlation and regression analysis. The data for this study came from the published financial statements of sixteen (16) consumer products manufacturing companies in Nigeria over six years, from 2014 to 2019. The results of the analysis aided in deciding whether to reject or accept the null hypothesis.

The work completed, the study's theoretical and empirical findings, conclusions, and suggestions are all summarized in Chapter five.

5.3 Theoretical Findings

The theoretical findings of this study are based on the Resource-Based Theory and the Miller-Orr Cash Management Model. The Miller-Orr model mainly deals with cash management which is a vital component of working capital management. It suggested imposing buy and sell limits on cash to keep cash at an optimal level. The Resource-Based Theory suggests that when resources are used effectively and under the proper control, there is long-term viability. The business tends to have the edge over its competitors.

5.4. Empirical Findings

The following conclusions are drawn from the findings:

- i. The cash conversion cycle has an insignificant but significant connection with profit after tax. This indicates that increasing the cash conversion cycle will result in higher profits.
- ii. The inventory conversion cycle has a negative and strong link with profitability, according to the research. In other words, when the inventory conversion cycle lengthens, profitability suffers.
- iii. According to the findings, the average payment duration has a negative and insignificant association with profit after tax. As a result, a rise in the average payment period will reduce profitability.

5.5. Conclusion

This study examined the impact of working capital management on the profitability of consumer goods manufacturing companies in Nigeria. In order to see through with the objective, the necessary data from the companies of the study was obtained for a period of six (6) years. The formulated hypotheses were tested using the panel regression method, and the outcome of the results are;

- i.H₀: There is no significant relationship between cash conversion cycle and profit after tax.
- ii.H₀: Inventory conversion cycle has a negative impact on firms' profitability.
- iii.H₀: Average payment period has no major impact on profit after tax.

5.6. Recommendations

Based on the findings of the study, the following recommendations will be helpful to managers:

- i. Firms should ensure that there are set controls and limits to monitor cash more appropriately.
- ii. The conversion of inventory should always be taken into consideration as it can strongly affect profitability.
- iii. Managers should strive to reduce the time it takes for debtors to pay their bills since this will enhance cash flow, working capital, and profitability.
- iv. Managers should ensure that the payment duration to creditors be reduced as this will have a positive effect on profitability.

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