# THE IMPACT OF WORKING CAPITAL MANAGEMENT ON THE FINANCIAL PERFORMANCE OF LISTED HEALTH CARE FIRMS IN NIGERIA

BY

SAHABI ABUBAKAR ALIYU
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OCTOBER, 2021

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BEING A RESEARCH SUBMITTED TO THE DEPARTMENT OF ACCOUNTING, FACULTY OF SOCIAL AND MANAGEMENT SCIENCE, FEDERAL UNIVERSITY GUSAU IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE DEGREE IN ACCOUNTING

OCTOBER, 2021

# DECLARATION

I Sahabi Abubakar Aliyu with the registration number 1610201019 declare that; this study is the product of the research done by me under the supervision of Mallam Adamu Magaji. All sources and materials consulted have been duly acknowledged.

**1610201019**

**SAHABI ABUBAKAR ALIYU**

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## CERTIFICATION

This research work titled "working capital management and financial performance of listed health care firms in Nigeria", has been supervised, examined and recommended for acceptance for the award of Bachelor of Science (B.Sc.) degree in accounting in the department of accounting and finance, faculty of Management and Social Sciences, Federal University Gusau, Zamfara.

Mallam Adamu Magaji

27/10/2024

Date

(Project Supervisor)

## APPROVAL

This research work title "working capital management on the financial performance of listed health care firms in Nigeria", "by Sahabi Abubakar Aliyu has been read and approved by the under signed officials on behalf of the Department of Accounting and Finance, Faculty of management and social sciences, Federal University Gusau, as meeting part of the requirement for the award of Bachelor of Science Degree in Accounting and finance.

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External examiner

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Date

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This research work title "working capital management on the financial performance of listed health care firms in Nigeria", "by Sahabi Abubakar Aliyu has been read and approved by the under signed officials on behalf of the Department of Accounting and Finance, Faculty of management and social sciences, Federal University Gusau, as meeting part of the requirement for the award of Bachelor of Science Degree in Accounting and finance.

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# DEDICATION

This project is dedicated to Almighty Allah for given me the opportunity to earn this degree.

# ACKNOWLEDGEMENT

All Praise is due to the supreme of the universe, the owner of here and hereafter, the Lord of all mankind and angels. Am indeed grateful to Almighty Allah for giving me the chance to write the project and earn B.Sc. Accounting, I know it's not my hard work nor my cleverness but it Allah's will. I thank Allah.

In the annals of my studies, I received so much support and encouragement from so many important persons not only financially and morally but also inspirationally. However, lack of space would not allow mentioning all of them which I wanted to. But I here for acknowledge all the contribution and support of all those people who help me in one way or the other in pursuance of my B.Sc. I also appreciate the will of those who want to help me but couldn't because of one reason or the other. Here I must names few individuals, for they deserve to be mention:

In must hereby start by acknowledging the role of the well learned Mallam Adamu magaji for his critical supervision to ensure that the project is up to international standard. My special thanks goes to; my parents :late Malam Abubakar Aliyu and Malama Rakiya Usman Hanau for giving birth to me as their son, may god continue to bless them and forgive all their sins and may he reward them with jannatul firdaus and to my tireless uncle Malam Yusuf Aliyu and his wife Malam Furaira Habibu for raising me as their son and showed me the path to seek knowledge, I will like to express my gratitude to Malam Suleiman Muhammad Mahir who has been given me financial support all the years. Malam Usman Muhammad for his academic support. Mubarak Yusuf Aliyu, a young Architect who pledges support whenever requested. Alhaji Saleh Dankyandi. Malam Abubakar Usman Hanau, Malam Hamza Usman Hanau and Alhaji Dalhat

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## ABSTRACT

The study examine the impact of working capital management on the financial performance of listed health care firms in Nigeria. The annual report of eight health care companies listed in the Nigeria stock exchange for the period of 2011-2020 were used for this study. Ex-post facto research design was adopted for this study. Multiple regression analysis was used as a technique of data analysis to test the significant impact of working capital management on the financial performance. The study findings reveal that account receivable period has no significant impact on the financial performance of listed health care firms, accounts payment period has a strong positive impact on the firm's financial performance and finally cash conversion cycle has a positive significant impact on the firm's financial performance. Therefore the study recommend that health care firms should reduce the borrowing level of the firms in order to improve credit rating, reduce the overall risk and cost of borrowing and the financial managers of health care firms should formulate policies for the management of cash in order to ensure continuous flow of cash and ability to meet short term ability as they fall due and surplus fund should be invested in profitable venture.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background to the study

Effective working capital management is very important to survival of business organization. Which is why in the last decades there have been many research papers and articles investigated the significance of working capital management with regard to its effect on the financial performance of companies. Abdulazeez, Baba, Fatima and Abdurrahman(2018), argued that the survival of manufacturing and product distribution companies depend largely on their ability to effectively manage credit so as to continue to be liquid in order to sustain their operations. The determination of appropriate balance between the volume of debt and credit is of tremendous importance as it dissuades firms from holding excess idle cash balance or running short of cash required to take care of firm's day-to-day operating activities (Phuong and Hung, 2020).

This requires putting in place some mechanisms to ensure a balance between short term assets and short term liabilities (Bagh, Nazir, Asif Khan, Atif Khan and Razaq 2016).

The rapid increase in the cost of working capital investment relative to the benefits of holding larger inventories or allowing for trade credit to customers lowers the firm's profitability levels (Anton and Nucu 2021). Working capital measures a company's efficiency and represents the liquid assets that are available with a firm. It also indicates firm's short term financial health and its capacity to meet day-to-day operating expense. Thus, working capital management has a significant impact on firm performance (Le, Vu, Le, Tran, and Du2018). The principle goal of Working Capital Management is to ensure that an organization generates sufficient positive working capital (specifically in the form of Cash) from ongoing business activities to continually fund both debt payments and operating expenses. Effective management of working capital involves managing discrete, but highly inter-related processes (cycles). Since these processes are interrelated, decisions made within each one of the disciplines can impact the other processes, and ultimately affect an organization's overall financial performance. Working Capital is the perception within much organization's that you cannot effectively predict when cash will be collected or when it will need to be disbursed, (Anton and Nucu 2021).

Another objective of working capital management in addition to ensuring that company has enough cash to cover its expenses and debt, are minimizing the cost of money spent on working capital and maximizing returns on investment. Efficient working capital management helps maintain smooth operation and can also help improve the company's earnings and profitability (Abubakar, Umaru and Olowe 2020).

Working capital management practices is not only to immunize companies from financial turmoil but can be manage strategically to improve competitive position and profitability which is one of the main problem of Retail Company (Quee, et al. 2020).

The tradeoff theory implies that firms with high level of liquidity may potentially encounter low profitability problem. In other words there is plausibility of negative relationship between liquidity and profitability (Kisanyanya, 2020).

Harsh, et al. (2014), Efficient Management of Working capital is one of the preconditions for success of an organization as Working Capital is the life giving force to an economic entity. Efficient management of working capital means management of various components of working capital in such a way that an adequate amount of working capital is maintained for smooth running of a firm and for fulfilment of twin objectives of liquidity and profitability. Also it is the most crucial factor for survival and solvency of a concern. High level of current of assets effect the firm's profitability and low current assets effect the firm operation as the firm will look for external sources of fund to pay its debt.

Financial management of a business hinges on the management of its short term operation which then drive to the long term goals. The management of working capital and the role it play advancing financial performance continues to steer debate among scholars and practitioners alike (Kasozi, 2017). In reality, analyzing statistics (i.e., metrics) for individual components of working capital often yield patterns or trends that enable managers to reasonably forecast sources and uses of cash (Eya,2016).

The ultimate objective of any firm is to maximize profit but preserving liquidity of the firm is an important objective too. The problem is that increasing profit at the cost of liquidity can bring serious problem to the firm. Therefore there must be tradeoff between these two objectives of the firm. One objective should not be the cost of other because both have their importance. If we do

not care about profit, we can survive for a longer period. On the other hand if we do not care about liquidity we may face the problem of insolvency or bankruptcy (Raheman and Nasr. 2007). Thus, working capital management is a very important component of corporate finance because it directly affects the liquidity and profitability of the company. It deals with current assets and current liabilities. With an efficient working capital management, firms could lower their reliance on external financing and used released cash for additional investment and for enhancing the firm's financial flexibility (De Almeida, Ribeiro, and Eid Jr. 2014).

An efficient working capital management allows health care firms to reduce their holding of current asset such as inventory and account receivables, which earn no interest and require financing with short term debt. Excessive levels of current assets can easily result in a firm realizing a substandard return on investment, however, when the level of current assets is low the firm may incur shortages and its operations will be affected (Horne and Wachowiz, 2005). The firm is expected to pay off its current liabilities as and when they fall due. Efficient working capital management controls current assets and liabilities in a manner that eliminates the risk of inability to meet the short term obligations and avoid excessive investment in current assets (Hassan, Mberia and Maturi 2017).

This management of short-term assets is as crucial as the management of long-term financial assets, since it directly contributes to the maximization of a business's profitability, liquidity and total performance (Toan, Nhan, Ahn and Man 2017).

Financial performance is a determinant of an organization's income, profits, increase in value as evidenced by the appreciation in the entity's worthiness (Asimakopoulos, 2009). The Measures of financial performance fall into investor returns and accounting returns. The basic idea of investor returns is that, the return should be measured from the perspective of shareholders e.g. share price and dividend yield. Accounting returns focus on how firm earnings respond to different managerial policies, which can be measured using different accounting ratios (Alan, 2008). Financial ratios that are usually used as measures of financial performance are further divided into three broad categories that will provide a review of the overall financial position of a company (Fulbier, et al. 2008). These categories include; ratios that indicate the structural change within a company; ratios that indicate the profitability of a company, and ratios that have an impact on the valuation of companies from a market perspective. Financial performance was

measured differently by different researchers, but the most argued measures that provide an important view and complex understanding of the financial performance of a company are the following ratios: Profitability, Liquidity and Efficiency (Radut, 2008).

**Statement of the Research Problem**

It has been noted that health facilities generally experience poor financial performance. Most health facilities perform below expectation and fail within two years after starting, this business failures has been blamed on the inability of the financial manager to plan and control the working capital of their respective firms. These reported inadequacies among financial managers is still evident today in in Nigeria in the form of high bad debts, high inventory cost etc. This study is out to examine the effect of working capital management on the profitability of limited liabilities companies in Nigeria (Nwidobie, 2012). A balance between maintenance of liquidity and profitability is a vital consideration for a firm. Increasing profits at the cost of liquidity can bring serious problems to the firm. Optimal maintenance of liquidity or Working Capital Management has been touted as a possible cause of poor performance (Judith and Muturi, 2018).

Prior scholars have conducted studies on working capital management and its effect on profitability and financial performance of different types of firms, however not much research has been done on its effects on financial performance of Health Care Firms. The Local and international studies include but are not limited to the research conducted by(Anton, et al. 2021) who carried out a research on The Impact of Working Capital Management on Firm Profitability, and they find out that Based on different panel data techniques, the relationship proved to be inverted U-shaped. The empirical results highlight that, at a low level of working capital, increasing sales and discounts on early payments significantly influence positively corporate profitability.: Abubakar, et al. (2020) Conducted a research on Working Capital Management and Financial Performance of Selected Quoted Firms in Nigeria and they discovered that, Cash Conversion Cycle has a strong positive significant impact on financial performance of quoted selected firms in Nigeria. Debt Equity ratio has no significant impact on financial performance of quoted selected firms in Nigeria. Inventory Conversion Period has no significant impact on financial performance of quoted selected firms in Nigeria.

Douglas, Wambugu and Maina (2018) Study the Effect of Working Capital Management on Performance of Small Enterprises in Kenya and their findings shows that longer accounts payable period has positive effect on the profitability of business. On the other hand, longer inventory management periods have negative effect on profitability of SMESs and Longer accounts receivable days have negative effects on profitability of SMEs. Yahaya (2016) study the impact of working capital management on the financial performance of pharmaceutical firms in Nigeria.

Few studies were conducted exclusively on the effect of working capital management on the financial performance of listed Health care firms in developing countries, such as the studies of Akoto, Awunyo-Vitor andAngmor (2013), they study the Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms and the study finds a significantly negative relationship between profitability and accounts receivable days. However, the firms' cash conversion cycle, current asset ratio, size, and current asset turnover significantly positively influence profitability. In spite of the important impact of efficient working capital management may have on business survival and growth, not much has been done in the area of the provision of empirical evidence in support of the claims of working capital management on the financial performance of listed health care firms quoted in Nigerian stock exchange.

In view of the above, this research is set out to ascertain the impact of working capital management on financial performance of listed health care firms in Nigeria.

### 1.3 Research Questions

1. To what extent does Cash conversion cycle (CCC) affect the financial performance of listed health care firms in Nigeria?

2. What is the effect of Account receivable collection (ARP) period on the financial performance of listed health care firms in Nigeria?

3. Does Accounts Payable period affect the financial performance (APP) of listed health care firms in Nigeria?

### 1.4 Objectives of the Study

The main objective of the study is to determine whether working capital management affects financial performance of listed health care firms in Nigeria. The specific objectives are:

1. To evaluate the effect of cash conversion cycle (CCC) on the financial performance of listed health care firms in Nigeria.
2. To evaluate the effect of account receivables collection period (ARC) on the financial performance of listed health care firms in Nigeria.
3. To determine the effect of account payables payment period (APP) on the financial performance of listed health care firms in Nigeria.

### 1.5 Hypotheses of the study

In line with the objectives of the study the following hypothesis are stated in null form

Ho1: Cash conversion cycle (CCC) has no significant effect on the financial performance of listed health care firms in Nigeria.

Ho2: Account receivable collection (ARC) period has no significant influence on the financial performance of listed health care firms in Nigeria.

Ho3: account payables payment period (APP) does not affect the financial performance of listed health care firms in Nigeria

### 1.7 Significance of the Study

This research will contribute for easing many of the problems faced by managers in managing the companies' working capital components. It is expected to contribute to better understand the policies of formulating strategies on the management of working capital and their impact on financial performance especially in the emerging markets, like Information Technology market in Nigeria.

The study will also go a long way in guiding the existing investors in the industry, creditors, and managements of the relevant companies, competitors, customers, financial analyst and government on the financial strength and weakness of the companies operating in the industry, hence the rationale for this research work. It is hope that both existing and prospective investors

will find the study useful as it will serve as a valuable guide to them in understanding the result of stewardship of management for the resources entrusted to it.
The study will also help students and researchers in their quest for knowledge in the area of accounting discipline.

## 1.8 Scope of the Study

This study focuses on the impact of working capital management on the financial performance of listed health care firms in Nigeria. The study will covers a period of 2015-2020. Because the period covers event of covid-19 novel and its impact on the social and economic activities.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter elaborates on the nature and scope of working capital management and firm financial performance. Which include definitions of Working Capital, concept of Working Capital Management, what previous researchers have done, the result derived and the existing theories developed by them.

## 2.2 Concept of Working Capital

Working capital is one of the concepts with lacks a clear cut or universally accepted definition. There are as many definitions of the concept as those that attempt to define it

Working capital is the difference between short-term assets and short-term liabilities, and the essence is to have the required cash needed for day to day operations. It, therefore, means that if the short-term goal is not achieved then, the long-term goals will be a mirage (Olaoye, Adekanbi and Oluwadare, 2019). Working capital as the time taken by a company to convert its investment in inventory into cash flow. The longer the time the larger the investment in working capital. Account receivable, inventory, account payables are also the component of working capital Poudel and Maharjan (2020)).

Working capital refers to funds to be invested in the business for a short period, generally one year. It is a measure of a company's efficiency and short term financial health. It shows whether a company has short-term assets to cover its short-term debt. It is required to meet day to day operating expenses and for holding stocks of raw materials, spare parts, consumables, work in progress, finished goods, and overdrafts. It is vital to the operating cycle of a firm (Rawat & Dave, 2017).Working capital is a measure of a company's liquidity, operational efficiency and its short-term financial health. If a company has substantial positive working capital, then it should have the potential to invest and grow. If a company's current assets do not exceed its current liabilities, then it may have trouble growing or paying back creditors, or even go bankrupt. Working capital is also seen as a financial metric which represents operating liquidity available

to a business, organization, or other entity, including governmental entities (Abubakar, *et al*,2020).

Jakpar, Tinggi, Johari and Siang TK (2017), working capital is the period it takes an entity to transform its expenditure on the purchase of raw material to cash collectable from the sales of its finished goods. Mohanty (2013) opined that working capital is the flow of ready funds necessary for the working of a concern of day to day business operations. It comprises of funds invested in current assets, which in the ordinary course of business can be turned into cash within a short period without undergoing diminishing in value and without disruption of the organization. Working capital and the sequence it forms are managed by working capital management. It ensures that current liabilities don't exceed current assets so as to avoid liquidity problem and that the consciousness of liquidity should not override the ultimate goal of a business undertaking which is profit making (Olaoye *et al,* 2019).

The concept of working capital can be viewed from two perspectives Gross Working capital and Net working capital;

Gross Working Capital: - The Gross working capital is described as the total value of current assets. Current assets include accounts receivable, inventory, and prepayments, Bank and cash balances (Sathyamoorthi, Mapharing and Selinkie 2018). Van Horne and Wachowicz, Jr. (2008), define Gross working capital as the firm's investment in current assets (like cash and marketable securities, receivables, and inventory). Gross working capital is the firm's investment in current assets. Current assets here refers to assets that can be easily converted to cash within an accounting period and this involves cash, short-term securities debts example, accounts receivables or book debt, stock (inventory) and bills receivables (Madugba and Ogbonnaya. 2016).

Pandy (2005) further opines that investment in current assets should just be made adequate to meet the needs of the firm instead of excessive, stating that excessive investment in current assets impairs the firm's profitability as idle investment earns nothing. He also stated that inadequate amount of working capital can threaten solvency of the firm because of its inability to meets its current obligation as they fall due. Osaze (1996) and Anao (1996), further argue that investment in gross working capital in form of current asset is also known as circulatory asset

because they change form from one state to another: inventory to trade debtors (when goods are sold on credit); from debtors to bills receivables (when bills are used to settlement); and from bills to cash (when bills are discounted or are settled upon maturity). The Gross Concept of working capital is further expanded by Buttchet and Hicks (1972), and Jack (1972), to comprise of both current asset and current liabilities. This is because according to them, working capital or circulating capital is that portion of organization funds that is devoted to recurrent use; therefore they contend that working capital should consist of both current asset and current liabilities. The financial analyst basically deals with gross working capital because he is constantly involved in providing the correct amount for current assets for the company at all times.

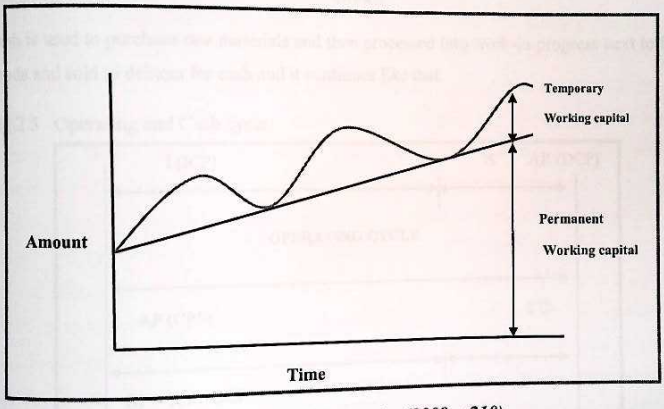
Net working capital: - Net working capital is seen as the difference between current assets and current liabilities. Current assets include accounts receivable, inventory, and prepayments, Bank, and cash balances. Current liabilities include accounts payable, overdrafts, Accruals and other short term obligations (Sathyamoorthi, *et al.* 2018). Van Horne and Wachowicz, Jr. (2008), define net working capital, as the dollar difference between current assets and current liabilities.Net working capital has to do with the current assets and current liability differences. Current liabilities are those claims of outsider which are expected to mature for payment within an accounting period Thus accounts payables, outstanding expenses. If current assets exceeds current liabilities, a positive net working capital has occurred and vice-versa (Madugba,*et al.*2016).

There are two types of working capital used by corporate organizations. Permanent and fluctuating/temporary Working Capital:

Permanent working capital is the minimum level of current assets. Van Horne and Wachowicz (2008), further explain that permanent working capital is the amount of current asset required by a firm to meet its long-term minimum needs; Permanent working capital is similar to the firm's fixed assets in two important respects. First, the Money investment is long term, despite the seeming contradiction that the assets being financed are called "current." Second, for a growing firm, the level of permanent working capital needed will increase over time in the same way that a firm's fixed assets will need to increase over time. However, permanent working capital is different from fixed assets in one very important respect – it is constantly changing. Thus permanent working capital does not consist of particular current assets staying permanently in

place, but is a permanent level of investment in current assets, whose individual items are constantly turning over.

While fluctuating or temporary working capital is the extra working capital needed to support the changing production and sales of the firm. For example, extra inventory of finished goods will have to be maintained to support increase in sales and investment in debtors. If there is decrease in sales, investment in raw materials, work-in-progress and finished goods will also fall. Both are necessary to facilitate production and sales through the operating cycle. It also aid to the management of efficient working capital. The explanation of permanent and fluctuating working capital can be best understood using a diagram as represented clearly below.




***Source: Van Horne and Wachowicz (2008: p210)***

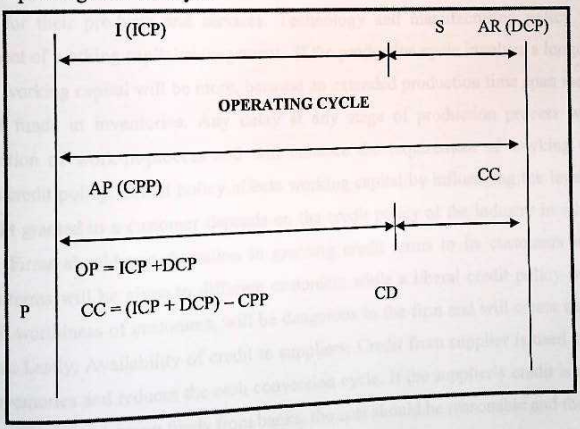
**Working Capital Cycle and Its Measurements**

Working Capital Cycle refers to the conversion of one component to another, starting from cash and back to cash and it continues. According to Akinsulire (2005), "Working Capital Cycle or operating cycle, is the length of time it takes to acquire inventory of raw materials, convert them in to finished products, sell them and collect cash from sales". It also refers to the total time taken to convert inventory procured into cash, thus indicating the financial implication of the type of Working Capital policy adopted by the firm.

Fig 2.2 Working Capital Cycle / Operating Cycle


Cash is used to purchase raw materials and then processed into work-in-progress next to finished goods and sold to debtors for cash and it continues like that.

Fig 2.3 Operating and Cash cycle




***Source: Van Horne (2005:p143)***

Where I, is inventory, S is sales, AR is accounts receivable, CC is cash cycle, CD is cash direction, P is purchases, and CPP is creditor payment period.

**Determinant of Working**

According to Pandey (2008) identified the following as determinant of working capital management;

The first determinant of working capital management is the nature of business. The working capital needs of a firm are basically influenced by the nature of its business. Trading and financial firms generally have a low investment in fixed assets, but require a large investment in working capital. The size of business also has an important impact on its working capital needs. Size may be measured in terms of the scale of operations. A firm with larger scale of operations will need more working capital than a small firm. Secondly, Market demand and conditions. Working capital requirement of a firm are related to its sales. A growing firm needs fund continuously and may need to invest funds in fixed assets in order to maintain growing production and sales. Large number of firms experience seasonal fluctuations (affects working capital needs and create production problems for the firm) and cyclical fluctuations in the demand for their products and services. Technology and manufacturing policy is the third determinant of working capital management. If the production cycle involves a longer period the need for working capital will be more, because an extended production time span means a larger tie-up of funds in inventories. Any delay at any stage of production process will result in accumulation of work-in-process and will enhance the requirement of working capital. The fourth is credit policy. Credit policy affects working capital by influencing the level of debtors. The credit granted to a customer depends on the credit policy of the industry in which the firm belongs. Firms should use discretion in granting credit terms to its customers which means different terms will be given to different customers while a liberal credit policy without rating the credit-worthiness of customers, will be dangerous to the firm and will create the problem of collection. Lastly, Availability of credit to suppliers: Credit from supplier is used to finance the firm's inventories and reduces the cash conversion cycle. If the supplier's credit is not available, the firm will have to borrow funds from banks, the cost should be reasonable and the firm will be able to finance its inventories and debtors without much challenges.

Operating efficiency: Operating efficiency means optimum utilization of resources. The firm can minimize its need for working capital by efficiently controlling its operating costs. With increased operating efficiency the use of working capital is improved and the pace of cash cycle

is accelerated. Better utilization of resources improves profitability and helps in relieving the pressure on working capital.

Price level changes: Rising price level requires a higher investment in working capital. With increasing prices the same levels of current assets need improve investment. However, firms which can immediately revise prices of their products upwards may not face a severe working capital problem in periods of rising levels. The effects of increasing price level may be felt differently by different firms due to variations in individual prices. It is possible that some companies may not be affected by the rising prices, whereas others may be badly hit by it.

**Concept of Working Capital Management**

Working capital management is a key part of financial management. The profitability of an enterprise in a certain period depends on the efficiency of its working capital management (Liu, *et al.* 2021).The management of working capital involves managing inventories, accounts receivable and payable, and cash. Working capital management is a business strategy designed to ensure that a company operates efficiently by monitoring and using its current assets and liabilities to the best effect. The primary purpose of working capital management is to enable the company to maintain sufficient cash flow to meet its short-term operating costs and short-term debt obligations. Working capital management can improve a company's earnings and profitability through efficient use of its resources, (Abubakar, *et al.*2020).

Management of working capital includes inventory management as well as management of accounts receivables and accounts payables. The objectives of working capital management, in addition to ensuring that the company has enough cash to cover its expenses and debt, are minimizing the cost of money spent on working capital, and maximizing the return on asset investments. Efficient working capital management helps maintain smooth operations and can also help to improve the company's earnings and profitability. Management of working capital includes inventory management and management of accounts receivables and accounts payables. The main objectives of working capital management include maintaining the working capital operating cycle and ensuring its ordered operation, minimizing the cost of capital spent on the working capital, and maximizing the return on current asset investments. Working capital management is essentially an accounting strategy with a focus on the maintenance of a sufficient balance between a company's current assets and liabilities. An effective working capital

management system helps businesses not only cover their financial obligations but also boost their earnings, (Abubakar, *et al.*2020).

Working capital management affects the financial performance of organizations and therefore requires sound management to balance off the performance and risk of not meeting financial obligations as they fall due (Ochieng, et al. 2020).The importance of working capital management as an essential component of financial management originates from the fact that investment in current assets constitutes a significant part of the total investment of a business enterprise (Oladimeji, et al. 2020).

Also according to Braimah, et al. (2021), Working Capital Management measures the firm's short-term financial health of the firm by focusing on the mixture of short-term assets and liabilities held on a day-to-day basis. Specifically, Working Capital Management seeks to settle the corporate dilemma of how many short-term assets such as inventory, receivables, and cash, or short-term commitments such as account payables a firm must hold at any particular period to maximize returns.

Harsh,Vineet and Kaur (2013), explained that, Efficient Management of Working capital is one of the preconditions for success of an organization as Working Capital is the life giving force to an economic entity. Efficient management of working capital means management of various components of working capital in such a way that an adequate amount of working capital is maintained for smooth running of a firm and for fulfillment of twin objectives of liquidity and profitability. Also it is the most crucial factor for survival and solvency of a concern. The management of working capital is one of the most challenging issues for financial managers as the success or otherwise of the management of the financial ratios affects the company either positively or negatively. The consequences of ineffective management of working capital are the inability of the company to meet its financial obligations (Eya, 2016).

Poudel, *et al.* (2020), argued that Working capital management is not a simple and easy task. So, managers must make sure that business operation is both efficient as well as profitable. There is a chance of a mismatch in current assets and current liability during this process, which could affect the growth and profitability of the business. Working capital management is a managerial accounting strategy focusing on maintaining efficient levels of both components of working

capital (that is, current assets and current liabilities) in respect to each other. Working capital management ensures that a company has sufficient cash flow in order to meet its short-term debt obligations and operating expenses. Implementing an effective working capital management system is an excellent way for many companies to improve their earnings, Working capital management involves, the process of managing the activities and processes related to working capital. The aim is to ensure that there are checks and balances to ensure that the amount of cash flowing into the business is enough to sustain the company's operations. This must be an ongoing process that must be evaluated using the current level of assets and liabilities. Working capital management may involve implementing short-term decisions that may or may not carry over from one financial period to the next. Current assets are very important for proper working of fixed assets. A company may not utilize its fixed assets such as plant and machinery if it does not have sufficient stocks of raw material. If a firm has no cash in hand, it cannot pay for different expenses it incurs. Working capital in simple terms is the excess of current assets over the current liabilities (Kamau, *et al.* 2014).

**Approaches to Working Capital Management**

This section examines the approaches and models relating to working capital management and firm performance (Banos-Caballero, *et al.* 2019) categorize approaches to working capital into three types as defensive or hedging, aggressive, and conservative working capital policy

The Conservative Approach; in this approach, the firm depends more on long-term funds for financing needs. In view of conservative approach to working capital management, the firm will keep a large quantity of current assets in relations to the total assets of the company. In the period when the firm has no need for temporary current assets, the idle long- term funds could be invested in tradable securities to conserve securities. The implication of this approach is that the firm has less risk of financing the problem of shortage of funds and yields a lower expected profitability resulting in a lower risk. This type of policy will also increase the company's net working capital situation.

The second approach is the Aggressive Approach; in this approach, the company finances all of its fixed assets with long term capital but part of its permanent current assets with short-term credit (Van Horne and Wachowicz, 2000). Under this policy, the firm finances a part of its permanent current assets with short term financing and holds relatively small portion of its total

assets in form of current assets. The implication of the aggressive approach is that it yields higher profitability resulting in a higher risk and lower working capital. The last approach is the Defensive Approach:

Defensive approach helps to minimize the risk that the firm will be unable to pay off its matured obligations. The firm could attempt to match exactly the maturity structure of its assets and liabilities. Inventory expected to be sold in twenty days could be financed with twenty days bank overdraft. The implication of this approach is that it yields moderate expected profitability resulting in moderate risk, and the working capital position of the company will be in optimum balance. It is neither aggressive nor conservative but it falls in between the two policies representing moderate situations. The optimal level of working capital is reached when the degree of returns expected maximizes the shareholders wealth and it must be pointed out that there is no best working capital theory or policy to suit every organization at all times.

## 2.3 The Concept of Financial Performance

Financial performance measurement has been discussed as a key priority in all economic decision making relating to public and private companies to identify the difficult locations and areas, (Chashmi, *et al.* 2016).Financial performance measurement is based on many decisions such as executive compensation, stock prices, stock risk, decisions related to investment, and many other cases. One of the main tasks of the managers is decision making, they should decide to plan, organizing and run. These decisions should be based on performance criteria and indicators in accordance with the organization's operations, (Azarbaijani,*et al.*2011, Chashmi, *et al.*2016).In any organization and business unit, there are collections of activities and factors that have a strong impact on the performance of the firm. So this collection should be evaluated for better performance of the firm. In today's competitive world, the only requirement for survival and participating in activities especially economic activity is accuracy and having efficiency. This will not be achieved unless with the planning, monitoring and ongoing evaluation of activities, because in this process that the capabilities and shortcomings are evident and can be treated before the occurrence of the event. According to the discussed matters, this question would be asked whether there is a significant relationship between the measures of financial performance and corporate success or failure, (Chashmi, *et al.* 2016).

### 2.3.1 Measures of Financial Performance

Performance of a business could be measured through many ways; some of these measures are;

Return on Asset (ROA): Return on asset, commonly referred to as ROA, is a good internal management ratio because it measures profit against all of the assets divisions used to make those earnings. Hence, it is a way to evaluate the division's profitability, performance, and effectiveness. ROA, is generally seen as a stable financial performance ratio. An increasing ROA indicates that a firm generate more profitability while decrease in it means firm generate less profitability (Castenble, 1997). It is calculated as

$$ROA = \frac{\text{Profit after tax}}{\text{Total Assets}}$$

Return on Investment (ROI): Return on investment compares income with operational asset that produce the income. It shows the relationship between the firm's net profit (output) and the long term invested capital (inputs). Consequently, it shows the effectiveness of management in terms of utilizing firm's assets and its power to create shareholder value (Copel and Koller and Murnin, 2000 P.58).Additionally; this measure is considered more accurate than others that depend only on the balance sheet. ROI relies on two financial statement balance sheet (financing) and income statement (profit).It is computed as

$$ROI = \frac{\text{Net Income}}{\text{Total Assets}}$$

Return on Equity (ROE): Return on equity ratio shows the effectiveness of management to create extra earnings for shareholders (Tezel and Mcmanus, 2003, p. 67). In other words, ROE measures profitability of a firm by exposing how much profit it generates with the money shareholders have invested. ROE is often used by traders to detect the firms that have faster growth of total shareholder equity. ROE is calculated as:

$$ROE = \frac{\text{Net income}}{\text{Total Equity}}$$

The study will use return on asset (ROA) as a measure of financial performance because return on asset shows efficient a company is at using its assets to generate profits. And ROA also gives an investor a reliable picture of management's ability to pull profits from asset and

projects which it chooses to invest. The metric also provide a good line of sight into net margins and asset turnover.

### 2.3.1 Account Receivable and Financial Performance

Account receivables are assets representing amounts owed to the firm as a result of the sale of goods or services in the ordinary course of business. Accounts receivables period is the average time taken by credit customers to settle their accounts. It was observed that credit customers who pay late or do not pay at all only aggravate the problem. Thus, it is important for the financial manager or account receivables manager to establish a good policy that controls the advantages of offering credit with the associated costs. The firm should establish its receivables policies after carefully considering both the benefits and costs of different policies (Mansoor *et al*, 2012, Akomeah *et al*, 2019).

In the manufacturing sector, accounting receivable days are always used to proxy cash collection period. It is computed as average accounts receivable divided by sales, all multiplied by 365 days. The expectation is that this ratio should relate negatively with profitability in manufacturing firms. The expected negativity explains that increase in cash collection period will reduce the working capital for day to day operation and the effect will be felt on the profit level (Olaoye *et al,* 2019). Studies like (Dong *et al,* 2010) reported an inverse relationship between account receivables days and profitability.

According to Emekekwue (1990), "Accounts receivable is an aggregate of all the debts owed to a firm at a particular point in time. It represents the amount the firm expects to receive from its debtors in payment of goods and services delivered or rendered by the firm. Therefore, it is the responsibility of the financial manager to make decisions as regarding the policy that must be adopted in extending credit facilities to customers because of the problem of possible default.

### 2.3.2 Account Payable and Financial Performance

The accounts or trade payables deferral period is the average time taken by a company to pay its trade payables, i.e. its suppliers (Uyar, et al.2009, Akomeah, et al. 2019).The general guidelines for optimizing the managing of account payables involve the timing of payments. Companies

should try prolonging the time of payment as long as possible as they can use the advantage of their suppliers financing their investments until payment has been made. Another argument for prolonging the time for payment is that the producing companies, for example, need some time to convert their purchased raw material into products they can get sold and get cash in return (Manesset al,2005) in (Akomeahet al, 2019). The account payables period is computed by dividing account payables by net purchases multiplied by 365 days (Nasr, et al.2007).

Account payable days are used to proxy credit payment day and it means how long it will take a firm to pay its creditors to keep the business relationship intact. It is computed as average accounts payable divided by cost of sales multiplied by 365 days. The expected relationship is that accounts payable days should have a positive relationship with the firm's profitability. This is because an increase in accounts payable days tends to afford firms more days to reinvest (Olaoyeet al, 2019). Empirically, (Karadumann et al, 2010, Olaoyeet al, 2019) reported a positive association between profitability and accounts payable days in their studies. Kaddumi, and Ramadan, (2012) reiterated that trade Payables forms an integral arms 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. Also, if a business has a shorted trade payable cycle, it will have to keep more cash in hand, resulting in longer trade cash conversion cycles and more interest costs. A more extended trade payable period will result in business making payments to its vendors after long periods. However, if the business can keep a short trade receivable period, then such a scenario improves the business cash conversion cycle and resulting in less working capital requirement, which will ultimately boost profits (Pais & Gama, 2015). Moreover, the importance of trade payables is equally referring as most of the analysts while evaluating a business check payables turnover ratio to understand the working capital management efficiency and timely payments by the business to honor its obligation to its creditors. A high trade payables turnover ratio reflects that creditors are paid on time by the business which enhance the creditworthiness of the business. Meanwhile, favorable ratio compared to industry practice that the business is not taking full advantage of credit facilities allowed by the creditors resulting in more cash requirements. (Pais et al, 2015). Korankye et al (2013) working Capital is the lifeline

of any business organization which enable the smoot running of day to day activities of the business. Each component plays a very crucial and have their own impact for the successful and sustaining role for the smooth running of the business.

Account payable is another component of working capital which in turn influences firm performance. Raham and Nasr (2007) states that delaying payment of accounts payables to suppliers allow firms to access the quality of bought products and can be inexpensive and flexible source of financing. However, delaying of account payables can be expensive if a firm is offered a discount for early payment which reduces the cash conversion cycle but has an implicit cost where discount is offered for early statement of invoices. In a 1996 survey of trade credit policies in Europe, Svensson (1997) found that 75% of Belgian firms offered a discount for prompt payment, and the average discount offered was 3% for all European firms in the survey, the average payment period was 61days and 54% of the firm offered a discount that was on average 4%.

Therefore, a decision to take advantage of trade credit or not to stretch account payables should be based on cost benefit analysis. According to Wachowicz (2005), the firm must balance the advantages of trade credit against the cost of forgoing possible late payment penalties, the opportunity cost associated with any possible deterioration in credit reputation and possible increase in the selling price that the seller imposes on the buyer.

### 2.3.3 Cash Conversion Cycle and Financial Performance

Cash is a major component of current asset and cash involves and all other liquid securities which can be converted into cash easily. Effective Cash Management goes a long way in keeping the working capital cycle in order and also enhance the business to manage its operating cycle. Also, business efficiency is determined base by the free flow of cash to the firm and how the firm generate the cash. Also, effective utilization of such cash ensures business to garner trade discounts and boost the cash conversion cycle, which is a major commitment to describe the working capital cycle of any business (Altaf & Shah, 2017).

The cash conversion cycle is used in measuring cash management, and it represents the interaction between the components of working capital and the flow of cash within a company (Wang, 2002, Akomeah *et al,* 2019). Thus, Cash Conversion Cycle is the duration of time that cash is tied up in accounts receivables and inventory. In fact, the Cash Conversion Cycle (CCC) is concerned with the amount of time a firm's resources are tied up. It was noted that the longer the cash conversion cycle, the greater the amount of investment required in working capital. The length of the cash conversion cycle depends on the length of: the inventory conversion period; the trade receivables collection period; and the trade payables deferral period (Uyar, 2009, Akomeah *et al,* 2019). The length of the cash conversion cycle (CCC) is given by:

CCC = Inventory days + Trade receivables days – Trade payables days

Cash conversion cycle is used to proxy the span of time in days it takes for a firm to change resource inputs into cash. The cycle is vital for firms in that it measures how quickly a firm can change its resources inputs into cash. The longer the cycle, the lengthier time capital is tied up and negatively affects the business operations and vice versa. It is computed as accounts receivable days plus inventory days less accounts payable days (Olaoye*et al*, 2019). Falope *et al* (2009), in their study find a significantly negative relationship between profitability and Cash Conversion Cycle of 50 Nigerian listed non-financial firms.

Poudel*et al* (2020), assert that Cash conversion cycle expresses the time that company takes for converting its investment in inventory and other resources into cash flow from sales or it can also be defined as how much time the company need to collect it receivable, sell its inventory and pay its bill without any penalties. In layman's term, it refers to the sum of days' inventory outstanding and days sales outstanding minus days' payables outstanding. The cash conversion cycle can be negative when days' payable outstanding is greater than sum of day's inventory outstanding and days' sales outstanding.

Deloof, 2003; Raheman and Nasr (2007), adopted cash conversion cycle as a competitive medium of working capital management and testing the impact on profitability. Therefore maintenance of a relatively low level of current assets is needed to increase profitability (Pandey, 2008), which will result to fewer funds tied down in the form of current assets, exposing the firm to greater risk of cash shortage and stock outs. However, this can be prevented by maintaining

relative high investment in current assets and the firm will be able to meet its short term obligations as well as meeting all sales order, maintain smooth production and disrupt profitability.

## 2.4 Review of Empirical studies

Moussa (2018) examines the impact of working capital management on the performance of 68 industrial firms from Egypt for the period of 2000–2010 and documents a positive relationship between working capital management (measured by the cash conversion cycle) and firm profitability. The author points out that stock markets in less developed economies do not realize the optimum efficiency of their Working Capital Management.

Abuzayed (2011) working capital management and firms' performance from the emerging economy of Jordan, he worked on the relationship between working capital management and firms' profitability of only listed firms on the amman stock exchange for the period 2000-2008. He statistically analyzed the cash conversion cycle and its components effect on firms' market and accounting performance. A significant correlation was noticed between the net operating profit and cash conversion cycle as well as its components. Correlation between the gross operating profit, inventory receivables days, payable days, and CCC are positive, showing that firms with higher profit are less concerned with efficient management of working capital.

Teruel and Solano (2007) investigated the effect of working capital management on firm profitability, using a sample of 8,872 small and medium size European companies. They found that reducing inventory and average collection periods affect positively the firm value, as reducing the cash conversion cycle improves the firm's profitability.

The pioneer work of Shin and Soenen (1998) and the more recent study of Deloof (2003) have found a strong significant relationship between the measures of working capital management and corporate profitability. Their findings suggest that managers can increase profitability by reducing the number of day's accounts receivable and inventories. This is particularly important for small growing firms who need to finance increasing amounts of debtors.

Another aspect of working capital management has been analyzed by Lamberson (1995) who studied how small firms respond to changes in economic activities by changing their working capital requirements and level of current assets and liabilities. Current ratio, current assets to

total assets ratio and inventory to total assets ratio were used as a measure of working capital requirement, while the index of annual average coincident economic indicator was used as a measure of economic activity. Contrary to the expectations, the study found that there is a very small relationship between changes in economic conditions and changes in working capital.

Dong and Su (2010) examined the effect of the conversion cycle components on firms' profitability. Using data from Vietnam stock Market, they find a strong negative relationship between firms' profitability and its ability to reduce the cash conversion cycle length. They also postulate that firms can increase the shareholders wealth by keeping the level of its working capital at the optimal level. Using a sample of 88 firms listed on New York Stock Exchange Gill (2010) investigate the relationship between the level of a firms' working capital and its profitability. They find a significant relationship between the cash conversion cycle and firms' profitability. They postulate that a firm profitability is increased the shorter the accounts receivable collection period.

In a research carried out by Alipour (2011), In Iranian companies, the ratio of payable accounts was 8% as compared with total assets and the ratio of receivable accounts and Inventory as compared with total assets was 17% and 20% respectively, in 2006. For an example, in the same year, current assets percent was 62 on the average to total assets and current debts percent is 83.so working capital management is very important in Iranian companies and the subject is propounded that how the companies take to manage working capital items to affect the profit and value of the company positively. He also postulated that Cash conversion cycle is one of the important measuring tools to calculate the efficiency of working capital management. The time span of the research was 2001-2006 and the studied companies have been the ones accepted in Tehran stock exchange. In general, out of 2628 companies; the company has been selected as a top company for 1063. Then multiple regression and Pearson's correlation was used to test the hypothesis. The results of the statistical test of the hypothesis indicate that there is a negative significant relation between number of day's accounts receivable and profitability, a negative significant relation between inventory turnover in days and profitability, a direct significant relation between number of day's accounts payables and profitability and there is a negative significant relation between cash conversion cycle and profitability. The results of the research show that in the studied companies, there is a significant relation between working capital management and profitability and working capital management has a great effect on the

profitability of the companies and the managers can create value for shareholders by means of decreasing receivable accounts and inventory.

Afza and Nazir (2009) made an attempt in order to investigate the traditional relationship between working capital management policies and a firm's profitability for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005.The study found significant different among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could crease value if they adopt a conservative approach towards working capital investment and working capital financing life. Singh and Pandey (2008) had an attempt to study the working capital components and the impact of working capital management on profitability of Hindalco Industries Limited for period from 1990 to 2007. Results of the study showed that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio had statistically significant impact on the profitability of Hindalco industries Limited.

Rahman and Nasr, (2007) observed that there is a significant negative relationship between working capital (average collection period, inventory turnover in days, average payment period and cash conversion cycle) and profitability of the firms listed on Karachi Stock Exchange. Juan and Martinez as sited in Fernando (2004) found a significant relationship between SMEs' profitability and the numbers of days account receivables and days of inventory. Objective of this study is to identify the relationship between working capital management and company profitability of the manufacturing companies listed in the Colombo Stock Exchange (CSE) in order to help Sri Lankan manufacturing companies to manage its working capital more efficiently. Secondary data relating to fifteen companies from 2001 to 2005 is considered for the analysis. Pearson's correlation analysis and regression analysis are used for the data analysis. Number of days accounts receivable, Number of days accounts payable, inventory turnover in days, and cash conversion cycle are the independent variables considered in this study. Sales growth rate, fixed assets to total assets also used as control variables. The results show that there is a strong negative relationship between variables of the working capital management (Number of days accounts receivable, Number of days accounts payable and inventory turnover in days) and profitability of the firm. It means that as the cash conversion cycle increases it will lead to

decrease profitability of the firm. However the same researchers: (Raheman and Nasr; 2007), have selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years from 1999-2004 to study the effect of different variables of working capital management on the net operating profitability. From result of study, they showed that there was a negative relationship between variables of working capital management including the average collection period, inventory turnover in days, average collection period, cash conversion cycle and profitability. Besides, they also indicated that size of the firm, measured by natural logarithm of sales, and profitability had a positive relationship.

Deloof (2003), in turn, carried out research on the relationship between working capital management and the performance of Belgian companies. This author used a sample of 1009 non-financial Belgian companies for the period from 1992 to 1996. He came across a significantly negative relationship between gross profits and the average period of receivables, the average period of inventories, and average period of payables. The results suggest that the managers could create value for stockholders if they were to reduce the time periods of receivables and inventories to reasonably minimum levels. These results show that there is a certain level of working capital that maximizes the value of the firms. Lazaridis and Tryfonidis (2006) have investigated relationship between working capital management and corporate profitability of listed company in the Athens Stock Exchange. A sample of 131 listed companies for period of 2001-2004 was used to examine this relationship. The result from regression analysis indicated that there was a statistical significance between profitability, measured through gross operating profit, and the cash conversion cycle. From those results, they claimed that the managers could create value for shareholders by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

In Nigeria, Uremadu (2004), find out that the building materials firms have a problem in maintaining optimum level of stocks. He therefore made mention that stocks level should be optimal, that is neither too large nor too small and the penalties for a business lying divergence from optimum is either over stocking with means idle funds not in use or under stocking with is vulnerable to firms liquidity position. Egbide and Enyi (2008), views working capital and financial performance from theories, concepts and empirical studies, they find out that excessive investment in working capital reduce the financial value of many building materials firms in Nigeria.

However, Van Horne and Wachowicz (2004) pointed out that excessive level of current assets may have a negative effect of a firm's profitability, whereas a low level of current assets may lead to lowers of liquidity and stock-outs, resulting in difficulties in maintaining smooth operations. Narasimhan and Murty (2001) stress on the need for many industries to improve their return on capital employed (ROCE) by focusing on some critical areas such as cost containment, reducing investment in working capital and improving working capital efficiency.

In order to discover the relationship between efficient working capital management and firm's profitability Shin & Soenen, (1998) used net-trade cycle (NTC) as a measure of working capital management. Net trade cycle is basically equal to the cash conversion cycle whereby all three components are expressed as a percentage of sales. The reason by using net trade cycle because it can be an easy device to estimate for additional financing needs with regard to working capital expressed as a function of the projected sales growth. This relationship is examined using correlation and regression analysis, by industry and working capital intensity. Using a Compustat sample of 58,985 firm years covering the period 1975-1994, in all cases, they found, a strong negative relation between the length of the firm's net-trade cycle and its profitability. In addition, shorter net trade cycle is associated with higher risk-adjusted stock returns. In other word, Shin & Soenen (1998) suggest that one possible way the firm to create shareholder value is by reducing firm's net trade cycle.

The study of Shin & Soenen (1998), is consistent with later study on the same objective that done by Deloof (2003) by using sample of 1009 large Belgian non-financial firms for the period of 1992-1996. However, Deloof (2003) used trade credit policy and inventory policy are measured by number of days accounts receivable, accounts payable and inventories, and the cash conversion cycle as a comprehensive measure of working capital management. He founds a significant negative relation between gross operating income and the number of day accounts receivable, inventories and accounts payable. Thus, he suggests that managers can create value for their shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum. He also suggests that less profitable firms wait longer to pay their bills. In order to validate the results Rajan and Zingales; (1995) and Wald (1999), suggested that size was positively correlated with debt based on the data from developed countries with Germany as an exception.

On a large sample and with a longer time period, Jose (1996) examined the relationship between aggressive working capital management and profitability of the US firms using Cash Conversion Cycle (CCC) as a measure of working capital management, where a shorter CCC represents the aggressiveness of working capital management. The results indicated a significant negative relationship between the CCC and profitability, indicating that more aggressive working capital management is associated with higher profitability.

Another study of relationship between the aggressive/conservative working capital policies and profitability as well as risk of firms for 208 public limited companies listed at Karachi Stock Exchange for the period of 1998-2005.

From the above studies we can deduced that 70% of the researchers found a negative relationship between working capital and financial performance.

## 2.5 Theoretical Framework

Theoretically, this study is underpinned by trade off theory of liquidity, pecking order theory of liquidity and the clack theory of profitability.

### 2.5.1 Clark Theory of Profitability

Clark begins his theory with an analysis of a profit-less economy and taking into account its key features. The profit less economy is compared with a profit-generating economy and significant differences were identified to indicate the causes of profit. This method was adopted by Schumpeter and Knight. The profit-less economy is referred to as 'static state', in which all factors are constant and not subject to change, the market is assumed to be perfect; hence the absence of monopoly and entrepreneurial efforts are rewarded according to management wage levels. There is perfect mobility and flow of all economic units in a frictionless environment; in short all impediments to perfect competition are dissolved.

"The society acts and lives, but does so in a changeless manner" (Siddiqi, 1971). Any change in these factors will produce a tremor in the system but the economy will adjust and settle at new equilibriums. So changes in population and capital will result in corresponding fluctuations in wages and interest rates, the economy will absorb these changes and then settle back to a static state. Similarly, changes in techniques of production will affect output and prices; adoption of the same techniques by other producers will cause a shift in the equilibrium, but once these become ubiquitous the equilibrium will resume. The ability of the economy to endure such

changes is due to the competitive equilibrium dynamics of the free market. Competition, remarks Knight, has the "tendency to eliminate profit or loss and bring the value of economic goods to equality with their cost" (Knight, 1921). Real economies as noted by Clark will, however, not buffer such changes instantaneously as there will necessarily be a time lag. It is into this frictional delay that the entrepreneur seeks to enter and make his profit before equilibrium returns and consumes his profit. Profit is hence a transitional phenomenon: "untransformed increments of wages and interest" (Siddiqi, 1971), its temporary nature demands from the entrepreneur a dynamic endeavor to seek out or generate opportunities on which he can capitalize. This process is summed up in Clark's statement that "dynamic forces, then, account today for the existence of an income that static forces will begin to dispose of tomorrow' .( Siddiqi, 1971). Economies are, however, in constant change, the five variables mentioned by Clark are never static; population and capital are in constant growth, innovation in production and management of resources are continually researched and consumer demands are subject to ever-changing fashions and trends. The entrepreneur thus finds permanence for as long as he can keep ahead of the changes, react before competitors and organize his efforts with sound knowledge of the market. Clark's analysis determines that the essential cause of profit is change. These changes yield a surplus in the market prior to equilibrium and they are the sought-after profits of the entrepreneur.

### 2.5.2 Schumpeter Theory of Profitability

Following on the method of Clark, Schumpeter developed the 'circular flow model' in which a profit-less economy is described where perfect competition extinguishes surpluses of monopoly and friction. The analyses of the 'circular flow' economy differ in detail from the 'static state' model of Clark. So departures between an ideally competitive environment and actual economies yield the causes of profit. Schumpeter, however, is far more selective in his approach than Clark. Schumpeter identifies the single notion of innovation as paramount, so that changes based upon innovation are the cause of profit. Gradual changes in population and capital would easily be anticipated by the market and hence present no opportunity for the entrepreneur. Schumpeter goes on to describe five areas in which innovation will lead to profit generation (Siddiqi, 1971): Innovations in commodities, either by introducing new products or improving old ones,

Innovations in production techniques, Finding new and fertile markets, Locating new resources and raw materials, Changes in industrial organization.

The entrepreneur is for Schumpeter an innovator, who by virtue of his innovation is able to break from the competition, acquire a transitory monopoly in which he can accrue profits until his competitors catch up, but, before they do so, he is able to move on to further innovation in new fields. Schumpeter did not see the entrepreneur's reward as a surplus value but rather as a functional reward linked to his innovative ability (Siddiqi, 1971). The impact of innovation was huge, leading to gales of creative destruction as innovations caused old inventories, ideas, technologies, skills, and equipment to become obsolete. Schumpeter saw the model of perfect competition in which different companies sold similar goods at similar prices produced through similar techniques as immaterial to progress.

### 2.5.3 Trade off Theory Liquidity

Under perfect capital market assumptions holding cash neither creates nor destroys value. The firm can always raise funds from capital markets when funds are needed, there are no transaction costs in raising these funds, and the funds can always be raised at a fair price because the capital markets are assumed to be fully informed about the prospects of the firm.

The trade-off theory suggests that firms target an optimal level of liquidity to balance the benefit and cost of holding cash. The cost of holding cash includes low rate of return of these assets because of liquidity premium and possibly tax disadvantage. The benefit s of holding cash is in two folds: one, the firms save transaction costs to raise funds and do not need to liquidate assets to make payments. And second, the firm can use liquid assets to finance its activities and investment if other sources of funding are not available or are extremely expensive.

Jensen (1986) presents agency problems associated with free-cash flow. He suggest that free-cash flow problem can be somehow controlled by increasing the stake of managers in the business or by increasing debt in the capital structure, thereby reducing the amount of 'free' cash flow available to managers. As theory, the use of trade off model cannot be ignored, as it explains that, firms with high leverage attracts high cost of servicing the debt thereby affecting its profitability and it becomes difficult for them to raise funds through other sources. Holding cash on that point is not only maintained by the smaller firm but also larger firms. So firm size does not matter when the question of bankruptcy interrupt the capital structure decision.

### 2.5.4 Pecking Order Theory of Liquidity

The theory emerges as a result of asymmetric information existing in the financial markets, that is, corporate managers often have better information about the health of their companies than outside investors. Apart from the transaction costs of issuing new securities, companies have to accept the information costs arising from asymmetric information. In this way, new securities issued on the financial market could be infra–valued because of informational asymmetries, and this is especially true in the case of new equities.

Myers & Majluf (1984) introduced very influential pecking order theory saying; manager prefers to finance deficit of capital by issuing SAFE security. The theory states that, in the event where retained earnings and other internal source of financing will be low to invest then manager will issue debt and only issue new equity with possibility of issuing junk debt (Financial distress possibility). An important survey of Myers (2003) documented the following findings on the pecking order theory of corporate financing: 1. Firms prefer to use internal source of fund as their first choice. 2. Dividend payout ratio has separate determinants. A change in dividend payout ratio does not facilitate capital expenditure. 3. In the question of external financing, debt issuance is more preferable by the firm than issuance of equity. 4. The firm's debt ratio shows their requirement of external financing.

A determinant of cash holding from the perspective of pecking order theory has been supported by other researchers more than trade off theory. Sebastian (2010) Examine Dutch firm's liquidity and solvency and their effect on financial decision. He discovers that, corporate liquidity and solvency interact through information, hedging, and leverage channels. The information and hedging channels increase equity-value of firms which helps to pay regular dividend and most importantly reduce volatility in cash flow.

Frank & Goyel (2002) Studied US firms (1971-1998) and came up with evidence that bigger firms are more organized to take decision followed by this theory. Smaller firms were not following this theory and being traded publicly during that time which also supports trade-off theory. As the smaller firms moved away from pecking order theory so, overall average moves further from the pecking order.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter highlights the research methodology adopted for this research which includes; the research design, population of study, sample size and sampling techniques, sources and method of data collection, techniques of data analysis, also the study discusses the variable of measurement and model of the study.

## 3.2 Research Design

Ex-post facto research design is adopted which is based on a scientific examination of dependent and independent variables. The design for the study is suitable because it helps establish caused relation between variables which this study is set out to achieve in order to make prediction. The approach is quantitative, while the research paradigm is positivism.

## 3.3 Population and sample of the Study

Stata statistical package were used, three companies were de-listed from the Nigerian stock exchange. Therefore the population of the study consist of all the remaining eight listed Health Care firms in Nigerian Stock Exchange. As at 31st December, 2020. The sample of the study is made up of all the health care firms since their annual reports and accounts are readily available. Therefore, the approach adopted for the use of the entire listed health care firms in Nigeria is census approach.

## 3.6 Source and Method of Data Collection.

For the purpose of this study, secondary source data is used. The secondary source data were collected from the published financial statements of the sampled Health Care firms covering the period of six (6) years (i.e. 2015 – 2020). The nature of the research design (being ex-post factor in nature) justified the above methods of data collection. This made the annual reports and accounts most suitable for collecting this information.

## 3.5 Variables Measurement

### a) Dependent Variable

This study focuses on Working Capital Management and firm's financial Performance on selected construction firms. For this purpose, Return on Assets was derived using net income after tax and total assets. The formula to compute this variable is given as;

**b) Independent Variables**

| Variables | Measurement | Source |
|---|---|---|
| **ROA** | Profit before interest and tax / Total assets | (Abor 2008) |
| **ARD** | $\frac{Accounts\ Receivable}{Sales} \times \frac{365}{1}$ | Nakos & Brouthers, (2017) |
| **CCC** | *IND+ARD-APD* | Napompech (2012). |
| **APD** | $\frac{Account Payable}{Cost\ of\ Goods\ Sold} \times \frac{365}{1}$ | Oluoch, (2017) |
| **Firm size** | Natural Logarithm of Sales (size) | Napompech (2012) |

### 3.6 Techniques of Data Analysis

For the purpose of this study, multiple regression analysis was employed as technique of data Analysis. This is because they actually capture and address inter-relationship of the data collected from secondary sources.

### 3.7 Model specification

The parsimonious model of the study includes the following:

$$ROA_{it} = \infty_0 + \beta_1 ARD_{it} + \beta_2 APD_{it} + \beta_3 CCC + \beta_4 fSize_{it} + e_{it}$$

## CHAPTER FOUR

## DATA PRESENTATION, ANALYSIS AND INTERPRETATIONS

### 4.1 Introduction

This chapter presents and analyses data generated from the disclosure information by firms in the Nigerian Health care industry. These two issues form both the dependent and independent variables of the study. The data collected is analyzed with frequency tables and percentages using the Stata Statistical Package. This is done to provide a clear and concise numerical and graphical summary of the data to facilitate any inferential statistics where necessary.

### 4.2 Data analysis of the variables of the study

The data presented are related to variables of working capital management and financial performance.

#### 4.2.1 Descriptive Statistics

**Table 1**

| Variables | Min. | Max. | Mean | Std. Dev. |
|---|---|---|---|---|
| ROA | -0.2750965 | 0.6043512 | 0.0695903 | 0.1573808 |
| ARP | 8.413221 | 353.9723 | 122.799 | 85.49062 |
| APP | 21.8234 | 326.6733 | 136.0458 | 81.31538 |
| CCC | 11.30591 | 1062.473 | 153.9987 | 148.8326 |
| NLS | 4.935064 | 10.13704 | 6.998156 | 1.262268 |

*STATA 2016*

The table above provides a summary of the descriptive statistics of the dependent and the dependent variables for the sampled Health care companies. It shows the average of the variables, the standard deviation, the minimum and maximum of the variables used.

From the table, return on assets has minimum and maximum values of -0.2750965 and 0.6043512 respectively and the mean value of 0.0695903 as well as the standard deviation value of 0.1573808. The standard deviation of 0.1573808signifies that the data deviate from the mean value from both sides by 0.1573808 implying that there is a wide dispersion of the data from the mean because standard deviation is higher than the mean value.

The table also shows that the mean of the Average accounts receivable of the sampled firms is 122.799 with standard deviation of 85.49062, and minimum and maximum values of 8.413221 and 353.9723 respectively. This implies that the performance of the firms in terms of Average receivable is on average 122.799, and the standard deviation value indicates that the Average receivable of the sampled firms deviates from the mean value from both sides by 85.49062, implying that there is significant dispersion of the data from the mean because the standard deviation is higher.

Moreover, the table shows that the mean of the Average accounts payable of the firms is 136.0458 with standard deviation of 81.31538. The minimum and maximum values are 21.8234 and 326.6733 respectively. This implies that Average accounts payables of the sampled firms is on average 136.0458, and the standard deviation value indicates that the value deviates from the mean from both sides by 81.31538, implying that there is significant dispersion of the data from the mean because the standard deviation is larger.

Finally, the table portrays that the Cash conversion cycle has an average value of 153.9987 with standard deviation of 148.8326. The minimum and maximum values are 11.30591 and 1062.473 respectively. The standard deviation indicates that the cash conversion cycle days of the firms deviates from the mean value from both sides by 148.8326. This further implies that there is widely dispersed data from the mean because the standard deviation is large.

### 4.2.2 CORRELATION ANALYSIS

The correlation matrix explains the degree of relationship between the dependent and independent variables of the study as well as the independent variables among themselves. The summary of the associations among the variables of the study is presented in table 4.2, while the full result is attached as appendix (I)

**Table 2**

| Variables | ROA | ARP | APP | CCC | NLS |
|---|---|---|---|---|---|
| ROA | 1.000 | | | | |
| ARP | -0.0082 | 1.000 | | | |
| APP | 0.0942 | 0.0509 | 1.000 | | |
| CCC | -0.1582 | 0.3195 | -0.1849 | 1.000 | |
| NLS | 0. 2154 | 0.2274 | -0.1340 | -0.2231 | 1.000 |

***STATA 2016***

All the research study variables are perfectly correlated with themselves as revealed by the correlation coefficient of positive one (1). Firm financial performance as measured by ROA has a negative correlation with leverage as measured by average accounts period (R=-0.0082). Average payment period has a positive correlation with firm financial performance (R=0.0942), cash conversion cycle has a negative correlation with the firm financial performance (R=-0.1582). And the natural logarithm has positive correlation with the firm financial performance (0.2154).

The relationship of the independent variables among themselves indicates that Average receivable period and cash conversion cycle are negatively correlated among themselves, and the average payment period has a positive relationship. Although some of the variables exhibited strong association, the overall relationship for the independent variables among themselves is not

significant, though this may not be enough to surmise that multicollinearity exists among the explanatory or exogenous variables of the study unless the variance inflation factor and tolerance values are comparatively beyond the established rule of thumb. Thus, the tolerance value and variance inflation factor (VIF) are advanced measures for assessing harmful multicollinearity among explanatory variables. The variance inflation factor and tolerance values are determined with the use of STATA 10 and were found to be concurrently smaller than ten and one respectively, indicating the absence of harmful multicollinearity. This therefore, indicates the adequacy of fitting the model of the study with four independent variables.

**4.4 Analysis of Regression Results and Discussion of Findings**

Table 4.3 presents the summary of the fixed effect multiple regression results obtained while the full results are shown in appendix (II):

**Table 3**

| Variables | Coefficient | T-Values | P-Values | Tolerance | VIF |
|---|---|---|---|---|---|
| **Constant** | -2.809092 | -7.49 | 0.000 | | |
| **ARP** | 0.0001661 | 0.15 | 0.885 | 0.774812 | 1.29 |
| **APP** | 0.0039633 | 3.72 | 0.000 | 0.899595 | 1.11 |
| **CCC** | 0.0015279 | 2.40 | 0.019 | 0.743278 | 1.35 |
| **NLS** | 0.2815914 | -7.49 | 0.000 | 0.803718 | 1.97 |
| **$R^2$** | 0.4281 | | | | |
| **F(4, 75)** | 14.04 | | | | |
| **Prob. $Chi^2$** | | | 0.8905 | | |

***Source: STATA Output, 2016***

Table 4.3 shows that the functional relationship between the dependent and independent variables is:

The table above showed the coefficient of determination $R^2$ which stands at 40% indicates the proportion of the total variation in dependent variable (return on assets) that is explained by the independent variables. This signifies that 40% of the total variation in financial performance of listed health care firms in Nigeria is caused by the combined effect of the Average receivable period, Average payment period, Cash conversion cycle; while the remaining 60% is caused by other factors not captured in the model of the study.

The table showed that Average accounts receivable has no significant impact on the financial performance of listed health care firms in Nigeria at all level of significance. This can be observed from the value of beta the coefficient of 0.0001661 with p-value of 0.885 indicating that the p-value is statistically insignificant. This implies that average receivable period as one of the proxies of working capital that does not affect the financial performance of listed health care firms in Nigeria. The results serves as a basis for accepting the first hypothesis, which states that total average accounts receivable has no significant impact on the financial performance of listed health care firms in Nigeria. The findings therefore disregard proposations by Deloof and Jegers, (1996), Sathamoorthi, (2002), Zariyawati, et al., (2009), Deloof (2003), Lazaridis & Tryfonidis (2006), Lazaridis & Tryfonidis (2006), Vishnani (2007) and Eljely (2004), all of whom argue that there is relationship between the ROA and working capital.

The table revealed a value of beta coefficient of 0.0039633 with p-value of 0.000 for Average payment period. This signifies that Average payment period has strong positive influence on the financial performance of listed health care firms in Nigeria at 1% level of significance. The result implies that Average payment period increase the financial performance of the firms. The result provides evidence of rejecting the second hypothesis that assumed Average payment period has no significant impact on the performance of listed health care firms

in Nigeria. The result is in line with the findings of so many researchers in this area. Such researchers include; Lazaridis and Tryfonidis (2006), Rajan and Zingales; (1995) and Wald (1999), suggested that payables was positively correlated with firm' financial performance based on the data from developing countries with no exception.

The table showed that cash conversion cycle has positive significant impact on the financial performance of listed health care firms in Nigeria. This can be observed from the value of beta the coefficient of 0.0015279 with p-value of 0.019 indicating that the p-value is statistically significant at 5%. This implies that cash conversion cycle as one of the proxies of working capital management that significantly affect the financial performance of listed health care firms in Nigeria. The results serves as a basis for rejecting the first hypothesis, which states that cash conversion cycle has no significant impact on the financial performance of listed health care firms in Nigeria. The result supports the findings of Akoto et al. (2013); Charitou et al. (2010); Makori and Jagongo (2013); Mansoori and Muhammad (2012); Mohamad and Saad (2010); Sharma and Kumar (2011).

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1. Introduction

This chapter provides the summary of the work done, summary of findings, theoretical findings, conclusions, recommendations and suggestion for further reading.

## 5.2. Summary

The research project was carried out on the effect of working capital management on the firm's financial performance in the Health care industries listed on the floor of Nigerian stock exchange market and the variables used include account receivable days, account payable days, inventory days and natural logarithm of sales as control variable. The main introduction to the research work which contains the background of the study and statement of research problem discussing the state of working capital management on the firm financial performance in Nigeria. The objective of the study is to examine effect of working capital management on the firm's financial performance in the Health care industries listed in the Nigerian stock exchange. The research hypothesis were based on the objectives of the study. The study was based on six Health care firms listed on the floor of Nigerian stock exchange. The data was analyzed using Stata statistical package. The relationship between the variables was measured using regression and correlation.

Followed by the detailed concepts of working capital management, graphical representation of working capital component, concept of financial performance, empirical studies and theoretical framework on working capital management and firm performance. The research design, population of the study, sample size drawn from the population and the sampling techniques employed in selecting the sample of all the health care firms listed on the Nigerian stock

exchange. The data gathering method used was annual report (secondary source). The data presentation using tables, Descriptive analysis was used to find the mean, the minimum, the maximum values and the standard deviation of the variables. The quantitative analysis consisted of the coefficient of significance to find the effects that exist between the variables and regression analysis was used to test the hypothesis using the general model, are made in the fourth chapter. And here the last chapter summarized the work, present the findings and highlight recommendations.

Ex-facto research design was adopted which is based on a scientific examination of dependent and independent variable, for the purpose of this study secondary sources of data were used and Stata statistical package were used to analyzed the data.

### 5.3. Findings

The following are the findings of the study obtained from the presentation, analysis and interpretation of data.

1. The account receivable days of the selected health care firm has no significant impact on the financial performance, The findings therefore disregard proposations by Deloof and Jegers, (1996), Sathamoorthi, (2002), Zariyawati, et al., (2009), Deloof (2003), Lazaridis & Tryfonidis (2006), Lazaridis & Tryfonidis (2006), Vishnani (2007) and Eljely (2004), all of whom argue that there is relationship between the ROA and working capital.
2. The account payable days of the selected health care firms is positive impact on the return on total assets. These results suggest that managers can create value for their shareholders by decreasing the number of account payable days. This result is also

in-line with the findings of so many researchers in this area. Such researchers include; Lazaridis and Tryfonidis (2006), Rajan and Zingales; (1995) and Wald (1999), suggested that payables was positively correlated with firm' financial performance based on the data from developing countries with no exception.

3. The cash conversion cycle of the selected Health care firms is positively related to the return on total assets. These results suggest that managers can create value for their shareholders by reducing the number of Cash conversion cycle days to a reasonable minimum. This is also consistent with the findings of; Shin and Soenen (1998), Deloof (2003), Raheman and Nasr (2007), Deloof (2003) and also in consistence with the work of Afza and Nazir (2009) that findout that, there is negative relationship between inventory conversion period and profitability. Uremadu (2004).

4. The natural logarithm of sales the selected health care firms is positively related to the return on total assets. These results suggest that managers can create value for their shareholders by increasing sales.

## 5.4. Conclusion

This study concludes that a negative relationship exist between account receivable days, inventory days and return on total assets, indicating that as account receivable days, inventory days increase, the return on total assets decreases and vice versa. On the contrary, account payable days and natural logarithm of sales showed a positive relationship indicating that as account payable days and natural logarithm of sales increase, the return on total assets will decrease and vice versa.

This study also concludes that the management of working capital in the Nigerian Health care firms plays an essential role in the day to day operation of the firm which leads to a success or failure of a firm and an important aspect of corporate finance decisions; An optimal working capital management is expected to contribute positively to the creation of firm value. To reach optimal working capital management, firm managers should control and manage adequately each component of working capital accurately. Therefore, in order to meet the firm's objectives, which is to increase profits and create better investor value, adequate working capital should be maintained and each of its different components should be effectively and efficiently managed and controlled

## 5.5 Recommendations

Based on the result obtained in previous chapter, the following recommendations are made;

1) Managers should create value for their shareholders by reducing the number of account receivable days and inventory days to a reasonable minimum and that Inventory policies should be reviewed in the light of changing economic factors such as demand and supply.

2) Management should give credit to good customers taking into account their behavior over time and cash discount could be given to encourage prompt payment.

3) Management should reduce the borrowing level of the health care firms in order to improve credit rating, reduce the overall risk and cost of borrowing

4) The managers of health care companies should maintain relative high investment in current assets so that the firm will be able to meet its short term obligations as well as meeting all sales order, maintain smooth production and disrupt profitability.

5) The financial managers of health care firms should formulate policies for the management of cash in order to ensure continuous flow of cash and ability to meet short term ability as they fall due and surplus fund should be invested in profitable venture.

## 5.6 Frontiers for further study

The following are areas where the researcher believes further studies should be carried out.

The number of dependent and independent variables not include in this researches should be included in further researches. Secondly, the sample size and the years should be increased and should involve more other populations not sampled here in. and last but not the least, In-depth research on inventory management and firm performance, as well as comparison of each component of working capital between different sectors.

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APPENDIX 1

| S/N | Name of the Companies |
|---|---|
| 1. | Afrik Pharmaceuticals Plc. |
| 2. | Union Diagnostic & Clinical Services |
| 3. | Ekocorp Plc. |
| 4. | Evans Medical Plc. |
| 5. | Fidson Healthcare Plc. |
| 6. | May & Baker Nigeria Plc. |
| 7. | Juli Plc. |
| 8. | GlaxoSmithKline Nigeria Plc. |
| 9. | Neimeth International Pharm Plc. |
| 10. | Nigerian-German Chemicals Plc. |
| 11. | Pharma-Deko Plc. |

APPENDIX 2

| COMPANY | ID | YEAR | ROA | ARP | APP | CCC | NLS |
|---|---|---|---|---|---|---|---|
| GLAXOSMITHKLIN | 1 | 2020 | 0.05 | 79.3546 | 322.5216 | 165.1263 | 7.3282 |
| | | 2019 | 0.0543 | 120.3492 | 216.6724 | 41.3213 | 7.3171 |
| | | 2018 | 0.0782 | 113.4674 | 195.1323 | 41.6532 | 7.265 |
| | | 2017 | 0.0443 | 154.1538 | 291.1233 | 31.6523 | 7.4231 |
| | | 2016 | 0.6532 | 136.4322 | 206.2174 | 183.7632 | 7.1579 |
| | | 2015 | 0.0342 | 74.3212 | 282.7642 | 75.4523 | 7.485 |
| | | 2014 | 0.0983 | 59.5224 | 220.1129 | 20.52364 | 7.484 |
| | | 2013 | 0.1583 | 50.4727 | 223.9924 | 56.6807 | 7.4651 |
| | | 2012 | 0.1914 | 50.4505 | 200.8272 | 40.123 | 7.3381 |
| | | 2011 | 0.482 | 339.6903 | 194.2024 | 281.9975 | 7.3321 |
| FIDSON PLC | 2 | 2020 | 0.0653 | 54.4326 | 82.3214 | 227.4567 | 7.2618 |
| | | 2019 | 0.0254 | 84.8797 | 62.4351 | 174.0897 | 7.1882 |
| | | 2018 | 0.0823 | 85.7687 | 135.2464 | 55.2645 | 7.2041 |
| | | 2017 | 0.0943 | 65.4232 | 192.3658 | 35.6748 | 7.1439 |
| | | 2016 | 0.0238 | 155.4234 | 143.2351 | 164.2145 | 6.8839 |
| | | 2015 | 0.0567 | 168.3213 | 65.7508 | 169.4762 | 6.9133 |
| | | 2014 | 0.0674 | 87.9783 | 89.4783 | 90.8435 | 6.8975 |
| | | 2013 | 0.0203 | 92.5372 | 149.4738 | 53.31769 | 6.966003 |
| | | 2012 | 0.0509 | 101.1252 | 84.3585 | 133.3637 | 6.855455 |
| | | 2011 | 0.2366 | 67.7354 | 47.7951 | 125.2348 | 6.851469 |
| PHARMA DEKO PLC | 3 | 2020 | -0.1602 | 16.7863 | 21.8234 | 151.0372 | 5.663547 |
| | | 2019 | -0.1234 | 88.6235 | 47.1623 | 128.4678 | 5.68536 |
| | | 2018 | 0.1142 | 60.3245 | 39.3243 | 170.7312 | 6.010218 |
| | | 2017 | 0.013441 | 30.7344 | 102.1765 | 28.3478 | 6.202319 |
| | | 2016 | 0.0915 | 239.4356 | 35.7633 | 169.3783 | 6.039457 |
| | | 2015 | 0.2783 | 23.0783 | 66.8734 | 94.7863 | 6.170838 |
| | | 2014 | 0.052891 | 24.02298891 | 143.6426 | 66.3656 | 6.4532 |
| | | 2013 | 0.091508 | 34.19022114 | 159.8932 | 11.30591 | 6.025432 |
| | | 2012 | 0.246792 | 31.33693925 | 228.5823 | 63.6212 | 6.015973 |
| | | 2011 | 0.387579 | 15.6285681 | 165.4615 | 78.02366 | 6.101017 |
| EKOCORP PLC | 4 | 2020 | -0.0523 | 109.0854 | 268.8974 | 228.7845 | 5.991677 |
| | | 2019 | -0.0472 | 119.0845 | 171.5674 | 260.6544 | 6.097345 |
| | | 2018 | -0.0432 | 53.3456 | 97.6452 | 180.7645 | 6.16812 |
| | | 2017 | -0.1523 | 40.3465 | 75.5746 | 320.5474 | 6.17186 |
| | | 2016 | 0.0254 | 257.7854 | 39.5624 | 195.8453 | 9.131088 |
| | | 2015 | 0.0345 | 210.5673 | 40.7842 | 195.4589 | 10.13704 |
| | | 2014 | 0.053552 | 174.7944542 | 74.13631 | 112.8328 | 9.11514 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2013 | 0.604351 | 142.1038891 | 71.98169 | 80.49808 | 9.084654 |
| | | 2012 | 0.050213 | 95.81743336 | 93.25275 | 16.54883 | 9.050905 |
| | | 2011 | 0.0742 | 190.7346 | 200.6473 | 169.4672 | 9.4512 |
| MAY AND BAKER PLC | 5 | 2020 | 0.0869 | 53.4782 | 87.789 | 124.5784 | 6.972675 |
| | | 2019 | 0.0948 | 72.7456 | 141.7645 | 70.8754 | 6.907432 |
| | | 2018 | 0.1009 | 57.7843 | 98.4554 | 67.6742 | 6.970934 |
| | | 2017 | 0.0791 | 28.8734 | 66.9483 | 58.7562 | 6.731506 |
| | | 2016 | 0.4423 | 64.6234 | 116.3424 | 54.6345 | 6.927851 |
| | | 2015 | 0.0172 | 79.6345 | 99.5634 | 81.4356 | 6.879008 |
| | | 2014 | 0.012497 | 101.1199877 | 79.77871 | 1062.472 | 6.846275 |
| | | 2013 | -0.00139 | 83.22166576 | 112.2621 | 106.0873 | 6.803976 |
| | | 2012 | 0.005517 | 91.71070517 | 97.95676 | 127.0105 | 6.753464 |
| | | 2011 | 0.046498 | 59.60314054 | 108.8312 | 42.10868 | 6.684627 |
| NEIMETH PLC | 6 | 2020 | 0.042342 | 131.4356 | 189.5467 | 18.4567 | 6.808978 |
| | | 2019 | 0.113276 | 139.7346 | 144.4373 | 294.0987 | 6.374989 |
| | | 2018 | -0.06437 | 275.6345 | 236.0891 | 162.0089 | 6.356154 |
| | | 2017 | -0.17176 | 118.7456 | 169.9877 | 364.8794 | 6.185826 |
| | | 2016 | 0.040654 | 147.8794 | 85.9804 | 211.7845 | 6.301424 |
| | | 2015 | 0.14895 | 207.4783 | 133.8459 | 145.0983 | 6.164569 |
| | | 2014 | -0.08213 | 272.4256261 | 149.5865 | 367.3157 | 6.21176 |
| | | 2013 | 0.023325 | 257.1063445 | 110.6625 | 384.2781 | 6.304603 |
| | | 2012 | -0.05377 | 206.7812718 | 173.0685 | 358.435 | 6.367394 |
| | | 2011 | 0.0432 | 123.4762 | 154.7482 | 352.7456 | 6.5443 |
| UNIONDAC PLC | 7 | 2020 | 0.003974 | 21.3278 | 29.5367 | 23.8093 | 9.153089 |
| | | 2019 | 0.20934 | 100.4871599 | 79.08375 | 24.51402 | 9.130066 |
| | | 2018 | 0.030918 | 95.87190783 | 86.19367 | 13.34605 | 9.131368 |
| | | 2017 | 0.077933 | 30.234 | 38.79046 | 23.555 | 9.195248 |
| | | 2016 | 0.08853 | 215.821376 | 24.77348 | 197.2338 | 9.190186 |
| | | 2015 | 0.05 | 280.5129732 | 111.0103 | 170.2459 | 9.089152 |
| | | 2014 | 0.040097 | 285.7887445 | 22.60211 | 264.0805 | 8.999558 |
| | | 2013 | 0.00746 | 353.9722644 | 287.4384 | 71.48256 | 8.935794 |
| | | 2012 | 0.0534 | 322.4563 | 189.3467 | 74.4532 | 8.8643 |
| | | 2011 | 0.076 | 98.34567 | 265.6235 | 98.6732 | 8.89823 |
| MORISON INDUSTRIES PLC | 8 | 2020 | -0.2751 | 164.1059057 | 76.13614 | 221.1571 | 5.086242 |
| | | 2019 | -0.23292 | 241.6675376 | 111.9081 | 167.5621 | 4.935064 |
| | | 2018 | -0.03951 | 239.5650915 | 28.56527 | 520.3559 | 5.140477 |
| | | 2017 | 0.333445 | 269.2968838 | 269.1265 | 269.5706 | 5.180037 |
| | | 2016 | 0.190326 | 78.87454642 | 326.6733 | 89.809 | 5.121494 |

| | | | | | |
|---|---|---|---|---|---|
| 2015 | -0.10906 | 52.78274102 | 296.1023 | 80.4866 | 5.263276 |
| 2014 | -0.19666 | 8.413221305 | 234.4207 | 49.3878 | 5.337427 |
| 2013 | 0.0871 | 108.6372 | 222.8473 | 98.4378 | 5.6532 |
| 2012 | 0.010826 | 83.09487991 | 23.28775 | 162.1766 | 5.609455 |
| 2011 | 0.130068 | 99.50192176 | 51.7731 | 354.1299 | 5.313447 |

# APPENDIX 3

```
  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   11.2   Copyright 1985-2009 StataCorp LP
  Statistics/Data Analysis             StataCorp
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      Special Edition                  College Station, Texas 77845 USA
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Notes:
      1.  (/m# option or -set memory-) 50.00 MB allocated to data
      2.  (/v# option or -set maxvar-) 5000 maximum variables

. edit

. *(7 variables, 80 observations pasted into data editor)

. summarize roa arp app ccc nls, detail
```

ROA

| Percentiles | | Smallest | | |
|---|---|---|---|---|
| 1% | -.2750965 | -.2750965 | | |
| 5% | -.165982 | -.2329242 | | |
| 10% | -.0955982 | -.1966591 | Obs | 80 |
| 25% | .0116615 | -.171764 | Sum of Wgt. | 80 |
| 50% | .0505566 | | Mean | .0695903 |
| | | Largest | Std. Dev. | .1573808 |
| 75% | .09455 | .4423 | | |
| 90% | .2416961 | .482 | Variance | .0247687 |
| 95% | .4149394 | .6043512 | Skewness | 1.298583 |
| 99% | .6532 | .6532 | Kurtosis | 6.396862 |

ARP

| Percentiles | | Smallest | | |
|---|---|---|---|---|
| 1% | 8.413221 | 8.413221 | | |
| 5% | 22.20305 | 15.62857 | | |
| 10% | 30.4842 | 16.7863 | Obs | 80 |
| 25% | 59.56277 | 21.3278 | Sum of Wgt. | 80 |
| 50% | 97.10879 | | Mean | 122.799 |
| | | Largest | Std. Dev. | 85.49062 |
| 75% | 166.2136 | 285.7888 | | |
| 90% | 263.5411 | 322.4563 | Variance | 7308.646 |
| 95% | 283.1509 | 339.6903 | Skewness | .9378231 |
| 99% | 353.9723 | 353.9723 | Kurtosis | 2.976708 |

APP

| Percentiles | | Smallest | | |
|---|---|---|---|---|
| 1% | 21.8234 | 21.8234 | | |
| 5% | 26.66938 | 22.60211 | | |
| 10% | 39.05738 | 23.28775 | Obs | 80 |
| 25% | 74.85545 | 24.77348 | Sum of Wgt. | 80 |
| 50% | 112.0851 | | Mean | 136.0458 |
| | | Largest | Std. Dev. | 81.31538 |
| 75% | 194.6674 | 291.1234 | | |
| 90% | 267.2605 | 296.1023 | Variance | 6612.191 |
| 95% | 289.2809 | 322.5216 | Skewness | .5503269 |
| 99% | 326.6733 | 326.6733 | Kurtosis | 2.350095 |

CCC

| Percentiles | | Smallest | | |
|---|---|---|---|---|
| 1% | 11.30591 | 11.30591 | | |
| 5% | 19.49017 | 13.34605 | | |
| 10% | 26.43091 | 16.54884 | Obs | 80 |
| 25% | 57.71845 | 18.4567 | Sum of Wgt. | 80 |
| 50% | 124.9066 | | Mean | 153.9987 |
| | | Largest | Std. Dev. | 148.8326 |
| 75% | 195.6521 | 367.3157 | | |
| 90% | 336.6465 | 384.2781 | Variance | 22151.13 |
| 95% | 366.0975 | 520.3559 | Skewness | 3.190934 |
| 99% | 1062.473 | 1062.473 | Kurtosis | 18.7586 |

NLS

| | Percentiles | Smallest | | |
|---|---|---|---|---|
| 1% | 4.935064 | 4.935064 | | |
| 5% | 5.160257 | 5.086242 | | |
| 10% | 5.473441 | 5.121494 | Obs | 80 |
| 25% | 6.166345 | 5.140477 | Sum of Wgt. | 80 |
| 50% | 6.853462 | | Mean | 6.998156 |
| | | Largest | Std. Dev. | 1.262268 |
| 75% | 7.3806 | 9.190186 | | |
| 90% | 9.122603 | 9.195248 | Variance | 1.59332 |
| 95% | 9.171638 | 9.4512 | Skewness | .637496 |
| 99% | 10.13704 | 10.13704 | Kurtosis | 2.57264 |

```
. swilk roa arp app ccc nls
```

Shapiro-Wilk W test for normal data

| Variable | Obs | W | V | z | Prob>z |
|---|---|---|---|---|---|
| roa | 80 | 0.86858 | 9.021 | 4.819 | 0.00000 |
| arp | 80 | 0.90334 | 6.634 | 4.146 | 0.00002 |
| app | 80 | 0.94439 | 3.817 | 2.935 | 0.00167 |
| ccc | 80 | 0.72668 | 18.760 | 6.424 | 0.00000 |
| nls | 80 | 0.91730 | 5.676 | 3.804 | 0.00007 |

```
. pwcorr roa arp app ccc nls, sig
```

| | roa | arp | app | ccc | nls |
|---|---|---|---|---|---|
| roa | 1.0000 | | | | |
| arp | -0.0082<br>0.9423 | 1.0000 | | | |
| app | 0.0942<br>0.4061 | 0.0509<br>0.6540 | 1.0000 | | |
| ccc | -0.1582<br>0.1611 | 0.3195<br>0.0039 | -0.1849<br>0.1006 | 1.0000 | |
| nls | 0.2154<br>0.0550 | 0.2274<br>0.0425 | -0.1340<br>0.2360 | -0.2231<br>0.0466 | 1.0000 |

```
. xtset id year
        panel variable:  id (strongly balanced)
         time variable:  year, 2011 to 2020
                 delta:  1 unit
```

```
. reg roa arp app ccc nls
```

| Source | SS | df | MS |
|---|---|---|---|
| Model | 34.1531596 | 4 | 8.5382899 |
| Residual | 45.6215116 | 75 | .608286821 |
| Total | 79.7746712 | 79 | 1.00980596 |

| | |
|---|---|
| Number of obs | = 80 |
| F( 4, 75) | = 14.04 |
| Prob > F | = 0.0000 |
| R-squared | = 0.4281 |
| Adj R-squared | = 0.3976 |
| Root MSE | = .77993 |

| roa | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| arp | .0001661 | .0011394 | 0.15 | 0.885 | -.0021036 | .0024358 |
| app | .0039633 | .001066 | 3.72 | 0.000 | .0018397 | .0060868 |
| ccc | .0015279 | .0006358 | 2.40 | 0.019 | .0002614 | .0027944 |
| nls | .2815914 | .049752 | 5.66 | 0.000 | .1824803 | .3807024 |
| _cons | -2.809092 | .3752214 | -7.49 | 0.000 | -3.556572 | -2.061613 |

```
. vif
```

| Variable | VIF | 1/VIF |
|---|---|---|
| ccc | 1.35 | 0.743278 |
| arp | 1.29 | 0.774812 |
| nls | 1.24 | 0.803718 |
| app | 1.11 | 0.899595 |
| Mean VIF | 1.25 | |

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of roa

         chi2(1)      =     0.02
         Prob > chi2  =   0.8905
```