

Working Capital Management and Profitability of Listed Industrial Goods Companies in Nigeria

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Abstract

Working capital is the capital needed by a business to finance the day-to-day operations of the business. The purpose of this study is to investigate the impact of working capital management and profitability of listed industrial goods companies in Nigeria. The study was anchored on the cost trade-off theory. The methodology adopted in the study was an ex-post facto research design. The population of the study consist of ten industrial goods companies in Nigeria. Secondary data from ten listed industrial goods companies in Nigeria's stock exchange for the period of ten years (2012-2021) was obtained based on a convenient sampling method. The statistical tools used were multiple regression analysis and Pearson product-moment correlation coefficient aided by SPSS version 22.0. The founding showed a negative significant impact between Inventory, Trade Receivable and Net Profit Margin as well as Return on Asset. Whereas a significant positive impact was observed between the cash conversion cycle and net profit margin as well as return on asset. The study concluded a significant impact on working capital management and profitability of listed industrial goods companies in Nigeria. The study recommends that the credit policy of the companies should be structured in such a way as to improve cash flow thereby reducing the firm cash conversion cycle. Also, professionals should be hired where necessary to ensure efficient management of working capital components to increase profitability.

Keywords: Net Profit Margin, Return on Asset, Inventory, Cash, and Trade Receivable, Working Capital Management, Profitability.

INTRODUCTION

The importance of working capital in the day-to-day operation of enterprise activities cannot be over-emphasized because no corporation can survive without adequate capital which serves as a lifeblood through which any organization can thrive. In essence, working capital management is pivotal for efficient and effective operation in any organization to ensure success. Adeniji (2015) opines that every business organization needs adequate liquid resources to maintain daily cash flow such as payment of wages, salaries and creditors to keep its workforce and ensure regular supplies. Maintaining adequate working capital which is the capital available for conducting the day-to-day operations of an organization represented by its current assets is not just important in the short term. Adequate liquidity is needed to ensure the survival of any business entity in the long run because even a profitable organization may fail without the adequate cash flow to meet its liabilities. Hence managers have the responsibility to manage the working capital of the organization in the best interest of the stakeholder (Adeniji, 2015). Working capital performs the same role in business as the role of the heart in the human body. It generates funds which are circulated in the business, when the circulation of capital stops the business becomes lifeless (dead). It is for this reason that working capital is known as circulating capital because it circulates funds in the business, the same way blood circulates in the human body (Anand & Gupta 2002).

Working capital consists of two categories gross and net. Gross working capital involves firm investments in current assets which can be converted into cash with ease within an accounting year and it includes inventory, short-term security, account receivables and bill receivable (Pandey, 2011, Adeniji, 2015). It is advisable to avoid two danger points of investment in current assets, such as excessive or inadequate investment. Excessive investment in current assets should be avoided due to its impairment of the firm profitability because idle investment earns nothing. However inadequate working capital can threaten the solvency of the firm due to its inability to meet its current obligation (Pandey, 2011).

Working capital management aim at maintaining an optimal balance between working capital components such as cash, inventory, receivables and payables which is the fundamental part of the overall corporate strategy to create value and it is an important source of competitive advantage in business (Deloof, 2003). Efficient working capital management plays a vital role in overall corporate strategy to increase shareholder value. An excessive level of current assets may results to lower liquidity and stock out which can trigger difficulties in maintaining smooth operations that may improve the profitability of the business concern and help meet the short-term liquidity (Singh, 2011). Profitability is a major objective of business organisations. Profit is only achieved when a business organisation has undergone an operating cycle. Profitability is indeed a very important measure of corporate performance.

The rationale for the take-off of every business is the profit motive and behind its continuity is profit. It is the profit motive that drives shareholders into buying shares and private owners into investing their capital. Profitability is a financial benefit that is realised when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. In essence, much of business performance is based on profitability. Profitability measures the extent to which an enterprise generates profit from the operation. It analyses the relationship between revenue and expenses and the level of profit relative to the size of investment in the enterprise (Mathuva, 2010).

Deloof, (2003) posited that efficient working capital management can improve the operating performance of an organization and help to meet short-term liquidity. Liquidity and profitability are two important and major aspects of an organisation's life which cannot be overlooked. Increasing profit at the expense of liquidity can bring a serious problem to the firm

as such the need for a trade-off between these two objectives. If an organization does not care about profit, it cannot survive for a long period; likewise, an organization that does not care about liquidity may face the problem of solvency and bankruptcy (Adeniji, 2015).

Performance evaluation is a necessity and accepted measures should be applied to consider the different aspects in terms of limitations in the operation and utilization of facilities. The optimum operation of an organization is in the hand of managers and so giving incentives to managers motivate them to make an optimum decision that will increase profitability and accelerate the achievement of an organizational goal (Reheman & Kiyayi, 2009). However shareholder inability to properly evaluate the performance of managers in term of wealth creation for the organization have resulted in a lack of proper compensation of the Director for their performance in maximizing shareholders' wealth, this creates a gap between the interest of shareholders and managers hence the conflict of interest among the agencies and owner.

Falope and Ajilore, (2009) assert that the study of working capital management and profitability had been concentrated on large organizations operating within the capital market of developed economies. It is difficult to generalize the finding to developing economies like Nigeria that operate on financial markets, where organizations rely mainly on owner financing, trade credit and short-term loan to finance investment in working capital.

It is evident from the literature review that a few studies had been carried out in Nigeria in respect of working capital management, but to the best of our knowledge, no known work had been done in respect of listed industrial goods companies in Nigeria. Hence there exists a knowledge gap that needs to be filled. It is on this note that the researchers deem it necessary to carry out a study on working capital management and profitability of listed industrial goods companies in Nigeria.

RESEARCH OBJECTIVES

The main purpose of this study is to investigate the relationship between working capital management and the profitability of listed industrial goods companies in Nigeria.

The specific objectives are:

1. To determine the relationship between inventory turnover period and net profit margin of listed industrial goods companies in Nigeria.
2. To determine the relationship between the cash conversion cycle and net profit margin of listed industrial goods companies in Nigeria.
3. To determine the relationship between the accounts receivable period and net profit margin of listed industrial goods companies in Nigeria.
4. To determine the relationship between inventory turnover period and return on asset of listed industrial goods companies in Nigeria.
5. To determine the relationship between the cash conversion cycle and return on assets of listed industrial goods companies in Nigeria.
6. To determine the relationship between the accounts receivable period and return on asset of listed industrial goods companies in Nigeria.

RESEARCH QUESTION

1. What is the relationship between inventory turnover period and net profit margin of listed industrial goods companies in Nigeria?
2. What is the relationship between the cash conversion cycle and net profit margin of listed industrial goods companies in Nigeria?
3. What is the relationship between the account receivable period and net profit margin of listed industrial goods companies in Nigeria?
4. What is the relationship between inventory turnover period and return on assets of listed industrial goods companies in Nigeria?

5. What is the relationship between cash conversion cycle and return on assets of listed industrial goods companies in Nigeria?
6. What is the relationship between the account receivable period and return on assets of listed industrial goods companies in Nigeria?

RESEARCH HYPOTHESIS

- 1) There is no significant relationship between inventory turnover period and net profit margin of listed industrial goods companies in Nigeria.
- 2) There is no significant relationship between cash conversion cycle and net profit margin of listed industrial goods companies in Nigeria.
- 3) There is no significant relationship between account receivable period and net profit margin of listed industrial goods companies in Nigeria.
- 4) There is no significant relationship between inventory turnover period and return of assets of listed industrial goods companies in Nigeria.
- 5) There is no significant relationship between cash conversion cycle and return of assets of listed industrial goods companies in Nigeria.
- 6) There is no significant relationship between account receivable period and return of assets of listed industrial goods companies in Nigeria.

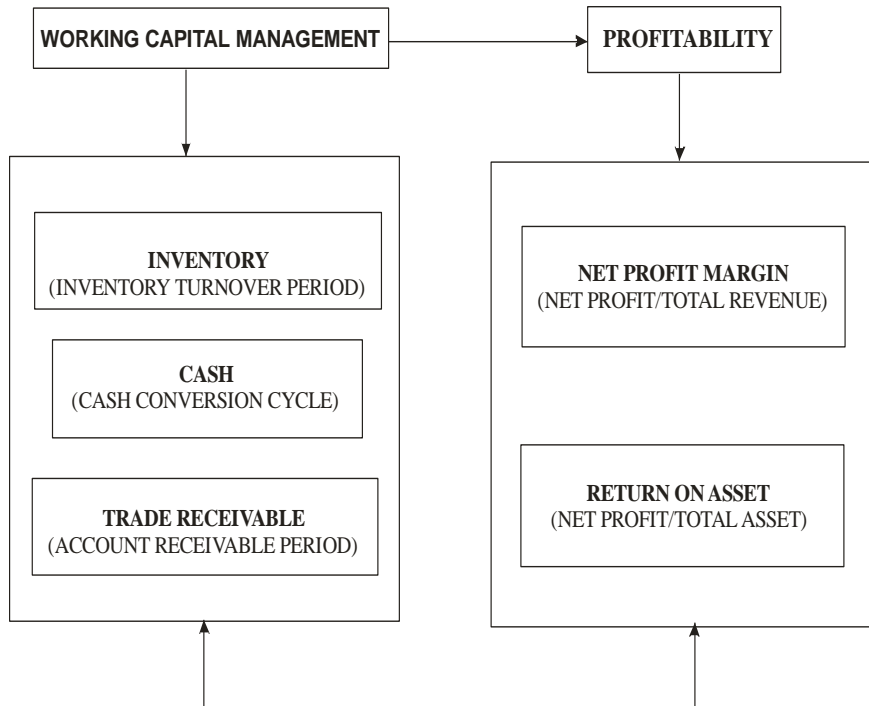
STATEMENT OF THE PROBLEM

Working capital management is required for a company's survival in the short run. It is a reflection of the liquidity position of the company. It depicts the extent to which an organisation can meet its daily financial obligations and take advantage of various opportunities. An organisation must maintain a balanced relationship among the components of its working capital for it to succeed.

Egbide, (2009) found out that a greater number of business failures in the past have been blamed on the financial managers in ability to plan and control the working capital of their respective companies. These reported inadequacies among financial managers are found in some organisations in the form of high inventory costs, and high bad debts, which affect their operating performance.

Madugba and Ogbonnaya (2016) assert that despite the crucial nature of working capital management, many promising and viable investments with high rates of return had turned out to be a failure. They stated that management of working capital affects the financial performance of a firm especially the manufacturing organisation because working capital shows the strength and degree of solvency of the business. To explain the relationship between working capital management and profitability different research had been carried out in different parts of the world, especially in developing countries. Despite the importance, this issue failed to attract the attention of researchers in the industrial goods companies of Nigeria. It is based on the identified problems that this study working capital and profitability of listed industrial goods companies in Nigeria have been undertaken to determine the relationship between working capital management and profitability of listed industrial goods companies in Nigeria.

CONCEPTUAL FRAMEWORK



The conceptual framework relevant to working capital management and profitability of listed industrial goods companies in Nigeria is schematically presented above.

EMPIRICAL LITERATURE REVIEW

Sanni (2008) opined that working capital is the capital an organization needs to finance daily business operations and that the utilization of current assets and liabilities to maximize short-term liquidity is known as working capital management. Medhi et al (2013) opined that working capital is the investment of an organization in current or short-term assets such as cash, short-term securities, account receivables and inventories. They further stated that working capital management entails the whole aspect of managing the current assets of the firm which involves the decisions related to the financing of the current assets through current debts and equity. Working capital is very necessary because the day-to-day running of the organization depends on the component of working capital, as such the need for adequacy and optimality. The building up and maintenance of confidence and reliability of the business depend on the ease with which inventories and receivables are converted into cash to meet maturing obligations promptly. Also worthy of note is that excess working capital is dangerous like the unnecessary build-up of inventories which may result in obsolescence, deterioration, high insurance cost and Pilferage (Ngerebo-a 2009).

Naeem, Malik, Muhamad and Mehboob (2014) investigated the effects of working capital management on firm performance in Pakistan. The proxies used for the variables of working capital management are the average age of inventory, average collection period and average payment period, while the referent for their criterion variable used is gross profit margin, return on asset and return on equity. The control variables used are the firm's size and leverage. Agency theory was used to anchor the study. The methodology adopted in the study was the panel econometric technique. Secondary data used in the study was obtained from annual reports of non-financial firms listed on the stock exchange of Karachi from 2007-2010. The data collected were analysed using a descriptive statistic, and ordinarily least square regression.

The finding showed an insignificant positive relation among average inventory with a gross profit margin as well as return on assets likewise average age inventory depicts a negative relationship with return on equity. The average collection period had a significant positive relation with gross profit margin and return on assets, while the average payment period was positively related to gross profit margin and return on equity. The firm size had a significant positive relation with gross profit margin and return on asset and negative relation with return on equity. The study concluded that working capital management influences the financial performance of a non-financial listed firm in Pakistan.

Mehdi, Esmaeil, and Ali, (2013), evaluated the impact of working capital management on the performance of the firm listed on the Tehran stock exchange. The variable of the working capital management dimension used is the average collection period, average payment period inventory turnover in days and cash conversion cycle while the proxies for performance used are refined economic value added and market value added. The theory used in the study was agency theory. The methodology adopted in the study was a descriptive research design. A secondary data source was used which was collected from the annual report of selected firms listed in the Tehran stock exchange from 2006 to 2010. The analysis of data collected was done using multiple regression and Pearson product-moment correlation. The result indicated that no significant relationship exists between working capital management and refined economic value added. However, working capital management variables used are significantly related to market value added.

Ani, Okwo and Ugwunta (2018), studied the effect of working capital management on profitability. The referents for the predictor variable used are cash collection cycle, sales growth rate, debt ratio and current ratio whereas the criterion variable was proxies with return on assets. The study adopted cross-sectional and time series. Secondary data sources were used. This data were collected from 5 top world-leading beer brewery firms. The data collected were analysed using multiple regressions. The empirical finding showed that between world-leading firms' cash conversion cycle and sales growth influence profitability positively. It was concluded that working capital management impact on profitability. The study showed that a reduction in the cash conversion cycle and increases in sales greatly improve world-leading beer brewer's profitability.

Ikpefan and Owolabi (2014) conducted a study on working capital management and profitability of the manufacturing sector in Nigeria. The predictor variables used include trade receivable collection period, trade payable payment period, current ratio, and quick ratio whereas the criterion variable used return on equity. The methodology used was a descriptive statistic. Secondary data was used, which was collected from the annual report of Nestle Nigeria Plc. and Cadbury Nigeria Plc. from 2008-2012. The data were analysed using correlation and regression analysis. The finding showed a significant negative relationship between liquidity, two of the efficiency ratio and return on equity for Nestle Nigeria Plc. whereas a positive association between the liquidity, efficiency ratios and return on equity of Cadbury Nigeria plc. The study concluded that working capital management influences the profitability of selected manufacturing companies in Nigeria. The study recommended that corporation should manage their working capital efficiently by upgrading the quality of their assets while obsolete inventories should be written off.

Uguru, Chukwu, and Elom (2018), investigated the effect of working capital management on the profitability of brewery firms in Nigeria. The dimensions used for the independent variables are the number of days account receivables are outstanding, the number of day inventory is held and the cash conversion cycle, whereas the dependent variable proxy was returning on asset. The study anchored on trade-off theory. The methodology adopted was an ex-post-facto

research design. Secondary data were used in the study. The data were collected from two brewery firms in Nigeria (Nigerian Breweries Plc. and Guinness Nigeria Plc.) from 2006-2014. The analysis of the data collected was done using ordinary least square regression techniques. The result of the finding indicated that working capital variables used significantly influence return on assets. The study, therefore, suggested that the management of brewery firms should ensure a reduction in the number of days accounts receivable outstanding, the number of day's inventory held and the cash conversion cycle as it will influence profitability positively.

Madugba and Ogbonnaya (2016) investigated working capital management and financial performance in Nigeria. The variables used for the working capital management measure are the Average Payment Period and Average collection period whereas financial performance was proxied with earnings per share and return on capital employed. The theories upon which the study was anchored are the operating cycle theory and the resources-based theory. The study used an ex-post facto research design. The secondary data sources were used for the studies which were collected from the annual financial reports of sample manufacturing companies in Nigeria. The data were analysed using multiple regression analysis. The result of the finding showed a positive relationship between the Average Payment Period and return on capital. It also revealed that the relationship between Account Collection Period and Earnings per share is negative meaning that an increase in ACP will result in to decrease in Earnings per share. A positive association was also discovered between the Average Payment Period and earnings per share meaning that a unit increase in APP will result in a unit increase in Earning per share of manufacturing firms in Nigeria. The study concluded that working capital management impact the financial performance of manufacturing firm in Nigeria. It was recommended that professionals should be hired by companies to ensure effective and efficient working capital management and that more attention be paid to the cost of sales because it affects the prices of stock negatively.

Oyedele, Adeniram and Oluwatosin (2017), conducted a study on working capital management and financial performance in Nigeria. The dimension of the predictor variables used includes inventory conversion period, Debtors conversion period, creditors' conversions period and cash conversion cycle whereas financial performance was proxied by return on assets. The theories used to anchor the study are the pecking order theory of liquidity, the trade-off theory of liquidity and the working capital cycle theory. The secondary data source used was collected from the annual report of Nigerian Breweries Plc. from 2011-2016. The collected data were analysed using descriptive and inferential statistics. The finding revealed that the cash conversion cycle and inventory conversion period had a negative significant relationship with return on asset. The study concluded that working capital management influences the financial performance of listed Nigerian Breweries Plc. it was recommended that the management of Nigerian Breweries Plc. Should reduce the number of days accounts receivable are outstanding and the account payable should be repositioned to reduce the cash conversion cycle.

Abdulazeez, Baba, Fatima and Abdulrahman (2018), investigated the working capital management and financial performance of listed conglomerate companies in Nigeria. The working capital management proxies used were the debtor collection period, cash conversion cycle and creditor payment period whereas the proxy for financial performance was used as return on investment and the control variable used was firm size. The methodology adopted was an ex-post facto research design. Secondary data was used for the study, which was collected from the annual report of the companies under study for a period of ten years (2005-2014). The data were analysed using descriptive statistics, multi-collinearity and ordinary least square regression. The result revealed that debtor collection period, creditor payment period and firm size negatively related to return on investment while the cash conversion cycle had an

insignificant positive relationship with financial performance. It was concluded that working capital management influences financial performance. The study recommended that listed conglomerate companies should maintain the current debtor's collection period or further reduces it to continue to enhance financial performance.

Ajayi, Abogun and Odediran (2017), investigated the impact of working capital management on the financial performance of quoted consumer goods manufacturing firms in Nigeria. The dimensions used for the independent variable are the Average collection period, cash conversion cycle and average payment period while the dimension of financial performance used are return on asset and gross operating profit. The theory used to anchor the study was the pecking order theory. The study adopted a descriptive research design. Secondary data was used for the study which was collected from the annual report of 15 companies through a purposive sampling technique from 2005 to 2014. The data were analysed using descriptive statistics and panel regression analysis. The result of the analysis showed cash conversion cycle had a significant negative relation with return on the asset while the Average collection period (ACP) had a positive significant relationship with gross operating profit. The study concluded that working capital management influences the financial performance of consumer goods companies in Nigeria. Polycarp and Tabitha (2016) investigated the effect of working capital management on the financial performance of listed manufacturing firms in Kenya. The predictor variable used is the average payment period, Average collection period inventory collection period and cash conversion cycle whereas the criterion variable used is returned on asset and the control variable is firm size. Theories used in the study are the pecking order theory, cost trade-off theory, the operating cycle and cash conversion cycle theory. The quantitative research design was adopted. Secondary data was used for the study. The data were collected from the annual report of selected companies from 2005 to 2014. The data were analysed using descriptive statistics and the Pearson correlation coefficient. The result showed a negative relation between debtors, inventory and cash management with financial performance. Likewise, a positive association was discovered between creditors' management and financial performance. It was concluded that working capital management influence the financial performance of listed manufacturing firm in Kenya.

Lawal, Abiola and Oyewole (2015), investigated the effect of working capital management on the profitability of selected manufacturing companies in Nigeria. The proxies of the predictor variables used include debtor collection period, cash conversion cycle and creditor payment period while the criterion is valuable used as return on investment. The theory used to anchor the work was the rational choice theory. The study adopted an analytical research design. The secondary source of data was used to gather information from the annual report of six manufacturing companies through a purposive sampling technique from 2006 to 2013. The data were analysed using an econometric approach by employing multiple regression analysis using E-views 7.0 package. The result showed a significant negative relationship between inventory turnover days, creditor's payment period and average collection period with profitability. It was concluded that working capital management had an impact on the profitability of manufacturing companies. It was recommended among others that companies should ensure that efforts are made towards proper management of cash, account receivable, inventories and accounts payable with the view to reduce the cash conversion cycle to increase profitability.

Asha and Mba (2014) conducted a study on the impact of working capital management on profitability in Pakistan. The variables of working capital used in the study were inventory turnover, account receivables and creditor's turnover whereas the variable of profitability was used as return on assets. The descriptive research design was adopted. Secondary data was used

for the study which was collected from Glaxosmith Kline Pharmaceutical Company listed in the Karachi stock exchange for a period covering 1996-2011. The collected data were analysed using descriptive statistics alongside multiple regression analysis. The result indicated an insignificant positive relation between debtor turnover and inventory turnover ratio with return on assets. It was concluded that working capital management impact on the profitability of the pharmaceutical company under study.

Bab, Muhammad and Najam (2018), investigated the impact of working capital management on profitability in Pakistan. The referents of the predictor variable used were inventory turnover, cash conversion cycle and payable days whereas the dimension of the criterion variable used returned on asset and return on equity. The data source used was secondary which was collected from 25 chemical and pharmaceutical companies listed on the Pakistan stock exchange from 2009-2014. The research design adopted was descriptive. The analysis of the data collected was done using correlational and regression analysis. The finding showed that cash conversion cycle, inventory days and payable days had a positive significant relationship with return on assets. It also indicated that the cash conversion cycle and payable days had a significant positive relationship with return on equity. However, inventory days had a negative association with return on equity. The study completed that working capital impact on profitability. It was recommended that companies should maintain a working capital component to improve firm profitability.

Asif and Zhuqan (2018) evaluated the effect of working capital management on profitability in Pakistan. The referent of working capital used were average collection period, inventory turnover days, cash conversion cycle and average payment period whereas operating net profit was used for profitability. A descriptive research design was used in the study. A secondary data source was used which was obtained from the annual report of 60 sample companies listed in the Karachi stock exchange from 2008-2014. The data collected were analysed using regression and correlation analysis aided by E-view 8 software. The finding showed that all the variables of working capital management used in the study had a significant relationship with profitability. Therefore it was concluded that working capital management influences profitability. It was recommended that managers of the firm can enhance the profitability of the organization by reducing the collection period and adopting an effective credit policy.

Rimsha, Tehreem, Abdul and Hamaza (2018), studied working capital management and profitability in Pakistan. The variable of working capital used in the study was current ratio, debt to equity ratio, operating profit to debt ratio and inventory turnover ratio whereas profitability was proxied with return on asset. The descriptive research design was used. Secondary data were used which was obtained from the annual report of an electrical equipment firm listed on the Karachi stock exchange covering a period of 2007-2012. The data were analysed using regression analysis. The finding revealed a significant positive relationship between the working capital management variable and profitability. It concluded that working capital management influence the profitability of electrical equipment firm in Pakistan.

Farooq and Nofazil (2017) investigated working capital management, firm performance and financial constraint in India. The dimension of working capital management used include cash conversion cycle, Account receivable period, inventory conversion period and Account payable period while return on asset was used as the dependent variable and firm size as the control variable. The methodology adopted in the study was the descriptive research design. The secondary source of data used for the study was collected from annual financial reports of 437 non-financial Indian companies from 2007-2016. The data were analysed using multiple regression analysis. The empirical finding showed that all the independent variables significantly correlated with the dependent variable used. It was concluded that working capital

management had an optimal level, the balance of cost and benefit by maximizing firm performance.

Hassan (2015), investigated working capital management on the profitability of cement sector-listed companies in Pakistan. The independent variable proxies used are payable days, receivable days, inventory days and cash conversion cycle whereas the dependent variable proxies used include return on asset and return on equity. The descriptive research design was used. Secondary data used for the study were collected from annual selected 30 companies listed in the Pakistan stock exchange for the period of 2001 to 2016. The data were analysed using simple regression analysis. The finding revealed a significant result between the variable tested. It was concluded that working capital management influences the profitability of listed companies in Pakistan.

Osuma, Ikpefan, Romanus, Ndigwe and Nkwodimmah (2018) investigated working capital management and bank performance in Nigeria. The dimension of working capital management used is net interest income and current ratio while the dependent variable used is returned on the asset, return on equity and profit after tax. The research design adopted was the survey method. Secondary data used were collected from ten deposit money banks from 2010 to 2016. The data were analysed using correlation analysis. The finding depicted that working capital management had a significant effect on the profitability of the selected banks. It was recommended that deposit money banks should ensure that idle cash and bank balance are utilised to meet short-term debt obligations.

Rahimah, Forha, Syahrul and Naraisah (2018) studied working capital management and its effect on profitability in Malaysia. The predictor variable proxies used include inventory days, account receivable days, account payable days and cash conversion cycle while the criterion variable was proxied with return on asset. The methodology used was a descriptive survey. Secondary data used were collected from listed Malaysian public companies from 2010 to 2014 and the data were analysed through the use of correlation and multiple regression analysis. The result showed that account payable days and cash conversion cycle has no significant effect on return on asset whereas inventory days and account receivable days had negative significant relation with return on asset. It was concluded that working capital management impact on profitability as such managers should ensure proper management for efficient performance.

Femi and Ali (2016) studied the relationship between working capital management and profitability in Turkey. The variables of working capital used are the Account receivable period, inventory conversion period, Account payable period and cash conversion cycle whereas the referent for the dependent variable used is the return on asset, return on equity operating profit margin and net profit margin. The methodology adopted was a descriptive research design. Secondary data used were collected from a purposive sampling of 120 Turkish manufacturing companies covering a period of 2003 to 2012. The data obtained were analysed using regression analysis. The result indicated a negative association between the inventory conversions period and return on assets. It was discovered that the Account receivable period, inventory conversion period, account payment period and cash conversion cycle had a positive significant association with return on assets. There was a positive significant relationship between Account receivable periods and cash conversion cycle and return on equity and an insignificant association was observed among inventory conversion period, account payment period and return on equity. The study concluded that working capital management impact the profitability of Turkish firm.

Bash, Nazir, Khan, Alif, and Razzaq (2016), conducted a study on the impact of working capital management on a firm's financial performance in Pakistan. The proxies for the predictor variable used include cash conversion cycle, inventory turnover, average collection period and

average payment period while the dimension of the dependent variable used returned on the asset, return on equity and earnings per share. The quantitative research method was adopted; secondary data were used for the analysis which was obtained by purposive sampling of 50 listed non-financial firms on the Pakistan stock exchange market covering 2005 to 2014. The method of data analysis used includes multiple regression and correlation matrix. The result depicted cash conversion cycle, average payment period and inventory turnover had a significant negative association with return on the asset while account receivable positively correlated with return on asset, inventory turnover had a negative significant association with earning per share and account conversion period had positive influence with earning per share. The study recommends that managers should have the best line of action to properly control working capital management to improve the performance of their entity.

Gonya and Mutekwe (2017) investigated the impact of working capital management components on the profitability of the basic material industry in South Africa. The referent of the independent variable used included account receivable days, cash conversion cycle, and inventory turnover period while the proxies for the dependent variable used returned on asset and return on equity. The study adopts a casual research design. The secondary data were used which were obtained from annual reports of the basic material industry listed on the Johannesburg stock exchange from 2002 to 2013. The collected data were analyzed using descriptive statistics and regression analysis. The finding showed a negative significant association between inventory days, account receivable days and cash conversion cycle with profitability and a positive significant relationship between account payable days and profitability. The study depicted that the working capital management component impacts the profitability of listed basic material firms on the Johannesburg stock exchange.

Gill, Biger and Mather (2010), studied the relationship between working capital management and profitability in the United States. The dimension of working capital management variable used include account receivable days, account payable days, inventory turnover period and cash conversion cycle while the dependent variable remains profitability. The research design adopted was descriptive. The data used was secondary and was collected from financial reports of publicly traded companies from 2005 to 2007 through a random sample of 88 out of 300 firms listed on the New York Stock Exchange. The data were analyzed using regression analysis. The result of the finding showed a negative relationship between account receivable and profitability. A significant relationship was noticed between the cash conversion cycle and profitability. The study concludes that working capital influences profitability.

Jason (2017), Investigated the effect of working capital management on profitability in South Africa. The dimension of working capital management variables used was account payable days, inventory turnover days, account receivable days and cash conversion cycle while the dependent variable used returned on assets. The study adopted panel data methodology, and secondary data used was collected from the annual report of listed manufacturing companies from 2007-2016. The result showed a negative association between the average payment period and average collection period with profitability while a positive relationship was noticed between inventory days and profitability. The study concludes that working capital management influences profitability.

A review of prior literature reveals that there is a significant relationship between working capital management and profitability by using different variable selections for the analysis. However, it is evident from the literature that the majority of the studies have been conducted outside Nigeria. A few studies have been carried out in Nigeria on working capital management and profitability, from the empirical study review it is clear that much work had not been done to determine the relationship between working capital and profitability of listed industrial

goods companies in Nigeria. Therefore, there is a need to fill this gap, which is the essence of this study Working Capital Management and Profitability of Listed Industrial Goods Companies in Nigeria.

COST TRADE-OFF THEORY

The cost of liquidity and illiquidity are involved in maintaining a particular level of current assets. This theory postulates that if the firm's level of current assets is very high, it will result in excessive liquidity and its return on assets will be low because funds are tied up in idle cash and stock earns nothing while high levels of trade receivables reduce profitability. On the contrary insufficient current assets make the firm not honour its obligation if it holds too little cash, which may force the firm to borrow at a high-interest rate that may adversely affect the firm credit-worthiness and eventually lead to insolvency (Pandey, 2011)

If investment in current assets falls at a certain level, it may lead to an inability to pay bills on time and may also result in shortage leading to the halting of production activities. It may also lead to a loss of sales due to a restrictive credit policy by the firm (Polycarp & Tabitha, 2016). This theory is relevant to the study as it emphasizes the need for the firm to maintain a working capital level that minimizes the cost of liquidity and illiquidity associated with the management of working capital items for the firm to optimize its performance.

METHODOLOGY

This study adopted the use of an ex-post facto research design which enabled the researcher further evaluate the available fact. The population of the study was industrial goods companies in Nigeria Stock Exchange. Secondary data collected from the latest published financial statements of ten (10) listed industrial goods companies in the Nigeria Stock Exchange from 2012-2021 were used. The non-profitability sampling technique known as judgmental sampling was used in the study base on convenience. The study employed 100 data observations because 10 firms were selected for 10 years (2012-2021). The least-square multiple regression techniques and Pearson correlation coefficient aided by the statistical package for social sciences (SPSS) version 22.0 were used to measure the relationship between the independent variable and the dependent variable.

MODEL SPECIFICATION

To evaluate working capital management and profitability of listed industrial goods companies in Nigeria, the general multiple regression models are presented below.

$$P = c_0 + c_1I + c_2C + c_3R + \mu \dots\dots\dots 1$$

$$NPM = c_0 + c_1I + c_2C + c_3R + \mu \dots\dots\dots 2$$

$$ROA = c_0 + c_1I + c_2C + c_3R + \mu \dots\dots\dots 3$$

Where

P = Profitability (dependent variable)

NPM = Net Profit Margin

ROA = Return on Assets

I = Inventory Turnover Period

C = Cash Conversion Cycle

R = Trade Receivable Period

c₀ = Regression constant/intercept

c₁c₂c₃ = regression coefficient

μ = error term

RESULTS

This section focuses on Data Analysis and Discussion of Findings.

Table 1 Descriptive Statistics of all the variables of the study.

Statistics

	Inventory	Cash	Receivables	Net Profit Margin	Return on Assets
N valid	100	100	100	100	100
Missing	0	0	0	0	0
Mean	58.61	78.49	42.84	0.482	0.145
Std. Deviation	37.36	41.65	28.89	0.365	0.122

Source: SPSS version 22.0 output, 2022

Table 1 shows that Inventory had a mean value of 58.61 and a Standard deviation of 37.36, Cash had a mean value of 78.49 and a Standard deviation of 41.65, and Receivables had a mean value of 42.84 and a Standard deviation of 28.89. Net Profit Margin had a mean value of 0.482 and a Standard deviation of 0.365, and Return on Asset had a mean value of 0.145 and a Standard deviation of 0.122.

Table 2 Regression

Analysis showing the relationship between Working Capital Management and Profitability

Variables	Coef	t-cal	t-tab (0.05,100)	Sig T	R	R ²	F-cal	F-tab (0.05,1,98)	Sig F
Constants	1.341	4.172		0.002					
W C M	-0.891	-2.623	1.980	0.004	0.891	0.794	6.108	3.940	0.004

Dep. Variable: Profitability

Source: SPSS version 22.0 output, 2022

$$P = f(W C M)$$

$$P = \alpha_0 - \alpha_1 WCM + \mu_1$$

$$P = 1.341 - 0.891 WCM$$

t-values in bracket (4.172)(-2.623)

Table 2 depicts the regression analysis on working capital management and profitability. The table depicted Pearson's Correlation coefficient 0.891, which denote that correlation is high, showing a strong relation towards working capital management and profitability. The determination coefficient (R²) = 0.794, means that 79.4% change in profitability describe the changes in working capital management. The 20.6% left over is described by the variables order than the one in this model. The F-calculated value 6.108 had a significant value 0.004 as such it is important to say that the model was good for the study. Conventionally, F-calculated = 6.108 > F-table (0.05, 1, 98) = 3.940. Therefore the model was declared useful.

Likewise Table 2 shows that working capital management with t-value |2.623| > t-table (0.05, 100) = 1.980 and important probability value of 0.004 < 0.05 significance level. Accordingly, the researcher stated that working capital management significantly influences profitability of listed industrial goods companies in Nigeria. The findings corroborate with the findings of Rehimah et al (2018), Asif et al (2018), Lawal et al (2015) in their study which observed that working capital management variables influences profitability.

Table 3 Regression table showing the relationship between Inventory, Cash and Trade receivables on Net Profit Margin

Variables	Coef	t-cal	t-tab (0.05,100)	Sig T	R	R ²	Durbin Watson	F-cal	F-tab (0.005,3,96)	Sig F
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Constants	4.721	2.642	0.007								
I	-3.181	-2.011	0.024								
				1.980		0.863	0.745	2.018	4.756	2.700	0.014
C	4.052	2.541	0.012								
R	-6.712	-2.312	0.020								

Dep. Variable: Net Profit Margin

Source: SPSS Version 22.0 Output 2022

$$NPM = f(I,C,R)$$

$$NPM = c_0 + c_1 I + c_2 C + c_3 R + \mu_2$$

$$NPM = 4.721 - 3.181 I + 4.052 C - 6.712 R$$

$$t\text{-Values} (2.642)(-2.011)(2.541)(-2.312)$$

Table 3 depicts that Pearson Correlation Coefficient 0.864, value is high showing a strong relation towards the regression and net profit margin. The determination coefficient R^2 0.745, means that 74.5% change in net profit margin is describe by changes in the regressors, likewise 25.5% changes in net profit margin describe variables other than the one use in the model. The F-calculation of 4.756 with important probability value 0.014. Therefore the usefulness of the model was declared by the investigator. Conventional F-calculated $4.756 > F\text{-table}_{(0.05, 3, 96)} = 2.700$. The statistical table calculated for Durbin Watson show value 2.018 indicating that auto correlation is absence, therefore the usefulness of the model was established by the investigator. Inventory with calculated t-value $|2.011| > t\text{-table}_{(0.05,100)} = 1.980$ and important probability value $0.024 < 0.05$ significance level, this affirm that inventory influence net profit margin significantly in listed industrial goods companies in Nigeria.

Cash with calculated t-value $|2.541| > t\text{-table}_{(0.05,100)} = 1.980$ and important probability value $0.012 < 0.05$ significance level, this affirm that cash influence net profit margin significantly in listed industrial goods companies in Nigeria.

Receivable with calculated t-value of $|2.312| > t\text{-table}_{(0.05, 100)} = 1.980$ and important probability Value $0.020 > 0.05$ significance level, this affirm that receivables impart on net profit margin of listed industrial goods companies in Nigeria.

Table 4 Regression Model showing the relationship between Inventory, Cash and Receivables on Return on Assets

Variables	Coef	t-cal	t-tab (0.05,100)	Sig T	R	R ²	Durbin Watson	F-cal	F-tab (0.05,3,96)	Sig F
Constants	1.641	2.891		0.005						
I	-5.013	-2.761		0.021						
			1.980		0.820	0.672	2.083	6.243	2.700	0.017
C	4.562	3.421		0.018						
R	-6.118	-2.613		0.025						

Dep. Variable: Return on Assets

Source: SPSS Version 22.0 Output 2022

$$ROA = f(I,C,R) \dots\dots\dots 1$$

$$ROA = c_0 + c_1 I + c_2 C + c_3 R + \mu_3 \dots\dots\dots 2$$

$$ROA = 1.641 - 5.013 I + 4.562 C - 6.118 R$$

$$T\text{-values} (2.891)(-2.761)(3.421)(-2.613)$$

Table 4 depicts the Pearson Correlation Coefficient of 0.820, showing a strong relationship between the regressors and return on asset. The determination coefficient R^2 is 0.672 meaning that 67.2% of changes in return on the asset are described by variation in regressors, likewise,

32.8% of the variance in return on the asset is attributed to variables other than the one used in the model. The f-calculated value of 6.243 with an important probability value of 0.017, therefore usefulness of the model was affirmed by the investigator. F-calculated value of $6.243 > F\text{-table}(0.05, 3, 96) = 2.700$. The statistical table calculated for Durbin Watson depicted a value of 2.083 indicating that autocorrelation is absent, therefore the usefulness of the model was established by the researcher.

Inventory with t-value $|2.761| > t\text{-table}(0.05, 100) = 1.980$ and important probability value of $0.021 < 0.05$ significance level, affirms that cash imparts on return on assets of listed industrial goods companies in Nigeria significantly.

Cash with t-value $|3.421| > t\text{-table}(0.05, 100) = 1.980$ and essential probability value $0.018 < 0.05$ significance level, this affirms that cash impact on return on assets of listed industrial goods companies in Nigeria significantly.

Receivable t-value $|2.613| > t\text{-table}(0.05, 100) = 1.980$ and essential probability value $0.025 < 0.05$ significance level. This affirms that receivables, impart on return on assets of listed industrial goods companies in Nigeria significantly.

DISCUSSION OF FINDINGS

Several findings were made in the course of testing the hypothesis of the study, therefore it is pertinent to discuss those observations and relate them to the literature review on the concept of working capital management and profitability.

There is a strong negative correlation of -0.891^* significant $0.004 < 0.05$ level of significance on the relations between working capital management and profitability. The discovered negative correlation coefficient indicates an increase in profitability is associated with a reduction in the working capital management components. Also, the regression analysis test depicts the same coefficient of correlation 0.891 and a strong coefficient of determination of 0.749 in Table 2, which implies that a 79.4% variation in financial performance is attributed to changes in the working capital management which was significant at $F = 0.004$. Likewise working capital with t-value calculated $|2.623| > t\text{-table}(0.05, 100) = 1.980$ with an essential probability value of $0.004 < 0.05$ significance level. The finding indicated a unit increase in profitability accounts for -0.891 reductions in the components of working capital management. The researcher affirms that working capital management influences the profitability of listed industrial goods companies in Nigeria significantly. These findings concord with the findings of Abdulazeez et al (2018), Jason (2017), and Gonya et al (2017) among others

CONCLUSION AND RECOMMENDATION

Working capital management aims at maintaining an optimal balance between working capital components such as cash, inventory, receivables and payables which is a fundamental part of the overall corporate strategy to create value and it is an important source of competitive advantage in business. The study was undertaken to determine the relationship between working capital management and the profitability of listed industrial goods companies in Nigeria. It was discovered that there is a strong negative correlation of 0.891^* significant at $0.004 < 0.05$ on the relations between working management and profitability. The discovered negative correlation coefficient indicates an increase in profitability is associated with a reduction in the working capital component. It was concluded that working capital management impacts the profitability of listed industrial goods companies in Nigeria.

The result of this study indicates that the duration of a trade receivable, inventory and cash are essential factors that affect the profitability of listed industrial goods companies in Nigeria. Based on the finding the listed recommendation is necessary.

1. There should be an improvement in inventory and receivable management practices in order to increase profitability and improve the wealth of shareholders.
2. The credit policy of the companies should be structured in such a way as to improve cash flow thereby reducing the firm cash conversion cycle.
3. To improve the profitability of the firm there should be collaboration with suppliers for a long credit period.
4. An increase in profitability of the firm will be achieved with a proper relationship with customers to accept short-term payment periods through incentives like a discount for prompt payment of accounts.
5. Where necessary professional should be hired to ensure efficient management of working capital components to increase profitability.

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