Working Capital Management and Financial Performance of Manufacturing Companies in Nigeria

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ABSTRACT

This study examined the relationship between Working capital management and financial performance of manufacturing companies in Nigeria. Secondary data was extracted from Nigeria Exchange Group website for ten manufacturing companies cutting across consumer goods, industrial goods and health sector of the economy for the period of 2011- 2020. The Research used a panel data regression analysis and finally adopted cross sectional random effects panel data Ordinary Least Square to estimate the observed data for validation of the various research questions. For ease of analysis and presentation, the researcher adopted trade payable, trade receivable and inventory turnover as a proxy for working capital while using Return on Equity ((ROE) to represent manufacturing companies' performance. Therefore, the finding thereby validates and confirm that inventory turnover and liquidity has no significant impact on ROE, the study also reveals that there is marginal positive effect of trade payable on ROE differing to the a priori expectation of negative relationship. The study therefore maintains that there is marginal significant effect of working capital on the performance of manufacturing companies which stipulates that there are other factors like sustainability factor, environmental, macro-economic conditions. The findings hereby conclude that receivables as part of working capital do significantly affects manufacturing performance via working capital management Based on the findings, it is recommended that emphasis should be hinged on effective credit policy and their management and strict adherence against high bad debt occasioned from high receivables.

Keywords: Working capital management, Financial performance, Manufacturing companies,

1.   Introduction

Working Capital is a short-term Finance for the organization to run its day- to -day operations. It can also be explained as the excess of current assets over current liabilities which indicates if a company can pay its short-term debts and have money left over for operations and growth. Working Capital Management plays a very significant components of financial management that has a relative impact on profitability and liquidity of a company and also play a vital role in increasing shareholder's value of a company which eventually create a balance between two purposes of a company which is profitability and liquidity Abbasali and Milad (2012). Working capital facilitates the company's ability to continue its activities without risking liquidity.

Makori, and Jagongo (2013) added that working Capital involves the ability of a company to manage its current assets and current liabilities in a more efficient manner that provides maximum return on assets. Current Assets are the Assets which are in ordinary course of business can be or will be converted into cash within a year and this consist of Cash, Account

receivables, Inventory (Stock in Trade) among others. On the other hand, Current Liabilities are the liabilities which are intended to be paid in the ordinary course of the business, within a year and this includes Accounts Payable, Bank overdraft, Bills Payable etc. According to Abubakar, et al., (2020), Working capital is a measure of a company's liquidity, operational efficiency and its short-term financial health.

Working Capital components consist of Inventory, Trade Payable and Trade Receivable. Cash among others. Each component must be managed efficiently to avoid liquidity or profitability issues. Trade receivables arises from credit sales granted to customers, it affords the customers the flexibility of buying now and pay later. Credit sales can attract new customers to purchase from the company and this will boost sales. Trade Receivables allows companies to have competitive edge over business rivals, increase sales as well as encouraging a better customer loyalty. Part of the ways of being competitive is to grant greater terms and a discount for early payment. However, trade Receivables usually affects cash flow, which means that the company will be funding debtor's book and a potential bad debt may arise.

Ineffective inventory management may result in a longer inventory conversion period, greater inventory costs, less money recycling, and ultimately a negative impact on the company's profitability and liquidity. Trade Payable is a cheap and interest free means of financing business. The disadvantage of a Payable is the fact that it is a liability to the company, or money that they owe. Having payables lowers the Owners' Equity of a business and it affects the cashflow of the company.

Working capital is a major component of the items in the Statement of Financial Position of manufacturing company, hence the ability to manage the individual components of working capital as enumerated above is a key factor on the financial performance of manufacturing companies

2. Literature Review

2.1 Conceptual Review

This section covers concept related to working capital management and manufacturing companies' profitability. Hence, related concepts such as working capital including its components, working capital management and financial performance.

2.1.1 Management Working Capital Components

According to Padachi, (2016) profitability is the strength of any given investment to earn a return from its use. However, Profitability is an efficiency needed which is regards as a measure of management guide to greater productivity. Though, profitability is a hallmark for measuring the efficiency of any organization, but the extent of profitability cannot be taken as a final proof of efficiency.

2.1.2 Inventory

Inventory, according to Lyons and Gillingham (2003), is the value or quantity of raw materials, supplies, work in progress (WIP), and finished stock that is held or stored for use as needed. Raw materials inventory refers to items that are used in the manufacture of finished goods. Work in progress inventory refers to materials that have been partially manufactured but not yet completed, whereas finished goods inventory, as defined by Kothari (1992), refers to commodities that have been completed and are available for sale.

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2.1.3 Trade Receivables

Trade Receivables form a significant part of the current asset and, therefore, working capital. It also includes the amount due to the bills of exchange receivable. These are the amount in which the business is owned by its customers. A good receivables management policy enshrines a long way in ensuring timely collection and avoidance of bad debts, if any, for the business. Each industry has a designated trade cycle, and businesses must ensure to keep its trade receivable cycle in line with the industry Makori & Jagongo (2013). A more extended trade receivable period will result in a delayed collection of cash, impacting the cash conversion cycle of the business.

2.1.4 Trade Payables

Kaddumi and Ramadan (2012) emphasized that trade Payables forms an integral arm of current liabilities and the amount due to the bills of exchange payables. These are the amount which is require for the business to pay for credit purchases made. A functional payables management policy has a long way in ensuring timely payment and cordial business relations with investors and creditors. Each industry has a certain trade cycle, and businesses must ensure to keep its trade payable cycle in order with the industry

2.2   Empirical Review

This section itemized selected empirical studies in the past that relates to working capital management and performance of manufacturing companies in Nigeria and across the globe Some of such empirical works are:

Olaniyan, *et al.* (2020) in their research, examine the effect of working capital management on profitability on manufacturing firms in Nigeria between the period of 1988 and 2019. The study analyzed working capital components which are trade receivables, inventory, cash and bank balances and trade payables using data extracted from the Audited Financial statement. auto-regressive distributed lag (ARDL) technique was used to analysis the data. The bound test revealed that; there was presence of cointegration (long-run relationship) among the dependent and all the explanatory variables. The findings of the study indicates that Trade Payables and Trade Receivables had a positive and significant impact on profitability of manufacturing firms in Nigeria.

Moodley *et al.* (2015) in their research study, using style-based analysis, in their research study, it was established that there exists a positive relationship between payable days and shareholder returns for those companies in industries that have a significant investment in payables; This is in contrast to Deloof (2003), assertion that working capital anchored majorly by Payable has a negative relationship with the return on equity due to the fact that the company will suffer higher fines, penalties and discount disallowed when delay to redeem its payables. Sabri (2012) on the other hand supported the negative (Inverse) relationship that when firm failed to speed up payment of payable it may attract fines and loss of discount which invariably impacted on their ROE negatively and not positively as opined in this research study.

This study extracted data from different sector of manufacturing companies in Nigeria such as consumer goods, industrial and health sector to examine the relationship between working capital management and financial performance of manufacturing companies in Nigeria. None of the empirical study in Nigeria cut across different sector of manufacturing firms to arrive at their findings and recommendations, most concentrated on consumer goods while some adopted a case study strategy.

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2.3 Theoretical Review

This study is hinged on Cash Conversion Cycle theory. Blinder and Maccini (2001) propounded cash conversion theory, the theory is based on the metric of time it takes a company to convert its resource inputs into cash flows. It evaluates how effectively a firm is managing its working capital.

3.   Methodology

This is the framework this study is built upon. Ex-post research design was used in the study to eliminate biases and marginal error. The research looked at manufacturing companies in Nigeria and ten were chosen at random from the Nigerian Exchange Group website. The population of the study is listed manufacturing companies in Nigeria. Population of the study comprised of forty- three (43) manufacturing companies listed on Nigeria Exchange Group, top Ten (10) manufacturing companies which cut across consumers goods sector, health care and industrials sector are selected using Purposive sample selection criterion. Purposive sampling technique allows the researcher to use judgement in selecting companies that fits in for the research work.

The companies selected are Dangote Cement, Unilever Nigeria Plc, Nestle Nigeria Plc, Nigerian Breweries Plc, Flour Mills of Nigeria, PZ Cussons Nigeria Plc, Glaxo Smithkline Consumer Nigeria Plc, Guinness Nigeria Plc, Lafarge Cement, and Cadbury Nigeria Plc. Secondary data were used for the study and collected from audited annual reports and accounts of the selected top ten (10) manufacturing companies in Nigeria for the period between 2011-2020. The data collection method used in this study is quantitative research method to derive data from the selected manufacturing companies in Nigeria. Dependent variable extracted from financial statement of the selected companies is Return on Equity while Inventory turnover, Trade receivables, and Trade Payables were proxied for independent variable. Data was collected from financial statement of manufacturing companies on Nigeria Exchange website which has been subjected to audit before publications and cannot be altered or manipulated by the Researcher.

Peer reviews and independent check were made on the extracted data to ensure completeness and error free data. The study used correlation and regression analysis to analyse data. Inventory turnover was used to measure Inventory management, trade receivable collection and trade payables payment periods were used as efficiency variables to capture the working capital management policy adopted by these companies while return on equity was used as the profitability variable.

3.1   Model Description and Justification

This study adopted the model of Ikpefan and Owolabi (2014) with some modifications as specified as follows. Inventory turnover, working capital management and profitability variables. Therefore, a model is specified based on this as follows:

ROE= (ITO, LQR, TRP, TPP)...equation (1)

Equation above is based on a linear relationship between the variables, the specification of the regression equation for the main model 1 above could be written as:

ROE = β0+β₁ITO+ β₂LQR+ β₃TRP+ β₄TPP+uit+ e..........................equation (2)

Where: ROE = return on equity

ITO = inventory turnover

LQR= liquidity ratio (used as the moderating variable).

TRP = trade receivable collection period

TPP = trade payables payment period

uit= error variable measurement

A priori expectation; $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$

ROE is used as a measure of profitability, and it is calculated as profit after tax/total equity.

ITO is an efficiency ratio that measures the number of times a company sells its average level of inventory during a year and the speed of inventory movement. It is calculated as cost of goods sold/Average Inventory

LQR is used as a measure of working capital management. It is calculated as current assets/current liabilities. This is used as the moderating variable.

TRP is the number of days taken to collect monies from trade debtors. It is used as a measure of working capital management and policy adopted. It is calculated as: Trade receivables/turnover x 365days.

TPP is the number of days taken to pay trade creditors. It is used as a measure of working capital management and policy adopted. It is calculated as: Trade payables/cost of sales x 365days

Table 1: Measurement of variables

Variables	Proxy/Representation	Types of Variables	Apriori expectation
Trade Payable			-
Trade Receivable	Working Capital	Independent variable	-
Inventory Turnover			-
Return on Equity	Financial Performance	Dependent variable	+
Moderating Variable			
Liquidity Ratio	Working Capital	Independent variable	+

Authors' compilation (2022)

4.   Data Analysis and Discussion of Findings

This section deals with the analysis and discussions of data gathered from the sample frame. The focus of this section is centered on presentation, analysis and interpretation of selected top ten manufacturing companies in Nigeria cutting across industrial goods, consumer goods and health sector. The outcome of the statistical result was subjected to hypothesis testing based on the reformulated research questions and hypotheses to enable the research highlight the major findings of the study.

4.1   Descriptive Statistics

This is the analysis of the raw data to validate their behavioral patterns and what they convey to enable the researcher to understand further diagnosis and treatment required to validate data integrity and confidence. The standard deviation which measures the distance of the data from their observed samples shows that ROE, TPP AND TRP value are too close to their mean values with significant standard error which show that the data are not 100% fit with higher dispersal from the sample observation. The Skewness and Kurtosis are also far apart from the normal skewness of value 0 and kurtosis of 3.

The Jarque-Bera statistic summarizes the data distribution between skewness and kurtosis, all

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the observed variables probability value is less than 0.5 significant level indicating that all the data sets are not normally distributed and fit, thus required further adjustment and testing. As a result of the data description above, the researcher carried out various diagnosis test to validate the appropriate statistical analysis test to be adopted. The outcome of the unit root test and co-integration test respectively indicates that the variables are integrated at level (I0) and No sign of co-integration to proof any existence of long run relationship among the variables.

As a fall out of the diagnosis test findings, it was confirmed that the best statistical test and methodology to be adopted is panel data OLS subdivided into pooled panel, Fixed panel and Random panel respectively with estimated result shown in table 1 below.

Table 1 Descriptive statistics of variables

Variables	ROE	ITO	LQR	TPP	TRP
Mean	0.217293	4.904176	1.12229	78.27354	25.17874
Median	0.143978	4.727701	1.035835	62.97607	18.30197
Maximum	1.338432	12.27743	2.575865	523.1447	121.2477
Minimum	-0.249696	0.913736	0.342955	6.613455	1.080655
Std. Dev.	0.242939	1.824683	0.502564	69.57083	22.23239
Skewness	1.715141	1.144561	0.866959	3.547313	1.531939
Kurtosis	7.441247	5.98203	3.322031	20.49545	5.811369
Jarque-Bera	131.2147	58.88577	12.95908	1485.102	72.04641
Probability	0	0	0.001535	0	0
Sum	21.72933	490.4176	112.229	7827.354	2517.874
Sum Sq. Dev.	5.842922	329.6175	25.00446	479170	48933.64
Observations	100	100	100	100	100

Source: Authors' computation 2022

4.2   Diagnosis Testing and Data justification

This section tries to display most of the data justification, Validation and evaluation in selecting the appropriate statistical techniques for this research study.

4.2.1   Unit root Test

The unit root test conducted shows that all variables for the study are stationary at level (I0) as shown in Appendix 4 based on Levin, Lin & chu t methodology accepted for this study. Thus, the study shall be restricted to Panel data OLS regression analysis.

Table 2: Unit root Test

VARIABLES	COEFFICIENT	INTEGRATION LEVEL	REMARKS
ROE	0.0368	I(0)	Stationary at level
ITO	0	I(0)	Stationary at level
LR	0	I(0)	Stationary at level
TPP	0	I(0)	Stationary at level
TRP	0	I(0)	Stationary at level

Source: Authors' computation 2022

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4.2.2   Hausman Test

Hausman Test to justify between Fixed effects and Random cross-sectional effects. From the estimated output shown in Hausman test and the corresponding probability, it could be construed that the section is not statistically significant, thus we accept the HO-Random effect is appropriate model for the study.

Sequel to the outcome of the unit root test and the co-integration test, the research study methodology is now based on panel data OLS regression between Pooled, Fixed effects and Random effects. For the benefit of using the appropriate statistical techniques for this study, Langrange multiplier and Hausman Test was carried out to justify the choice of our model and analysis. Langrange Multiplier test was used to justify between Pooled Group and Random/Fixed effects

Based on the above table 4, we reject null hypothesis (H0) that Pooled Group is not suitable and look forward to H1 –alternative for either fixed effects or Random effects regression panel model

Table 3: Hausman Test

Test summary	Hausman Test		
	Ch-Sq Stat	Df	Probability
Cross Section Random	0.972625	4	0.9139

Ho- - Random effect appropriate for the model
H1- Fixed effects appropriate for the model

Source: Authors' computation 2022

Table 4: Pooled Group Test

Langrange Multiplier Test			
	cross section	test hypo. Time	Both
Breusch Pagan	0	0.6516	0
HO	no effects		
H1	Alternative hypoth		

Source: Authors' computation 2022

4.5   Working Capital Management and Financial Performance

Diagnosis test was carried out to validate the appropriate panel test effect for the study using Breusch-pagan (Lagrange Multiplier) Test and Hausman Test, the test confirmed Cross Sectional Random effect suitable for this research study. Thus, the research data analysis shall be based on the estimated output from the Random effect statistics as highlighted Table 1 above part C.

The result from the estimated equations indicates that the intercept was 0.206(21%), meaning that there is 21% variation impact on the Return on Equity (ROE) not accounted for by any changes in the listed explanatory variables (Liquidity ratio (LQR), Trade receivables payment

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(TRP), Trade Payable Payment (TPP), and Inventory Turnover (ITO)) within the manufacturing industry occasioned by other variables and parameters i.e. Macroeconomic interplay, political etc.

The Inventory turnover rate (ITO) has a positive effect on the ROE with 0.017 units, this means that a change in ITO shall account for 1.7% corresponding change in the manufacturing sector ROE. However, this was not statistical significant at 5% confidence interval level. Kwak (2019) in his articles on inventory performance also confirmed that the inventory turnover did not show significant correlations with the itemized measures of many manufacturing financial ratios. Thus, it can be inferred that they are good measures for corporate sustainability and sales growth but they alone may not be sufficient to assess the performance of the manufacturing industry.

Liquidity ratio (LQR) on the other hand as the moderator variables for this research study shows a negative relationship with the ROE to the tune of -0.0306, which means that the higher the LQR the lower the level of ROE for the manufacturing sector, which is not statistically significant at 5% confidence interval. This is contrary to Niresh (2012) study on the causal effects on the relationship between liquidity and profitability which shows mixed association, negative relationship to net profit but positive relationship to ROE.

Trade payable (TPP) estimates indicates a positive 0.00095-unit coefficient in the equation, signifying that a unit change in Trade payable payment in the manufacturing industry shall account for a minute and marginal corresponding increase in the ROE by just 0.0095(0.095% approx..0.1%). This was in line with Moodley et al., (2015) in their research study, using style-based analysis, in their research study, using style-based analysis, it was established that there exists a positive relationship between payable days and shareholder returns for those companies in industries that have a significant investment in payables; (mostly with companies with high momentum and rise in their share prices). It was however, refuted and in contrast to Deloof (2003), assertion that working capital anchored majorly by Payable has a negative relationship with the return on equity due to the fact that the company will suffer higher fines, penalties and discount disallowed when delay to redeem its payables.Sabri (2012)) assertion that working capital anchored majorly by Payable has a negative relationship with the return on equity due to the fact that the company will suffer higher fines, penalties and discount disallowed when delay to redeem its payables. Sabri (2012) on the other hand supported the negative (Inverse) relationship that when firm failed to speed up payment of payable it may attract fines and loss of discount which invariably impacted on their ROE negatively and not positively as opined in this research study.

The Trade receivable (TRP) estimates on its part show a negative relationship with 0.004645 unit. This means that a unit rise in the trade receivable of the manufacturing company shall result in a corresponding decrease in the ROE by 0.004645(0.5%). This is a very marginal effect, but it is however statistically significant at 5% confidence level interval. Assertion and findings was also supported by Jose et al., (1996) in their study where they examined the relationship between aggressive receivables (Shorter cash Cycle) management and profitability of US firms, outcome shows a significant negative relationship between the cash conversion cycle and profitability indicating that more aggressive receivables management is associated with higher profitability.

The estimated R-square was 0.1657 (17%), indicating that all the independent variables (ITO, TRP, TPP, LQR) can only account for 17% variation in the explanatory factors for the change in return on equity of a typical manufacturing sector. This indicates a very weak relationship and explanatory power for the effective change in the manufacturing sector. This speaks

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volumes about the relevance of these variables to the manufacturing performance, which however means that there are major contributing factors to the sector's ROE other than the working capital variables highlighted in this study. i.e., sustainability factor, environmental, macroeconomic conditions etc.

It was however noted that the model has a low Durbin-Watson (dw) value 0.9 which is substantially less than 2, this indicates strong evidence of positive serial correlation. As a rough rule of thumb, if Durbin–Watson is less than 1.0, there may be cause for alarm. Small values of dw indicate successive error terms are positively correlated. This also supported the adduced for the lower R-square.

The F-statistics been statistically significant confirmed otherwise that the model is a good fit but it however has some serial correlation effects.

Based on the findings from the estimated output in Table 5 the coefficient of Trade Payable payment (TPP) is 0.001092 with probability value at 0.022 (2.2%). The observed probability value of 2.2% is lesser than the benchmark 5% statistical confidence interval level for this study. Thus, we reject the null hypothesis (H0) and accept the alternate hypothesis (H1) that there is significant relationship existing between the value of account payables and financial performance of manufacturing companies in Nigeria.

The outcome of the estimated coefficient of Trade Receivable Payment (TRP) and its corresponding probability value] is -0.003537 and 0.0002(0.02%). Since the probability value is less than 5% level of confidence intervals as set by the research study, we therefore reject the null hypothesis (H0) and accept the alternate hypothesis (H1) that volume of account receivables has a significant effect on the financial performance of the manufacturing companies in Nigeria.

Table 5: Summary of All the Panels Data Regression Effects

S/N	DEPENDENT VARIABLE	ROE	INDEPENDENT VARIABLES							
	PANEL TYPES	INTERCEPT	ITO	LQR	TPP	TRP	DW	R-SQUARE	F-STAT
A	POOLED OLS	0.071468	0.042261	-0.051555	0.001092	-0.003537	0.392414	0.165902	4.723866
	Probability	0.4948	0.0029	0.3131	0.0198	0.0166			0.001608
B	FIXED EFFECTS	0.218695	0.015647	-0.028881	0.00094	-0.004739	1.027857	0.679579	14.03055
	Probability	0.0144	0.2306	0.4864	0.0266	0.0002			0
C	RANDOM EFFECTS	0.206495	0.017887	-0.030631	0.00095	-0.004645	0.955811	0.165739	4.718305
	Probability	0.0701	0.161	0.4542	0.022	0.0002			0.001621

Source: Authors' Computation 2022

5. Conclusion and Recommendations

The finding validates and confirm that inventory turnover and liquidity has no significant impact on ROE while on the other hand the study reveals that there is marginal positive effect of trade payable on ROE contrary to the *a priori* expectation of negative relationship. The study therefore maintains that there is marginal significant effect of working capital on the performance of manufacturing companies which stipulates that there are other factors like sustainability factor, environmental, macro-economic conditions Based on these findings, the study hereby concludes that receivables as part of working capital do significantly affects

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manufacturing performance via working capital management, but its impact is however very marginal and cannot majorly disrupt performance. Payables shows the same effects and representation on the manufacturing performance. This, however, present itself in this conclusion that working capital do matters in performance assessment of manufacturing companies but does not on his own alone impact their performance rather as a metric dashboard for key performance indicators for monitoring and reviewing manufacturing company's performance.

Based on aforementioned findings and observation from this research study, the researcher hereby recommends the following probable mitigating strategy and solution to the problem impacting working capital and manufacturing performance:

i. Emphasis should be hinged on effective credit arrangement and their management and strict adherence against high bad debt occasioned from high receivables.

ii. Aggressive working capital model should be adopted via short-term receivable and payables to drive profitability and performance.

6. Areas for Further Research

Further research in this area of study be conducted as follows.

i) Extend the number of observations to at least 20years for adequate degree of freedom and better predictive power.
ii) And separation of our research analysis into or per various manufacturing categories i.e. Fast moving consumer goods, semi-finished goods, etc., for in depth understanding of their peculiarity and elasticity of their working capital
iii) Adopt and application of combined research methodology of using both secondary and primary data via questionnaires for better understanding of company/lines specifics in grouping working capital behavioral pattern per firms.

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