EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY AMONG MANUFACTURING AND ALLIED FIRMS LISTED ON NAIROBI SECURITIES EXCHANGE, KENYA

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DECLARATION

Declaration by the Student

This thesis is my original work and has not been presented for a degree in any other University. No part of this thesis may be reproduced without prior written permission of the author and/or Rongo University.

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DEDICATION

I dedicate this thesis to my late Father, Henry Ogada, and to my wife, Betty Aduda, for

their moral support as well as the encouragement they have continued to give me.

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ABSTRACT

The study sought to assess effects of working capital management on profitability among manufacturing and allied firms, Kenya. Moreover, specific objectives of this study are to: determine effect of Average Collection Period on profitability of Nairobi Stock Exchange manufacturing and allied firms; establish influence of Inventory Conversion Period on profitability of manufacturing and allied firms on Nairobi Stock Exchange; determine effect of Average Payment Period on profitability of Nairobi Stock Exchange manufacturing and allied firms; and to establish the effect of Cash Conversion Cycle on profitability of Nairobi Stock Exchange manufacturing and allied firms. Explanatory research approach is employed. Panel data obtained from Nairobi Stock Exchange between 2009 and 2018 are analyzed with the help of Eviews 10 student version program. Baumol's theory is adopted as an underlying theory of the study whereby, random effect method is chosen to be the best method to run panel data at 5% level of significance. It is observed that Average Collection Period and Cash Conversion Cycle are significant at the 5% level of significance with p-values of 0.0021 and 0.0240, respectively while APP and Inventory Conversion Period had insignificant influence on profitability (Return on Assets) of Nairobi Stock Exchange manufacturing and allied firms, evidenced by p-values of 0.8758 and 0.6639, respectively. The study recommends that manufacturing and allied firms ought to minimize duration taken by their customers to pay for the already sold goods. Furthermore, the managements of the firms should come up with a credit policy to reduce as well as define credit period the clients are given (the duration allotted to debtors) to settle their debts. Also, manufacturing and allied firms ought to take appropriate steps to minimize Cash Conversion Cycle. This can include developing relations with debtors in order to make it simpler to collect receivables, taking proper steps to avoid bad debts, for example assessing consumer payment risk, and, most importantly, implementing a sound cash management strategy.

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LIST OF ACRONYMS

ACP: Average Collection Period

APP: Average Payment Period

CCC: Cash Conversion Cycle

CMA;   Capital Market Authority

CPP: Cash Payment Period

DSE: Dar es Salaam Stock Exchange

EOQ: Economic Order Quantity

EWASCO: Embu Water and Sanitation Company

GDP: Gross Domestic Product

GOI: Gross Operating Income

GSE: Ghana Stock Exchange

ICP: Inventory Conversion Period

ITD: Inventory Turnover Days

KEWASCO: Kericho Water and Sanitation Company

NACOSTI: National Commission for Science, Technology and innovation

NOI: Net Operating Income

NSE: Nairobi Securities Exchange

NZOWASCO: Nzoia Water and Sanitation Company

ROA: Return on Assets

ROE: Return on Equity

ROI: Return on Investment

WCM: Working Capital Management

DEFINITIONS OF TERMS

Accounts payable: This is a current account in a firm where the liabilities owed to suppliers are recorded by the firm. In other words, it is the account for recording debts resulting from credit purchases.

Accounts receivable: This is the current account in a firm where the credit sales are recorded, in few words it is the account that keeps track on the amount owed by customers to the firm.

Average Collection Period: Refers to the duration on average between credit sales and recovery of the money from the credit buyer.

Average Payment Period: This refers to the duration of time that is taken by the firm to make payment of the good bought on credit from vendors. In other words, it is the average time taken to settle credit account payable.

Cash Conversion Cycle: This is the duration it takes for a firm to change stock to cash. The duration is measured in days in other words it is the time taken in converting inventory investment into cash.

Inventory Conversion Period: This is the duration needed by a company to change cash into raw materials, make goods using the raw materials and sale the goods.

Profitability of manufacturing and allied firms: Refers to the ability of a company or efficient management and use of firm resources to create more income as compared to expenses.

Profitability: It refers to the business ability to utilize its assets to earn income and it is measured using ROA

Return on Assets: Refers to profitability ratio that assesses a company's capability to yield profits from its total assets. It is useful in making the decision to invest.

Working Capital Management: Refers to firm's accounting strategies developed for monitoring as well as utilization of current liabilities and current assets, to increase efficiency in financial activities of the firm.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the recent, in terms of recessionary economic environment, there is necessity for positive cash flow and liquidity in all companies regardless of their size and sector of operation. The working capital management (WCM) influences the profitability level of a company (Sarbapriya, 2015). Often financial managers have encountered difficulties in achieving a desired tradeoff between liquidity and firms' profitability. Firm's profitability together with firm's risk as well as value is highly influenced by liquidity management level. The theory of risk and return holds that risk is directly proportional to profitability (return). This indicates that organizations with high risks register high rates of return. As a result, level of working capital constituents ought to be as high as feasible in order to enhance profitability while also protecting the company from liquidity issues (Mifta, 2016).

Companies with positive working capital are able to cater for short term debts for example the debt from suppliers while those firms with negative working capital are not capable of meeting the short term obligations (Ali & Syed, 2014). Excess working capital on the one hand, shows possession of inactive current assets which does not yield any benefit for the company during the working period. Insolvency results from lack of enough capital which has high chances of harming the company's credit worthiness as well as the day-to-day activities. WCM is a key requirement and is very essential in corporate finance since it is concerned with making financial decisions as well as short term investments. A tradeoff between firms' liquidity and profitability is achieved through efficient WCM which entails

planning as well as controlling of both the current assets and liabilities (Ngendakumana, Jagero & Gondo, 2017). Poor control of working capital elements (accounts receivable, account payable as well as inventories) results to challenges in the firms' operations and also decline in company's market value. This may in turn hinder the firm's key objective which is to ensure maximum profit to shareholders. In order to ensure maximum profit an organization should try as much as possible to balance current assets and liabilities as well as ensuring tradeoff between profitability and company liquidity (Fredrick, 2013).

In the last one decade (2010 to 2019), there has been a lot of study done on the essence of WCM in relations to profitability of a firm. Many researches have been carried out on WCM and organization profitability (Yakubu, Alhassan &Fuseini, 2017). However, authors differ on how WCM through CCC together with its elements influence profitability. In US, Gill, Biger and Mathur (2010) discovered that WCM measured in terms of cash conversion cycle (CCC), Average Collection Period (ACP) and Average Payment Period (APP) significantly influences company's profitability. In England, Qurashi (2017) indicated that that ICP positively influence profitability. However ACP negatively influenced profitability. The Deloof (2003), revealed a significant influence of WCM on organization profitability of Belgian companies. Moreover, in Sri Lanka, Wanigasekara and Nadeesha (2016) indicate the WCM influences profitability of listed companies. In Pakistan, Ali and Syed (2014) observe that WCM did not influence firm's profitability however; there was an influence in current asset management as well as current liability management.

Evci and Sak (2017) established that Return on Assets (ROA) was negatively affected by the components of WCM such as CCC, APP and ACP. In addition, Sarbapriya (2015) established that company profitability in India was negatively and significantly influenced by the

measures of WCM which included CCC, financial debt ratio, and ACP. Iqbal, Ullah and Zhuquan (2017) observe that well-functioning WCM plays an important role in profitability and growth of the companies in Pakistan and those companies can enhance their performance through properly controlling the components of working capital. Specifically, they observed that profitability was negatively and significantly influenced,

1.1.1 Working Capital Management

In business as well as economic development finance, word "working capital" has numerous meanings. It is described as the short-term or current liabilities and assets in accounting and financial statement analysis (Ngendakumana, Jagero & Gondo, 2017). Net working capital is the disparity between current assets and current liabilities, and it is a measure of company's ability to achieve short-term financial obligations. By managing and controlling current liabilities and assets, effective WCM eliminates the danger of not being capable of meeting short-term commitments and prevents overinvestment in these assets on the one hand, and prevents overinvestment in these assets on the other (Kwaku & Mawutor, 2014).

The current assets as well as liabilities' management is known as WCM. It deals with the management of current assets and current liabilities, which has direct influence on the company's liquidity as well as profitability. The importance of WCM has been underscored by the current liquidity crisis. Furthermore, WCM has ramifications for profitability as well as liquidity, and provides familiar front for the company's profitability and also liquidity (Jakpar, Tingg & Siang, 2017). To achieve optimal WCM, the firm manager must carefully manage the tradeoff between profit maximization and liquidity. Ideal WCM is supposed to contribute to generation of business value in a beneficial way (Kwaku & Mawutor, 2014). WCM is significant for diverse reasons. A normal current asset is accountable for over half

of manufacturing firm's assets. Moreover, they account more for a distribution company. Poor ROI for a company can be as a result of excessive current assets. Firms with inadequate current assets may face deficiencies and have difficulty sustaining smooth operations. Planning and controlling are important aspects of effective WCM.

According to Kasozi (2017) WCM is a straightforward and easy idea that ensures the firm's ability to finance variation between short-term liabilities and also short-term assets. Nonetheless, a comprehensive approach and method were adopted to encompass all of the company's activities involving vendors, customers, and products. WCM is now widely regarded as one of the most important challenges in businesses, with finance executives attempting to pinpoint the fundamental drivers and levels of WCM.

In terms of accounts receivable, the ACP is the time it takes for a company to receive payments owed by its customers (Kenton, 2020). According to ACP is the average number of days between when a sale (on credit) is made and when the buyer submits payment or when the company receives payment from the buyer (Wafula, Rezouki, and Ondiek, 2019). The financial ratio is also used to determine whether the credit terms are reasonable. Businesses must be able to manage their ACP to ensure they have enough cash on hand to meet their financial obligations. The ACP figure is also essential from a timing standpoint, as it can assist a company in developing effective strategy for purposes of covering costs as well as scheduling possible growth expenses (Wasike, Rezouki, Tibbs and Alala, 2019).

Receiving payment for services or goods on time is critical for a business. It allows the business to maintain a level of liquidity, enabling it to cover immediate costs and also get a sense of when it will be able to make huge purchases. In general, a shorter ACP is preferable

to a longer ACP. A short ACP indicates the company collects money rapidly. If the ACP is greater than the average credit period given to clients, the Billing Process isn't functioning properly. Most of the time, this is due to a lack of close follow-up or bad credit lines that should have never been extended in the first place. To avoid this, businesses should conduct a thorough analysis of their clients before extending credit lines to them. If a customer has a history of late payments with other vendors, the company should avoid selling goods or services on credit because collection will be difficult (Wafula, Rezouki, and Ondiek, 2019).

Besides that, administrative systems must send reminders of past-due invoices to the Billing Team, encouraging them to follow up in order to lower the ratio. A business that has a history of not collecting payments on time will eventually run into financial difficulties due to cash shortages as its cash cycle lengthens. This is also a costly situation because the company will just have to take on debt to meet its obligations, and that debt will incur interest charges, reducing earnings. The average AR balance is calculated by adding opening and closing AR balances, then dividing the total by two (Suleiman, 2017).

The APP, also defined as days payable outstanding (DPO), is a solvency ratio that determines how long it takes a company to pay its vendors for credit purchases (Thaku, 2020). The average payment period calculation by the organization can provide distinct information about the company, including its cash flow position and creditworthiness, which is beneficial for many of the company's stakeholders, particularly investors, creditors, management, and analysts, to make informed decisions about the company. To calculate the company's average payment period, you'll need figures for the company's average accounts payable. This information can be found in the company's balance sheet under the heading current liabilities.

If calculated payment period is short, it indicates that the company pays its customers promptly. If the calculated APP is large, it indicates that the company is not paying its customers promptly. However, if payment period is extremely short, it indicates that the company is unable to fully utilize the credit terms provided by the company's suppliers (Munene, 2015).

The company should keep average payable days low because it will help to build supplier confidence and allow you to take advantage of any trade discounts they may be offering. Because APP is a solvency ratio, it assists businesses in determining their long-term viability by assessing their ability to meet their obligations. It can also assist the business in making cash flow decisions. APP is critical in determining efficiency of using credit in the short term as well as its long-term viability. Similarly, it aids in determining the company's long-term ability to pay creditors. If a company's average payment period is short, it means it settles credit payments quickly and on time. As a result, the company is more likely to attract favorable payment terms from both existing and new vendors. (Mko , and Nwankwo, 2018).

Average payment period can help the company to look for discounts available when they choose to pay vendors sooner rather than later. Investors, shareholders and other capitalists who have a financial stake in a business use a business's APP ratio to determine if it has enough incoming revenue to cover short-term liabilities and how quickly the business can pay them off. This information helps investors decide whether it's beneficial to fund business ventures. The APP also gives banks and other financial institutions necessary information to approve business loans or lines of credit. The average payment period ultimately tells investors and creditors how quickly companies can pay down credit purchases and liabilities. Sometimes, companies can take advantage of discounts through suppliers or vendors on

credit purchases so long as they can pay off the outstanding balance within a specified period (Mukhoma, 2014).

The CCC – also referred to as cash cycle or Net Operating Cycle – is a working capital metric, which expresses the number of days it takes a company to convert cash into inventory, and then back into cash via the sales process (Murphy, 2020). The CCC is lengthened when a company—or its management—takes a long time to obtain outstanding accounts receivable, has much more inventory on hand, or pays its expenditures too quickly. A longer CCC generally takes longer to generate cash, which can lead to small businesses going bankrupt. The CCC is reduced when a company obtains outstanding payments rapidly, accurately forecasts inventory needs, or pays its bills slowly. A lower CCC indicates that the company is in better shape (Hayes, 2021).

For potential investors as well as creditors, the CCC is a useful calculation. CCC can be used to determine how efficient your business is and whether you are collecting payments from customers on time. You will be able to see how well products are selling and how rapidly inventory turnover is handled. Furthermore, when determining how much money you need to borrow, the CCC is a fundamental factor to consider (Çam and Özbek, 2015).

The CCC should be compared to other companies in same industry and followed on a regular basis. When a company's cash conversion cycle is compared to its industry competitors, it can assist in determining whether the company's CCC is normal. It means that the company yields similar returns in a shorter amount of time. When comparing a company's conversion cycle to previous years' conversion cycles, you can see if its working capital management is improving or deteriorating (Al-Mohareb, 2019). Investors, lenders, as well as other sources

of capital frequently assess a company's CCC to ascertain its financial health and, in specific, its liquidity. A company's liquidity determines how easily it can repay a business loan, meet other financial obligations, and invest in growth. Suppliers consider CCC when deciding whether or not to extend credit to a company. They may be concerned that they may not be paid on time if the company lacks adequate liquidity.

You can shorten your company's cash conversion cycle in a number of ways. To begin, ensure that your accounts payable process is as efficient as possible. Furthermore, be specific about what you're billing for and the terms you're requesting. You'll get paid faster if the customer understands the invoice quickly. You can also reduce the CCC by requesting upfront payments or offering a discount for paying early. Furthermore, staying on top of late a payment by following up as soon as a payment is due is a good idea. According to Lesonsky, (2021) companies can improve CCC in several ways: converting inventory into sales faster, collecting payment from customers sooner and extending the time taken to pay suppliers.

1.1.2 Profitability

Profitability refers to the company's capability to generate revenue. This capability is contingent on effectiveness as well as efficiency of its operations, and also the resources at its disposal. It refers to the company's capability to profit from its own investments (Mathuva, 2015). The basic purpose of any business enterprise is to make money. The business will not exist in long run if it is not profitable. As a result, determining current and previous profitability, as well as estimating future profitability, is critical. Company's capability to make profit is referred to as profitability. After paying all expenses related directly to revenue generation, such as making a product, as well as other expenses associated

with conduct of business' activities, a profit is that which is left of revenue a firm generates (Nadeem, Shahzad & Javed, 2017).

To maximize the impact of firm's resources and effectively manage receivables, management must discover efficient ways to deal with available cash for daily operations. Working capital management contributes to higher cash flows and, as a result, a lower requirement for external funding, lowering the risk of the company defaulting (Ngendakumana, Jagero & Gondo, 2017). Profitability is an important metric for management since it is an outcome that has been produced by either an individual or group of people within the organization in relation to their power and also responsibility, without breaking the law, and in accordance with morale as well as ethics. Such profitability is determined by organization's ability to acquire as well as manage economic resources in diverse ways to obtain competitive advantage.

Working capital management has a number of effects on profitability. The handling of cash, debtors, and stocks has an impact on a company's profit margins. Excessive stock holding results in expensive stock handling expenses, stock value depreciation owing to damage as well as obsolescence, employee theft or pilferage and. All of these are expenses for a company, lowering its profitability. Insufficient stocks result in stock out expenses and a loss of the company's goodwill, resulting in losses or profits (Ul Hassan, Imran & Hussain, 2014). When you have a lot of inventory, you have a lot of capital locked up in stocks. Due to the foregone interest income that would have been generated if capital tied up in assets had been invested, this tied up capital has resulted in a loss of profitability.

Studies conducted in Kenya on manufacturing firms' profitability have measured profitability in different ways. For instance, Chemis (2015 measured profitability of Kenya sugar manufacturing firms using Return on Assets (ROA). In addition, Nduati (2014) measured of manufacturing companies' profitability NSE in terms of Gross Operating Profit (GOP). In addition, Muya and Gathogo (2016) measured manufacturing firms' profitability in terms of ROA and ROE. This study measured profitability of manufacturing and allied firms listed in NSE using ROA

1.1.3 Nairobi Stock Exchange- Listed Manufacturing and Allied Firms

The NSE was founded in 1954 and is situated in Nairobi, Kenya's capital. It was a non-profit organization of European stockbrokers registered in British Kenya under Societies Act. NSE which demutualized and self-listed in 2014 is administered by an 11-member board of directors and is governed by the capital market authority (CMA) of Kenya. For foreign and local investors seeking exposure to the country's growing economy, the Exchange provides a world-class trading facility (NSE, 2018).

Nairobi Security Exchange regulates the exchange market and there were 57 listed companies as at 31st December 2018 categorized into ten sectors, and manufacturing and allied firms is one of them. There are nine companies listed in NSE: British American Tobacco Kenya Ltd, B.O.C Kenya Ltd, Carbacid Investments Ltd, Mumias Sugar Co. Ltd, East African Breweries Ltd, Unga Group Ltd, Kenya Orchards Ltd, Eveready East Africa Ltd as well as Flame Tree Group Holdings Ltd (NSE, 2018).

In Kenya, the manufacturing companies generate about 10% of GDP and generates 34% of the foreign exchange earnings. The sector accommodates about 20 percent of the overall

employees. This is a higher percentage as compared to what other economies employ. This is a clear indication that manufacturing sector plays significant role in the economy of Kenya. Therefore more job opportunities and increased foreign exchange as well as increased GDP can be achieved through developing the manufacturing sector.

1.2 Statement of the Problem

Private sectors' companies have a common goal and that is to ensure maximum profit. Maintaining organization liquidity in the manufacturing sector is very essential as well and profit maximization at the expense of liquidity can affect the firm adversely as it can lead to the problem of insolvency or bankruptcy (Mifta, 2016). As a result, all firms should give more consideration to working capital management. WCM entails essential decisions on various aspects like management of accounts payable and accounts receivable, preserving a certain inventories and investment level of accessible cash (Ngendakumana, Jagero & Gondo, 2017). Nevertheless, most financial executives are more concerned with making decisions on long term financial issues especially decisions related to capital structure as well as investment. Business failure in the past has been linked to poor control of WCM by financial executives.

In manufacturing and allied sector, five out of eight listed firms saw a drop in profit in 2016. In 2017, two companies experienced a decrease in profitability measured in terms of net profit (Nairobi Security Exchange, 2018). In addition, the current ratio for all the manufacturing and allied firms decreased from 1.45 in 2015 to 1.41 in 2016 and 1.32 in 2017. WCM is critical to the manufacturing sector's success and survival, and it must be embraced in order to improve performance and contribute to economic growth. WCM which tries to maintain ideal balance between working capital element, namely cash, receivables,

inventories, and also payables, is critical component of a company's overall value creation strategy and a key source of competitive advantage. In order to ensure liquidity in manufacturing sector, it is essential to understand how WCM affect profitability (NSE, 2018).

Several research on WCM and profitability have been conducted. Nduati (2014) evaluated influence of WCM on NSE-listed manufacturing companies' profitability (2009 to 2013); and Kioko and Sitienei (2015) evaluate whether WCM influences the profitability of Kenya cement manufacturing companies (2000 – 2014). However, Nduati (2014) covered the period between 2009 and 2013, Kioko and Sitienei (2015) covered the period between 2000 and 2014. These periods are more than 5 years ago and there has been tremendous changes in the manufacturing sector (increase in assets) and in the macroeconomic environment of the county, which include interest rates, inflation, and exchange rate, which affect the sales volume, buying of new assets and ability to make payments on time. This study covered the duration of between 2009 and 2018. Additionally, while Nduati (2014) measured profitability in terms of Gross Operating Profit, this study measured profitability using ROA. This study evaluated the effects of WCM on NSE-listed manufacturing and allied firms' profitability (2009 -2018).

1.3 Objectives of the Study

1.3.1 The General Objective

General objective of this study is to establish effects of working capital management on profitability among manufacturing and allied firms listed on Nairobi Stock Exchange, Kenya.

1.3.2 Specific Objectives

The specific objectives of the study are to;

i. Determine the effect of Average Collection Period on Profitability of manufacturing and Allied companies listed on Nairobi Stock Exchange.

ii. Establish the effect of Inventory Conversion Period on Profitability of manufacturing and Allied companies listed on Nairobi Stock Exchange.

iii. Determine the effect of Average Payment Period on Profitability of manufacturing and Allied companies listed on Nairobi Stock Exchange.

iv. Establish effect of CCC on Profitability of manufacturing and Allied companies listed on NSE.

1.4 Research Hypotheses

The study tests the following hypotheses;

i. H_{01}: There is insignificant relationship between ACP and Profitability of Manufacturing and Allied companies listed on Nairobi Stock Exchange.

ii. H_{02}: There is insignificant relationship between Inventory Conversion Period and Profitability of Manufacturing and Allied companies listed on Nairobi Stock Exchange.

iii. H_{03}: There is insignificant relationship between Average Payment Period and Profitability of Manufacturing and Allied companies listed on Nairobi Stock Exchange.

iv. H_{04}: There is insignificant relationship between CCC and Profitability of Manufacturing and Allied companies listed on Nairobi Stock Exchange.

1.5 Significance of the Study

The study results add to the understanding of effects of working capital management of manufacturing and allied firms listed on Nairobi Stock Exchange in Kenya. This provided a foundation for policy making and strategic formulation to most decisions. The findings of the study forms a future reference to researchers, students and scholars who may be interested to conduct similar researches.

Working capital management and its effects on profitability will be useful to the Kenyan government as well as policy makers, company managers and investors as well as to other researchers as well as academicians. Moreover, to the management of manufacturing firms and Allied firms, information provided will be fundamental in formulating an optimum working capital policy to bring about effective WCM and enhance profitability and liquidity of their firms.

1.6 Limitations of the Study

This study was limited to panel data from the year 2009 to 2018 within Kenya. A study's limitations refers to attributes of the researcher design and methodology that may in one way or another have an effect on the findings' interpretations. Information on WCM and profitability is of strategic importance to an organization and can be used by competitors to develop strategies to win the market, increase market share and become more competent. Therefore, the management of manufacturing and Allied firms was reluctant to grant permission for data collection. Nonetheless, the researcher obtained data from websites of the respective companies as it is in the public domain. In addition, data for Eveready East Africa Ltd for the period between 2014 and 2018 was not available in their website. As a

result, the company was excluded from the study and hence data for 8 companies were utilized.

1.7 Scope of the Study

The researcher will examine four elements of WCM: (APP), (ICP), (CCC) and (ACP). Furthermore, the study will be conducted in nine Manufacturing and Allied firms listed at NSE; British America Tobacco ltd, Carbacid Investment Ltd, East Africa Breweries, B.O.C Kenya Ltd, Eveready East Africa Ltd, Unga Group Ltd, Mumias Sugar Co. Ltd, Kenya Orchards Ltd as well as Flame Tree Group Holding Ltd. All these manufacturing companies are located in Industrial Area, Nairobi. The study will cover duration of ten years, from 2009 to 2018.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This section lists relevant literature regarding effect of WCM on manufacturing and allied firms' profitability. This chapter covers theoretical literature review, ACP, ICP, and APP and CCC.

2.2 Theoretical Literature Review

This part deals with theoretical review relating to the effects of WCM on profitability. The research makes use of the following theories; Hawley's Risk Theory of Profit and Baumol model of cash Management.

2.2.1 Baumol Model of Cash Management

The cash management model was developed by Baumol (1952). He noted that in past theories cash balances were treated very similar to inventory levels, and therefore he developed a new model based on the economic order quantity (EOQ). The developer suggested that cash management should follow the same procedure followed managing any other inventory and that the inventory model could sensible show the cost-volume relationships as well as the cash 'flows. In this way the inventory management EOQ model could be used in cash management. The Baumol's model assumes that there is a constant rate of cash usage per period in organizations.

The organization's maximum cash balance under certain is determined by the help of Baumol model for cash management. Moreover, the model is extensively employed and widely useful in cash management. The model holds that, there exists no difference between cash management problems and inventory management problems. William Baumol came up with a model that is used in managing both cash and inventory in an organization. The model for cash management ensures a tradeoff between opportunity cost and transaction cost. This indicates that organizations work towards ensuring least amount of holding money and the cost associated with selling of securities. Many organizations are currently working towards minimizing the cost of owning cash. The firms are working toward minimizing expenditure incurred in converting securities to cash.

The Baumol model is useful in this study as it enables manufacturing and allied firms to examine under certainty, a desirable level of cash balance through management of working capital. Moreover, the firms can use ACP, ICP, APP and CCC to: predicts its capital

necessities and identify opportunities cost required for holding working capital (Zakari & Saidu, 2016).

2.2.2 Hawley's Risk Theory of Profit

The above theory was proposed by Hawley in 1893, who felt that individuals who are capable of taking risks in dynamic production had a legitimate claim to the return, which is known as profit. Simply put, profit is the cost to society of taking on a company risk. Risk-taking was an unavoidable part of dynamic production, and individuals who took risks in business were entitled to a separate reward called "profit." Profit, according to Hawley, is the price society pays for taking on commercial risk (Ali & Syed, 2014). A businessperson would not accept a risk unless he expected to be compensated more than actuarial value—that is, a premium on calculable risk. The premise that risk causes various forms of dis-utilities is why projected profit must be greater than actuarial risk. As a result, taking on risk entitles the entrepreneur to a return that exceeds the risk's actuarial value.

According to Hawley, profit is made up of two parts: one compensates for the average loss caused by the many causes of risk, and the other is an encouragement to bear the effect of being put into risk (Gill, Biger & Mathur, 2010). Profits, according to Hawley, arise from the aspect of ownership, for as long as ownership takes account of risk. If entrepreneur evades a risk by indemnifying against it, he no longer qualifies as an entrepreneur and is not entitled to profits. Profit arose from uninsured risk, according to Hawley. With the sale of the entrepreneur's product, the uncertainty is over. Profit is therefore a residue (Iqbal & Zhuquan, 2015).

Hawley's Risk Theory of Profit was used by the researcher to explain the profitability of manufacturing and allied firms. The risks involved in manufacturing and allied firms include investment in assets used in production as well as trade credit. Investment in assets increases production efficiency, which reduces inventory conversion period. In addition, offering of trade credit increases sales in manufacturing firms, if not well monitored it can increase the ACP, decrease APP and decrease CCC.

2.3 Empirical Review

2.3.1 Average Collection Period, Manufacturing and Allied firms' Profitability

The ACP involves the duration by a company to receive payments of goods sold on credit. The ACP is attained through division of the average balance of the account receivable by the gross sales in credit for the period the multiplying the fraction by the number of days taken. This measure is used in determination of how effectiveness of the firm's policies relating to credit granting and debt collection (Ngendakumana, Jagero & Gondo, 2017). The duration of time taken in converting the account receivable into cash flow is referred to the collection period. This is applicable in both personal transaction and organization's overall transaction history for the duration of time. The less the period taken the more efficient the organization is in debt collection. Longer period of time taken in collection indicates many things but the key issues that the clients are not honest in honoring their debts (Kwaku & Mawutor, 2014). Nevertheless, a longer period of time can also imply worse problems or high probability of problems that may have adverse effect on organization performance.

In Pakistan, Nadeem, Shahzad & Javed (2017) researched on the influence of ACP on profitability of the textile sector. Secondary data were gathered and used for evaluation. Data were collected from companies' published annual reports during 2008-2012. Additionally,

regression model was deployed for analysis. Results discovered that ACP is positively associated with organizations' corporate performance. Further, the study found out that the organization has a solid idea on how to collect efficiently collect debt. Furthermore, the results revealed that the industry extended interest-free loans to its customers.

Jakpar, Tingg and Siang (2017) examined the effect of ACP on companies' profitability in Malaysia. The research targeted 164 listed firms in Malaysia, with four years in operation from 2007. The study employed descriptive survey design. Findings showed negative as well as significant effect of ACP on organization profitability. Further, the research established that most of the customers in sector pay off their debts on time.

In South Africa, Kasozi (2017) investigated on influence of ACP on listed firms' profitability. The research used a panel data methodology. Target area of interest comprised of 69 listed firms which have been in operation from 2007 to 2016. ACP was found to be negatively and significantly influencing profitability, this indicates that proper management of accounts receivable together with timely payment of creditors influence organization performance in a positive way. Moreover, the study found that purchases made by customers in the sector do not require a payment made in full at the time of purchase.

Kwaku and Mawutor (2014) researched on ACP and organization profitability in Ghana. The population consisted of five listed trading companies the data was for duration of 4 years from 2010. An ordinary linear time series regression model was used. ACP had influence on performance of listed companies. Further, the finding showed that the firms ensured that customers meet the minimum credit requirement before issuance of products on credit.

In Zimbabwe, Ngendakumana, Jagero and Gondo (2017) researched on ACP and profitability of companies. This research utilized case study approach, correlation analysis as well as linear regression analysis. Findings revealed weak negative association between ACP and profitability of smart bags manufacturing firm. In Meru County, Muturi, Kinyariro and Maina (2016) researched on ACP and tea companies' profitability. The study deployed descriptive research approach. Simple regression analysis was utilized in describing the association between ACP and profitability. Findings revealed that ACP negatively influenced profitability, this indicates that the less the duration taken the high the profitability level.

A study by Kipkirui (2018) assessed whether the financial performance of KEWASCO was attributed to Average Collection Period. The analysis used secondary data from Kenya's national audit office as well as KEWASCO's financial statements from 2010 to 2014. KEWASCO employees working in finance in two locations, Kericho and also Bureti, were among the target population. Data was obtained via questionnaires and then analyzed by employing regression and correlation analysis, as well as a census. Average collection period was had a positive association with ROE, denoting that if debtor's payment period is extended, KEWASCO's financial performance increases.

Makau, Banafa and Mwanzia (2016) conducted a study to determine whether average collection period as well as leverage influences NSE-listed manufacturing firms' financial performance. ROA was employed to measure firms' performance. The descriptive research approach was adopted. As of December 2015, target population consisted of all nine listed manufacturing companies on the NSE. The study used a census of the 9 manufacturing firms that were listed on the NSE from 2011 to 2015. The research study relied on secondary data gathered through content analysis of annual financial statement reports of listed companies

for the years 2011-2015. Return on Assets was shown to be negatively correlated with Average Collection Period and Leverage in the study.

Wafula, Tibbs and Ondiek (2019) examined financial performance impact of the average collecting period. The analysis used secondary data from Kenya's national audit office and NZOWASCO financial accounts from 2012 to 2016. Data was acquired via secondary data and then analyzed by employing regression as well as correlation analysis. Study's target population was 48 AR managers from four NZOWASCO regions: Kitale, Webuye, Bungoma, and Kimilili. The investigation used census method, which looked at all personnel. The findings noted that the ACP had considerable effect on NZOWASCO's financial success as evaluated by Return on Equity (ROE).

Using diagnostic and descriptive research designs, Lumbwa, (2017) analyzed effect of ACP on profitability of energy and petroleum companies, construction and allied at listed NSE, Kenya for a period of 2000-2016. The study population was 9 firms listed at Nairobi Securities Exchange. Stratified sampling was used to sample 2 sectors. Census survey was used for 8 companies in the two sectors. The study deployed secondary data. Data sources were financial statements for all the listed companies. Data was analyzed using regressions and correlations. The sales turnover was deployed as a measure of performance. Moreover, the study discovered that ACP has negative effects on sales turnover.

Ramachandran, Santos and Unnikrishnan (2020) carried out a study to examine the impact of ACP on financial performance of construction material support companies in Oman. The assessment utilized secondary data gathered from company's yearly reports from 2013 to 2018. The information gathered from annual reports was produced in accordance with the

study's objectives. The information was gathered from seven publicly traded companies on the Muscat Securities Market in the category of industrial sector-construction material support. The study period for this research was seven years, from 2013 to 2018. The study found a positive relationship between ICP, average collection period, average payment period and profitability

Using correlational and ex-post facto research design, Khan, Tashfeen and Saghir (2019) assessed influence of ACP on performance of manufacturing sector in Pakistan. Data was acquired from yearly reports of ninety four on Pakistan Stock Exchange (PSX) listed non-financial firms for between 2011 and 2016. The study's sample size comprised of secondary data derived from financial statements of PSX- listed firms. The results show that inventory turnover, ACP as well as CCC have non-significant link with profitability.

Using diagnostic research design, Mwangi and Obwogi (2018) examined the effect of average collection period and cash conversion cycle on the gross operating profit. The study population was the 9 NSE-listed manufacturing firms. The study utilized secondary data which was obtained from consolidated financial reports' document analysis of years ending December: 2006, 2007, 2008, 2009 and 2010 of 6 companies. The results from the study revealed that gross operating profit had a positive link ACP with but negatively correlated with cash conversion cycle.

In Nigeria, Olaoye, Olatunji and Roseline (2019) conducted a study to evaluate effect of average collection period on listed manufacturing firms' profitability. A total of 20 firms were randomly listed over a period of 10 years. Moreover the study deployed secondary data from the firms' annual report. Result showed that ACP exert insignificant positive effect on

ROC employed by industrial goods firms, while ACP exert insignificant negative effect on ROC employed by consumer goods firms.

In Ghana, Tuffour and Boateng (2017) examined whether ACP influences Manufacturing Companies' Profitability. Moreover, the research study deployed secondary data from yearly financial reports as well as financial statements of the companies under study between 2008 and 2014 as well as GSE. The study discovered that ACP had positive impact on profitability.

In South Africa, Makoni and Mabandla (2019) investigated the nexus between average collection period and firms' financial performance. The sample size for this study was 12 listed food and beverage firms which were in operation during 2007 and 2016. This research used secondary data from iress McGregor databases for firms listed on Johannesburg Stock Exchange (JSE). The study discovered negative association between ACP and firms' profitability. Furthermore, the study discovered a positive association between APP and firms' profitability.

In Nigeria, Olaoye, Akintola and Ogundipe (2019) conducted a research with the purpose of determining impact of ACP on profitability of manufacturing firms from 2006-2015. Moreover, the researcher deployed secondary data. Panel data methodology was employed in this study. Additionally, ex-post facto time series approach was deployed. The data deployed was acquired from NSE-listed manufacturing companies' financial statements from 2006 to 2015. The results showed a positive significant association between ACP and profitability.

Using descriptive research design, Mwangi (2019) carried a study with the purpose of evaluating the impact of average collection period on listed manufacturing firms'

profitability in NSE in Kenya for a period of between 2012 and 2017. Moreover, the study population comprised of 8 NSE-listed manufacturing firms. The secondary data involved collecting financial data from the eight listed manufacturing companies in NSE. Secondary data in this study was obtained from financial statement on involved companies. Financial data collected covered year 2012 to 2017. The study indicated that there existed a strong positive association between ACP and ROA.

Kweri (2011) examined the association between ACP and profitability of NSE- listed manufacturing firms. Moreover, the study analyzed secondary data from annual reports and financial statements of manufacturing companies listed during the years 2006-2010 to achieve this goal. A total of 17 companies were chosen for the study, however following the screening procedure, the number of companies that were studied was reduced to 14. The results show a strong negative association between ACP and NSE-listed manufacturing firms' profitability.

2.3.2 Inventory Conversion Period and Manufacturing and Allied firms' Profitability

Inventories comprise raw materials, a project in progress and finally the finished products. In an organization holding high levels of raw materials is not essential, of raw materials inventory. As a matter of fact a firm can depend on daily orders for raw materials; however this is associated with high cost of transaction (Mathuva, 2015). Furthermore production might face a challenge in case of delay in supply. In the same case, a company is in a position of reducing the stock of finished goods through minimizing production or producing with the purpose of meeting the current market demand. However, this strategy might adversely affect the firm in case of sudden rise in demand (Hassan & Abdullah, 2016). In case this happens, customers will be dissatisfied and may even lead to switching of loyal customers to the

competitors. This indicates that an organization should stock enough inventory to meet the sudden rise in demand but the stock holding expenses should not be more that the profit.

In Kenya, Makori (2013) researched on impact of ICP and firm profitability in listed companies. Descriptive research design was employed. Furthermore the research employed ordinary least squares method. Results showed that inventory conversion period was negatively affecting firm profitability of listed companies. The study concluded that increase in inventory to a reasonable level increases the organization's profit.

In Pakistan, Ul Hassan, Imran and Hussain (2014) researched on ICP and performance of listed companies. The research relied on secondary data from listed firms in Pakistan covering a period between 2007 and 2010. The results discovered that ICP has positive influence on ROA and gross profit margin. However ICP was found to influence ROE negatively. The research concluded that despite the negative impact of ICP on ROE there may be positive effected on profit since increase in sales reduced inventories and in turn increased profitability.

Hassan and Abdullah (2016) examined the effects of APP profitability of companies in Somalia. The research used descriptive research design. Moreover, results showed that organizations with effective control of inventory benefit from lower costs associated with inventory control. In addition, through effective control of inventory, an organization is in a position to operate with lower amount of inventory hence leading to lower costs.

Kasozi (2017) investigated on ICP and profitability of firms in South Africa. Moreover, the research adopted panel data methodology. Target area of interest comprised of 69 listed companies operating between 2007 and 2016. The findings showed that ICP had positive

significant impact on company's profitability; this showed that the organizations that maintain reasonable inventory level rarely suffer from stock outs, furthermore they will have no challenges in securing finance when need arises. Through is an organization is entitled with profitability in the long run due to operational efficiency.

Mathuva (2015) investigated on ICP and organization profitability in Kenyan Listed Firms. The research was interested with 30 firms. The secondary data covered duration of 15 years from 1993. Pooled OLS model was employed during the study. The research discovered that ICP positively and significantly influenced profitability of listed companies. This indicates that organizations maintaining sufficiently high level of inventory lower the costs associated with delays in the process of production as well as organization loss due to scarcity of goods and services. This lowers the costs related with organization supply as well as protecting the organizations from price fluctuations.

Munene and Tibbs (2018) researched on ICP and profitability of EWASCO Limited, Embu County. Descriptive research approach was employed and area of concern was employees in EWASCO. The research findings showed that ICP negatively and significantly influenced ROE. This is a clear indication that through reduction of inventory turnover in days a company is in a position to increase its financial performance.

Muturi, Wachira and Lyria (2015) investigated the impact of inventory conversion time on tea company profitability in Meru County. Several relevant literatures were reviewed with the goal of identifying research gaps. The study employed a descriptive research design since it's an efficient strategy to use cause-and-effect statistical tools like regression analysis. The influence of the inventory conversion period on the profitability of tea manufacturers was

studied using simple regression analysis. Moreover, the data for this regression study was collected over five years (2009 and 2013). Because the study population was unlimited, the Census method was utilized to investigate the responses. Questionnaires were deployed to gather primary data from the population under study. To validate or reject the hypothesis, these data were evaluated and assessed using Pearson's correlation coefficient and ANOVA. According to the findings, ICP has statistically negative impact on firms' profitability.

In Nigeria, Olorunfemi, Opusunju and Jiya (2020) assessed the effect of the CCC period on food and beverage companies' profitability. The research used five years period from 2014 to 2018. The study deployed ex-post facto research approach. Moreover, study population was 43 food and beverage companies listed on NSE. Moreover, the study used judgmental sampling techniques to select the sample size of ten (10) food and beverage firms. The study deployed panel regression and analyzed the data using an e-view statistical package of 9.00. The findings indicate that CCC has significant negative association with profitability (measured using ROA).

Maina (2016) investigated the effects of ACP, ICP and CCC on NSE-listed manufacturing and allied firms' financial performance. ROA was used as a financial performance measure. Secondary data was gathered from six Kenyan industrial and related companies. The study examined the seven years following financial crisis of 2008, from 2009 to 2015. The financial performance measured by ROA has a negative significant connection with ACP and CCC. Nonetheless, the relationship between ICP and ROA was negative and statistically insignificant. This finding implies that lowering the ACP, CCC, and ICP will greatly boost manufacturing firms' ROA.

Using descriptive and quantitative research design, Rotich, Ondimu and Kipkirui (2018) carried out a research with an aim of investigate effect of ICP on financial performance of NSE-listed manufacturing companies. Moreover, the study population was manufacturing firms listed on the NSE for 5 years between 2012 and 2016; due to small size of the population, a census was conducted. The showed a strong correlation between ICP and NSE-listed manufacturing firms' financial performance.

2.3.3 Average Payment Period and Manufacturing and Allied firms' Profitability

Accounts payable occurs when an organizations buys goods and services on credit and promises to pay in specified future date. Almost all businesses practices credit purchasing and the benefit with account payable is that it's accessible for all firms irrespective of the size furthermore clearing our debt earlier than the specified period can attract cash discount. An accounts payable day is the duration between the credit purchase and the time of honoring the debt (Iqbal & Zhuquan, 2015). Failure ensure timely payment of the account payable by an organization is a clear indication that the organization has financial issues and can be declared bankrupt anytime. Consequently the goodwill of the company will depreciate hence leading to declining of the share value. It is therefore beneficial for an organization to manage the day-to-day account payable so as to ensure no problems are associated with the account. The shorter the payment period of the accounts payable the more the benefits to the company for example the benefit of cash discount although sometimes it is associated with decline in collection time which may result to low sales (Kwaku & Mensah, 2015). Longer accounts payable days are preferable theoretically extending the honoring dates of the account payable to creditors gives an organization time to enough time to carry out an evaluation of the quality of the purchased goods which can be cheap and non-rigid source of financing. Nevertheless,

in situations of discounts associated with earlier payment then extending the payments dates tend to be expensive or is being charged for late payment.

Makori and Jagongo (2013) investigated on APP performance of listed companies. Moreover, the researcher deployed descriptive research design. Additionally, the data covered duration of 9 years from 2003. The research was interested with 5 listed companies in both manufacturing sector and construction sector. The research adopted both Pearson's correlation model as well as OLS regression model. Findings showed that APP negatively influenced performance.

In Pakistan, Iqbal and Zhuquan (2015) evaluated influence of APP on companies' performance. Moreover, the research targeted on Pakistani listed companies covering a period of 6 years from 2008-2014. Correlation analysis using panel data and panel least squares were used to check the influence of APP on profitability. The results revealed that APP negatively and significantly influenced the measures of profitability such as ROA, Size, and Sales growth of Pakistani firms.

In Ghana, Kwaku and Mensah (2015) investigated on the influence of APP on organization profitability. The research targeted on 5 listed organizations operating for four years from 2006. The research findings showed that APP negatively and significantly influenced profitability which indicated that increase in cash payment period which is a decline in CCC, will positively improves organization's profitability.

In Kenya, Chemis (2015) investigated on influence of APP on performance of sugar firms. The researcher relied on secondary data obtained from 8 sugar companies. The data used for the companies covered duration of 5 years from 2008. Moreover, Pearson's correlation and

also regression analysis was employed. From the findings APP was found to influence organization performance.

In Kenya, Kioko and Sitienei (2015) examined on the effect of APP on organization performance i. The research relied on secondary data from cement companies covering duration of fifteen years from 2000. Data analysis was done through the use of Karl Pearson correlation as well as multiple linear regression. The research revealed that APP negatively impacted organization profitability of cement companies. In Kenya, Muya and Gathogo (2016) researched on influence of APP on company's profitability. Additionally, descriptive survey research design was deployed. The study targeted 156 staffs in the finance and management departments. APP positively influenced organization performance.

2.3.4 Cash Conversion Cycle and Profitability of Manufacturing and Allied firms

Cash conversion cycle in organizations shows the degree of performance; furthermore, through the CCC an organization is in a position to know the point of weakness which needs improvements (Abdusalam, 2013). The primary responsibility of shareholders in a company is to assess and forecast the company's cash flow. Moreover, this aids in the long-term and short-term inflows as well as outflows identification, allowing for the timely identification of cash shortages and excesses through the creation of financing and investment plans in that sequence (Ntui, 2014). It can also be used to arrange for timely supplier payments in order to retain reputation and consumer trust, reducing the risk of bankruptcy. Cash management is commonly centered on CCC, which is regarded critical in supporting organization performance because it represents the effectiveness of the company in debt payment, inventory sales, and payment collections (Kasozi, 2017). Firms can increase their

profitability by assuring a minimum duration of CCC by ensuring less time in inventory selling, payment collection and the greatest amount of time for credit payment.

In India, Mahato and Jagannathan (2017) examined on the influenced of CCC on profitability in the Indian telecom sector. The study utilized secondary data and the target population was 8 listed Indian telecom industries covering a period of five years from 2010. Findings indicated that CCC significantly influenced organization profitability measured using ROA.

Abbasi and Bosra (2012) researched on CCC on organization performance in Tehran. The study used 112 company's financial data, covering a period of 11 years from 1998. The research revealed that CCC insignificantly influenced organization performance however the results further indicated that the payment period for account payable and the collection period for account payable negatively impacted organization profitability.

Nguyen and Mohanlingam (2018) researched on effects of CCC on profitability in food manufacturing companies in Thailand. The research was interest with the secondary data of 34 listed firms covering a period of four years from 2009. Moreover, the study adopted Pearson's correlation and regression analysis. CCC influenced profitability of listed companies in Thailand. In addition, ROA was negatively influenced by both debt ratio and production cycle on the other hand ROE was positively influenced by organization size and the payment cycle. The research found no significant influence of CCC on organization profitability

In Sri Lanka, Murugesu (2013) investigated on the influence of CCC and listed firms' profitability in plantation sector. The researcher utilized secondary data obtained from 10 listed companies for a period of 6 years from2008. Findings showed that there is CCC

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negatively influenced ROE. The research further showed that CCC negatively influenced ROA.

Mwirigi, Wambugu and Maina (2018) carried out a research study with an aim of establishing effect of CCC on small enterprises' financial performance. The Small Enterprises' financial performance was measured using net profit. In Kirinyaga County, the study looked into small businesses with more than ten employees. The study population consisted of small businesses in the county from which 40 enterprises was drawn using simple random sampling. Moreover, to investigate the influence and link between variables, the study used cross-sectional as well as correlational research designs. In order to acquire primary data, questionnaires were given to proprietors of the listed SMEs. The results for this study indicated CCC is highly correlated to profitability of small enterprises.

Abdusalam (2013) studied influence of CCC on profitability of listed organizations. The research utilized descriptive research approach. Moreover, the area of interest was 62 listed companies. The research relied on data covering a period of 5 years from 2008. CCC negatively influenced profitability of all companies apart from the firms dealing with consumer goods as well as service offering companies. Results discovered a significant negative influence of CCC on ROA. Furthermore, the companies with shorter CCC have high chances of making more profits as compared to companies with longer period of CCC. This implies that the lesser the period of CCC the less the need for external sources of finance hence less costs associated with borrowings and interest this in turn leads to increases profitability.

In Ghana, Kwaku and Mawutor (2014) researched on influence of CCC on listed companies' performance. The study population was five listed trading companies and covering duration of four years from 2006. The study used an ordinary linear time series regression model. Findings showed that CCC negatively influenced profitability of listed organizations in Ghana.

In Tanzania, Ntui (2014) evaluated the effects of CCC on firms' profitability. The research was interested in three firms listed in DSE. The research relied on 10 years data from 2002-2012. Data analysis was carried out by employing Pearson's correlation as well as regression analysis. The research revealed a positive influence of CCC on organization profitability. This indicated that increase in profitability depends on the rate of CCC; therefore company managers are in a position of increasing shareholders value through ensuring reasonable increase of CCC.

Jahan (2011) carried out an investigation of CCC of manufacturing firms as well as its relationship with profitability and firm size. The research study primarily focused on secondary data, which was obtained from yearly reports of companies listed on Dhaka Stock Exchange. Sample size consisted of 30 manufacturing companies from six diverse manufacturing industries, categorized in Dhaka Stock Exchange as Engineering, Pharmaceuticals and Chemical, Textile, Food and Allied, Cement and Miscellaneous. A random sample approach was employed to choose the sample, and five sample companies were chosen under each industry type. Companies that provide services were excluded from the study since they did not fall under the scope of this research. There is statistically significant inverse association between the CCC and firms' profitability, particularly in regard to ROE. When measured in terms of net sales, the Cash Conversion Cycle of

manufacturing firms likewise exhibits a significant negative connection with the size of the firm.

Using descriptive research design as well as regression analysis, Otekunrin, Nwanji, Fagboro, Olowookere and Adenike (2021) examined impact of cash conversion cycle on profitability of listed Nigerian agricultural as well as agro-allied companies (2012 and 2016). Secondary data was obtained from 18 agricultural as well as agro-allied companies listed in Nigeria. The study discovered that CCC and firms' profitability are positively linked.

In Nigeria, Zakari and Saidu (2016) researched on CCC and organization profitability of companies. The research relied on secondary data for the listed companies for duration four years from 2010. The research employed multiple linear regression analysis. The research discovered that CCC positively and significantly influenced organization profitability

Wangari (2018) conducted a research to assess influence of CCC on NSE-listed manufacturing firms' financial performance. The NSE's ten listed companies made up the study's population. There was no sampling because the entire population was evaluated by census. Secondary data from manufacturing companies' financial statements was used in this investigation. The research was completed in 2016. This study utilized secondary data as reported in manufacturing firms' financial statements. The research was completed in 2016. The fixed effects panel data model was deployed to examine data acquired using Stata software. The findings revealed that CCC had no substantial impact on NSE-listed manufacturing companies' financial performance.

In South Africa, Kasozi (2017) evaluated whether CCC influences firms' performance listed. The research used panel data. The research used secondary data of 69 listed firms covering

duration of 9 years starting from 2007. The research did not reach to a conclusion on the degree of CCC influence on organization profitability. This was due to the weak findings to support the argument. Nevertheless, the research showed that investigated companies are averagely performing with their capital structures accumulating a lot of debt.

Egbide, Uwuigbe and Uwalomwa (2013) conducted a research with an aim of investigating the association between cash conversion period and profitability. Moreover, the analysis was based on 30 manufacturing companies listed for period 2006-2010 on NSE. Data was extracted from yearly financial statements of listed companies sampled for 2006-2010 making a total of 150 firm year observations. Both descriptive statistic and multiple regression analyses were deployed to analyze data. The study noted that in Nigeria, cash conversion period is negatively linked with manufacturing companies' profitability.

Nwakaego and Ikechukwu (2015) examined the influence of CCC on Health Care Companies' performance in Nigeria. Secondary data from yearly Reports of three firms was chosen for this research, and hypotheses in this study were assessed by deploying generalized square multiple regressions. Study's findings revealed that CCC had inverse but considerable impact on Nigerian health-care businesses' profitability.

Adembo, (2014) analyzed the influence of CCC on profitability of 24 NSE-listed Manufacturing and allied firms for duration between 2008 and 2012. Profitability was measured by employing ROA. The study population was all twenty-four NSE-listed manufacturing and allied companies from 2008 to 2012. The researcher used panel data in which the profitability of each of the 24 manufacturing companies was linked to the trade receivables variables for each year during a five-year period. Over a five-year period,

secondary data was gathered from firms' audited financial statements as well as NSE handbooks. To examine the link between variables under study, Pearson correlation was used. The study discovered that CCC had no influence on manufacturing enterprises' return on assets.

In Pakistan, Majeed et al (2013) investigated impact of the CCC on performance of manufacturing companies empirically. For five-year duration between 2006 and 2010, the research used a study sample of thirty two companies chosen at random from 3 industrial sectors: chemical, autos, and construction and material. The association between CCC and firm performance, as assessed by ROA, ROE and Operating Profit, was investigated using correlation as well as regression analyses (EBIT). According to the findings, CCC has negative link with performance.

Al-Abass (2017) examined the link between CCC and firms' profitability. The research data was collected from KSE listed companies over duration of 2012 and 2016. Pearson correlation as well as regression analysis was conducted for empirically testing of study findings. Profitability in this study was measured using ROA and ROE. The results discovered insignificant relationship between CCC and profitability.

Muscettola (2014) evaluated the impact of CCC on firms' profitability. The data in this study was collected from 226 Italian SMEs. The sample consisted of Italian manufacturing SMEs, during the period 2007 and 2010 with revenues between 5 million and 50 million euro. The study noted that CCC has significantly positive association with firms' profitability.

Using causal co-relational research design, Ali, Shah and Arif (2018) examined effect of CCC on probability of the firms in manufacturing sector in Pakistan. This study deployed

secondary data of 56 Pakistan Stock Exchange-listed manufacturing firms covering the period between 2014 and 2017. The study discovered that conversion cycle has significant and positive relationship with firm's probability of Pakistan manufacturing sector.

In Nigeria, Dabo, Andow and Shekari (2018) assessed the effect of CCC and Inventory Turnover in Days on manufacturing firms' financial performance for duration of 7 years (2011 and 2016). A total of 91 Nigerian Stock Exchange-listed manufacturing enterprises, with a sample size of forty-seven (47) were used in the study. Moreover, data was acquired from secondary sources for example audited yearly reports as well as firms' accounts, using the Simple Regression Analysis. Findings revealed that CCC and Inventory Turnover in Days influence firm's performance.

2.3.5 Profitability of Manufacturing and Allied Firms

Profitability is the capability of an organization to make more income as compared to its expenses. Nduati (2014) argued that profitability refers to the firms' capability to make profit. Organization profit is achieved through deducting the organization expenses from the revenue realized. Therefore organization income and expense is used in measuring profitability. The revenue realized from organization activities is referred to as income. Company performance and return on capital invested is directly proportional to the firm's profitability. In the manufacturing sector, organization revenue is realized through selling the manufactured goods. Organization expenses refer to the total costs of the used resources in the production processes, transportation, selling and administration. Mifta (2016) argued that for a firm to ensure continuity in its operations profit is a key requirement. Nevertheless, making loss in one financial year is not an indication that the business should be closed down or it is not viable but consistence loss spoil the business' reputation. Organization

performance can best be measured through the profit realized. Hence the organization profitability is used in determining financial performance as well as the going concern of the firm in business environment.

ROA is used in doing an analysis of the profitability of companies in the manufacturing sector. ROA is used to show the relationship between profitability and organization asset furthermore it shows the best way of utilizing organization assets to generate maximum profit. Ngendakumana, Jagero and Gondo (2017) indicated that ROA in an organization must be positive as well as standard figure for ROA is 10% to 12%. High ROA indicates that an organization is having increased return on invested capital which is better for the financial health of the company. WCM is essential in ensuring improved profitability in companies. Through ensuring balance between liquidity and firms' profitability, companies will be in a position to ensure optimal WCM. A balance always exists between liquidity and profitability (Fredrick, 2013). Benefiting from one means you have foregone the other. Organization profitability is ensured through proper WCM. Through effective WCM, an organization is in a position to increase profitability and hence ensure its survival in the industry.

2.4 Summary

Even though empirical literature suggests that ACP, ICP, APP and CCC are having some influence on ROA, most of the studies have looked at the effects of these components of WCM on profitability individually and in isolation of the other components. The main gap that this study aims to fill is the lack of a comprehensive look at the combined effect of these components of WCM, as displayed in Table 2.1

Table 2. 1: Summary of Research Gaps

Author	Study	Study findings	Research gaps
Average Collection Period and Profitability of Manufacturing and Allied firms			
Nadeem, Shahzad and Javed (2017)	The effect of ACP and profitability of the Textile Sector in Pakistan	The results revealed that in Pakistan, ACP is positively linked with corporate performance of organizations	The study took place in Pakistan therefore, due to disparities in economic environment, social environment and legal frameworks between Pakistan and Kenya, the findings are not applicable to Kenya
Jakpar, Tingg and Siang (2017)	The association between ACP and profitability in manufacturing sector in Malaysia	The results indicated a significant negative association between net operating profitability and ACP.	The study took place in Malaysia and therefore the findings are not applicable to Kenya.
Kasozi (2017)	The effect of ACP on manufacturing	The findings discovered that ACP is negative and	This study was conducted among manufacturing firms in

	firms listed in South Africa	statistically significant in influencing profitability	South Africa which operate under different economic environment and legal frameworks from those of Kenya.
ICP and Profitability of Manufacturing and Allied firms			
Ul Hassan, Imran and Hussain (2014)	The effects of inventory conversion period on firm performance in non-financial listed firms in Pakistan	results indicated that average age of inventory is positively related to gross profit margin and return on asset, whereas it is negatively linked to ROE but the association is insignificant	The study was carried out in Pakistan therefore the results cannot be used among manufacturing firms in Kenya.
Hassan and Abdullah (2016)	The effects of average payment period on firm profitability in merchandise	The results indicated that a company that effectively manages its inventory will benefit from lower	This study was conducted in Somalia whose economic environment, social environment among

		inventory costs. In addition, effective inventory control decreases costs since it decreases amount of inventory needed to manage the business.	others are different from those of Kenya
Mathuva (2015)	The influence of inventory conversion period on corporate profitability in Kenyan Listed Firms	Findings found a highly significant positive association between the time taken in order to change inventories into sales (ICP) as well as profitability	The study covered the period between 1993 and 2008. This is more than 10 years ago and since then there has been significant changes in manufacturing sector and in economic environment.
Average Payment Period and Manufacturing and Allied firms' Profitability			
Kwaku and Mensah (2015)	The effect of average payment period on the	The results showed a fairly significant negative relationship	The study took place in Ghana, thus the results are not applicable to

	profitability of firms in listed manufacturing firms in Ghana	between the APP and profitability	Kenyan manufacturing sector.
Chemis (2015)	Effect of APP on Kenyan sugar manufacturing firms' profitability.	There exists a positive association between APP and Kenyan Sugar manufacturing firms' profitability.	The study conducted in sugar manufacturing firms, which is just small section of Kenyan manufacturing firms
Makori and Jagongo (2013)	The association between average payables period and firm profitability in manufacturing and construction firms listed on NSE	The results of the study indicated a negative significant association between accounts payment period and firm profitability in manufacturing and construction firms.	The research was carried out over a ten-year period between 2003 and 2012. However, since 2012, there has been a significant change in manufacturing sector, legal framework and economic environment in the country.

CCC and Profitability of Manufacturing and Allied firms			
Mahato and Jagannathan (2017)	The association between cash conversion cycle and profitability in the Indian telecom sector	Findings indicated that CCC had negative effect on profitability in Indian telecom sector measured in terms of return on assets.	This study was done in Indian telecom sector hence results cannot be generalized to the manufacturing sector situated in Kenya
Zakari and Saidu (2016)	Effect of CCC on firm profitability in Nigerian listed companies in telecommunication sector	Findings found a significant positive association between CCC and corporate profitability	This study assessed Nigerian listed telecommunication firms hence results are not applicable to the Kenyan manufacturing sector
Abdusalam (2013)	Influence of CCC on NSE-listed firms' profitability	The results found and association between CCC was negatively and significantly related with ROA.	The research was carried out over a five-year period between 2008 and 2012. However, since 2012, there has been

			significant change in manufacturing sector, legal framework and economic environment in the country.

Source: Author, (2020)

2.5 Conceptual Framework

Figure 2.1 sets out hypothesized relationships between the study variables. Additionally, independent study variables are ACP, ICP, APP and CCC. The dependent variable is profitability of manufacturing and allied firms, which will be measured by employing ROA.
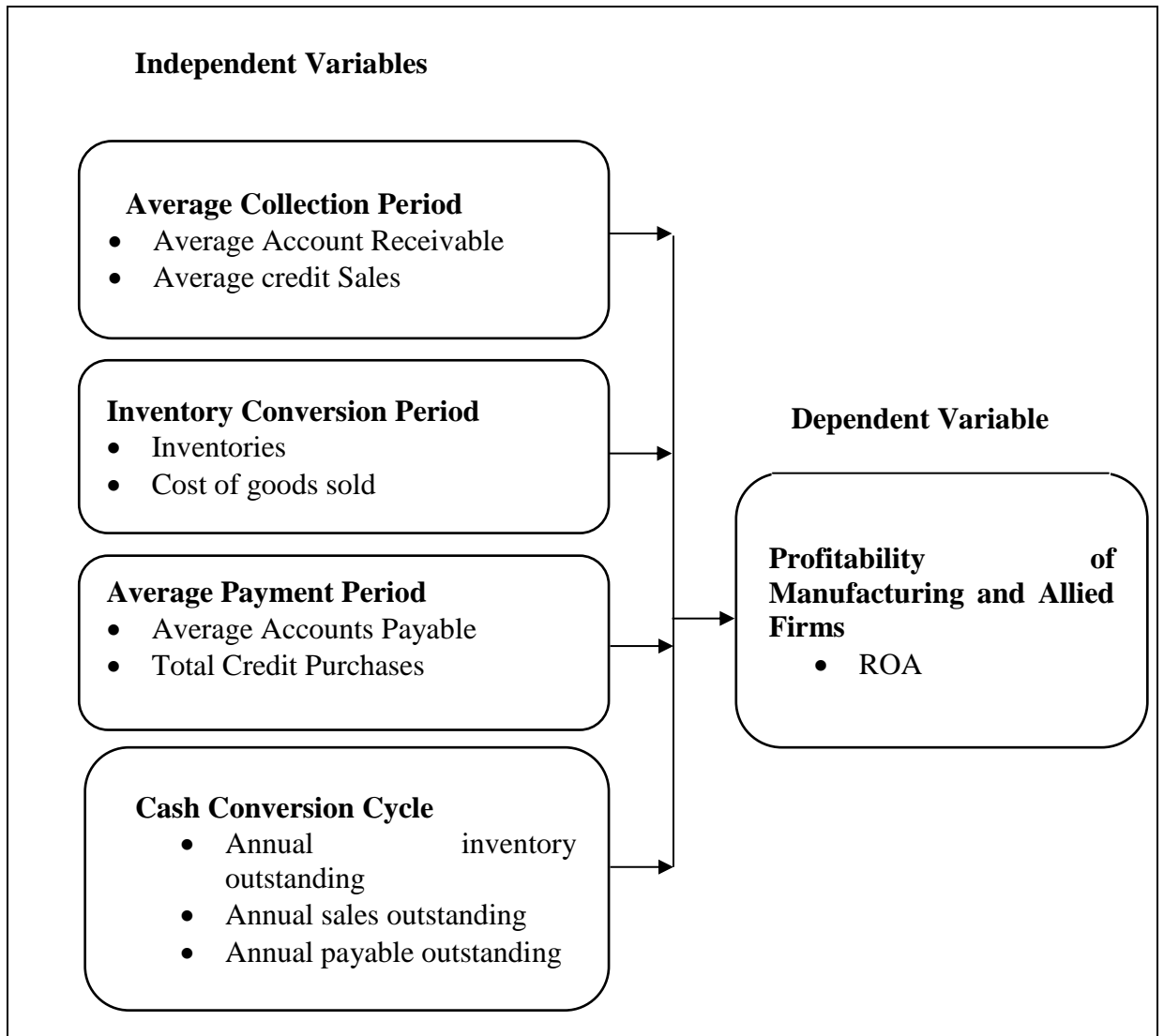

Figure 2.1: Conceptual Framework

Source: Author (2022)

Average collection period is a ratio that determines the duration of time taken in converting credit sales into cash. It outlines relationship between organization's account receivable and its cash flow. The duration for ACP is directly related to the investments made in the receivable account. If an organization makes more investments in the account receivable indicates that the organization has limited amount of cash to cater for the expenses (cash outflow) (Ngendakumana, Jagero & Gondo, 2017). Intuitively, it is expected that ACP has negative association with organization profitability. This indicates that for firm's to increase their profit level, there must be minimum duration taken in collecting the account receivable. In other words, it means that the shorter the time taken in collecting credit sales, the higher the availability of cash due to cash adequacy which consequently increases the amount of sales. The negative impact of ACP on organization profitability indicates the more the number of days taken in debt collection the less the profitability (Jakpar, Tingg & Siang, 2017).

Inventory conversion period relates to the duration between acquisition of the raw materials and selling of goods. This period is achieved through addition of the period taken in converting the raw materials, the duration taken by the work in progress and the duration taken in selling the finished goods (Ul Hassan, Imran & Hussain, 2014). This indicates that ICP is affected by the level of efficiency as well as effectiveness of organization's manufacturing process as well as selling process. Technology and product type are the great determinants of the period taken in producing a certain product. The rate of sale of a product depends on the ease of use and the satisfactory level of the product to the customer (Mathuva, 2015).

APP refers to the duration of time between credit buying of goods or labor and payment for credit goods. In an organization account payable is very essential in ensuring WCM since through delaying of credit payment provides a cheap source of financing (Kwaku & Mensah, 2015). Nevertheless, delaying credit payment maybe expensive for the organization in case of discount associated with early payment. Extending the honoring dates of the account payable to creditors gives an organization time to enough time to carry out an evaluation of the purchased goods which can be cheap and non-rigid source of financing. Nonetheless, in situations of discounts associated with earlier payment then extending the payments dates tend to be expensive or is being charged for late payment. This indicates that there could be a positive influence of APP on profitability (Iqbal & Zhuquan, 2015).

Cash conversion cycle in organizations shows the degree of performance; furthermore, through the CCC an organization is in a position to know the point of weakness which needs improvements (Abdusalam, 2013). The primary responsibility of shareholders in a company is to assess and forecast the company's cash flow. Moreover, this aids in long-term and also short-term inflows as well as outflows' identification, allowing for the timely identification of cash shortages and excesses through the creation of financing and investment plans in that sequence (Ntui, 2014). It can also be used to arrange for timely supplier payments in order to retain reputation and consumer trust, reducing the risk of bankruptcy. Cash management is commonly centered on CCC, which is regarded critical in supporting organization performance because it represents the effectiveness of the company in debt payment, inventory sales, and payment collections. Firms can increase their profitability by assuring a

minimum duration of CCC by ensuring less time in inventory selling, payment collection and the greatest amount of time for credit payment (Abbasi & Bosra, 2012).

CHAPTER THREE

METHODOLOGY

3.0. Overview

This section sets out the model and procedure used to analyse data. It reviews theoretical and empirical frameworks, model, analysis technique, hypothesis testing, and measurement of variables as well as sources of data.

3.1 The Theoretical Model

3.1.1 Analytical Framework

The study has employed Baumol's theory of cash management. The model assumes that there is a constant rate of cash usage per period in organizations. This theory bases its arguments on profit maximization with emphasis on maximizing total revenue, reducing total cost and also considering working capital management such as cash conversion cycle, average collection period, average payment period and inventory conversion period. Baumol's theory is considered relevant to this study as it captures most of the variables under the study. This theory has been used in previous studies (Ngendakumana, et al., 2017, Jakpar et al. 2017, and Makau et al 2016).

3.1.2 The Baumol Model

The theoretical framework presented in chapter two suggests that profitability of manufacturing and allied firms is influenced by aspects of total cost, total revenue and working capital management mainly; ACP, ICP, APP and CCC. This is expressed mathematically as follows:

P= f (TC, TR, WCM)……………………………………………………………(3.1)

Where; P represents profit or simply return on assets, TC represents total cost, TR is the total revenue and WCM represents working capital management which is the average collection period, inventory conversion period, cash conversion cycle and also cash payment period.

3.2 The Random Effect Model

General objective of this study is to establish effects of working capital management on profitability among listed manufacturing and allied firms listed on NSE, Kenya. Baumol's theory suggests the following general functional relation:

ROA= f (ACP, ICP, APP, CCC)……………………………………………(3.2)

Random effects model has been estimated by help of GLS. According to Park (2011), random effect model incorporates a composite error term, $\varpi_{it} = \varepsilon_{it} + \mu_{it}$.

General equation for random effect

$$Y_{it} = \beta_0 X_{1it} \pm \beta_1 X_{2it} \pm \ldots \beta_k X_{kit} + \varpi_{it}……………………………………(3.3)$$

Y_{it} is the dependent variable where i=entity and t=time, k represents 1,2,3….

X_{1it}, X_{2it} and, X_{kit} is the independent variables

$\beta_0, \beta_1, and\ \beta_{k,}$ are the coefficient for the independent variables

ϖ_{it} Represents the error term

Following the same approach, this study estimates the following random effect equation:

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$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_1 ICP_{it} + \beta_1 APP_{it} + \beta_1 CCC_{it} + \delta_{it} + \mu_{it}\ldots\ldots\ldots(3.4)$$

Where:

$\boldsymbol{ROA_{it}}$ Denotes returns on assets;

$\boldsymbol{ACP_{it}}$ Denotes average collection period;

$\boldsymbol{ICP_{it}}$ Denotes inventory conversion period at first difference

$\boldsymbol{APP_{it}}$ denotes average payment period;

$\boldsymbol{CCC_{it}}$ denotes cash conversion cycle;

$\beta_1, \beta_2, \beta_3$ and β_4, are parameters of model

β_0, represents the intercept for all cross-sections or entities

i denotes i^{th} observation,

t is the duration of time and μ_{it} is the same as in OLS following randomness (not trend) while $\boldsymbol{\delta_{it}}$ is different for all cross-sections to get individual intercept with $\boldsymbol{\beta_0}$. It varies cross-sectionally but constant over time.

3.3 Research Design

Research design is an overall plan which provides directions for procedures in a research (Creswell, 2014). It is important in the sense that it translates a research problem to data for the purpose of analysis. Asenahabi (2019), classifies research design into three major categories; quantitative research design, qualitative research design, and mixed method research design. This study sought to adopt the mixed method, emphasizing on explanatory research design. The reason for choosing this

kind of design is, it helps the researcher to conduct detailed quantitative research as data results are explained further with qualitative aspect. Explanatory research can be conducted in order to assess the impact of a change on existing norms and various processes (Singpurwalla, 2013). This research approach is appropriate as the researcher seeks to establish influence of WCM on organizational performance.

This study sought to check whether variables were stationary at levels, at first difference or at second difference by running panel unit root test. ADF-Fisher chi square test techniques were used (P-values for Fisher tests were computed using an asymptotic Chi-square distribution whereas, all other tests assume asymptotic normality) because they can be used with serial correlation. This implies that ADF is capable of handling more complex models than other techniques (Glen, 2007). Further, under unit root testing, used Schwarz Info Criteria as a preferred selection because it the best model with the lowest SC and takes into account both closeness of fit of the points and the number of parameters used in the model.

The study conducted two tests (fixed effect model and random effect model), compared them using Hausman test and came to conclusion in using random effect model. In order to arrive at this conclusion, two hypotheses were analyzed: Null hypothesis was 'the preferred model is random effect'; and alternative is the fixed effect (Green, 2008). With the help of p-values, the study sought to go with random effect model since it was significant and thus the preferred model.

3.4 Analysis Technique

With the aid of Eviews version 10 during data analysis, the researcher first ran Pooled Ordinary Least Squares with the aid of Breusch- Pagan (BP) test. BP test usually helps researchers to identify the existence of varying residual distributions which is also known as heteroscedasticity. P-value turned out to be less than 0.05 or rather 5% leading to the rejection of the null hypothesis meaning that heteroscedasticity was present and, therefore, opted for other random effect model (REM). Hausman test criteria was employed in this analysis when analyzing whether to choose random effect model or fixed effect model. This criteria often helps researchers to identify the consistence of "true parameters" of the model and therefore, directs which is the best criteria between random effects and fixed effects. The null hypothesis was "REM is appropriate than FEM". P-value turned out to be greater than 0.05, leading to the acceptance of the null hypothesis and random effect model was, therefore, used in the analysis. The random effect model assumes that individual effect or generally heterogeneity is not correlated with any regressors and also helps one to estimate error variance specific to groups or times.

3.5 Diagnostic Tests

3.5.1 Normality

The study establishes whether the data are normally distributed (perfectly symmetrical around the mean). Jarque-Bera (a test of Lagrange multiplier) and probability values are used to determine the outcome. The data are termed normally distributed if the p-value is greater than the 5% level of significance positive value of Jarque-Bera.

3.5.2 Stationarity

This study determines whether the variables are stationary at levels, stationary at first difference or stationary at second difference. It uses ADF-fisher technique and SIC selection criteria. At 95% confidence interval, the variable is said to be stationary if the p-value is less than the 5% level of significance.

3.5.3 Random Effects

This is a statistical model where the model parameters are random variables. The variable results are said to be significant when probability values are greater than the significance level and insignificant when probability values are less than the significance level (5%).

3.5.4 Hausman Test

Hausman test is used to test the null hypothesis, that, one of the compared models (fixed effect model and random effects model) gives consistent and efficient results while the other gives consistent but inefficient results. Hausman test dictates that, if the p-value is less than 0.05, reject the null hypothesis and accept the alternative hypothesis.

3.6 Measurement of variables

3.6.1 Average Collection Period

Investopedia defines average collection period as the amount for a business to receive payments owed by its clients as account receivables. It is simply the measurement which is useful in evaluating credit collection policies (Gitman, 2015) rather the

number of day's sales remain with the debtors (Brigham, 1995). Therefore, it is the ratio of average account receivables per year and the average credit sales per annum.

$$ACP = \frac{Average\ Account\ Recivables\ per\ year}{Average\ credit\ Sales\ Per\ year}$$

3.6.2 Inventory Conversion Period

This is the duration needed by a company to change cash into raw materials, make goods using the raw materials and sale the goods. According to *WallStreetMojo,* inventory conversion period determines how much time it takes to convert the inventory into sales.

$$ICP = \frac{Inventories}{Cost\ of\ goods\ sold} * 365$$

3.6.3 Average Payment Period

This refers to the duration of time that is taken by the firm to make payment of the good bought on credit from vendors. In other words, it is the average time taken to settle credit account payable.

$$APP = \frac{Average\ Accounts\ Payable}{(\text{Total Credit Purchases})/(\text{Period (years)})}$$

3.6.4 Cash Conversion Cycle

Is the duration it takes for a firm to change stock to cash. The duration is measured in days in other words it is the time taken in converting inventory investment into cash.

$$CCC = (\text{Annual Inventory Outstanding} + \text{ Annual Sales Outstanding}) - \text{Annual}$$

No table of figures entries found. Payable Outstanding

3.6.5 Profitability

It refers to the business ability to utilize its assets to earn income and it is measured using ROA (Return on Assets) which refers to profitability ratio that assesses a company's capability to yield profits from its total assets. It's useful when investing

$$ROA = \frac{Net\ Income}{Average\ total\ Assets}$$

3.7 The Data

The study employed panel data which covered the duration of ten years (2009 to 2018) from Nairobi Stock Exchange. Panel data which is also known as longitudinal or cross-sectional time series data is a data set in which the behavior of entities (like states, companies, individuals, and countries among others) are observed across time. The data was collected on ACP, ICP, APP, CCC and Profitability of Manufacturing and Allied Firms from annual statements of the nine listed companies. The study aimed to establish influence of WCM on companies' profitability. An extraction checklist was used to facilitate data extraction since it provides relevant information from the secondary data sources (Bryman, 2012). Moreover, data extraction checklist

composed of six columns headed; company, year, ACP, ICP, APP, CCC and ROA of the nine manufacturing firms. The quantitative secondary data were obtained from pre-existing sources that have been generated and documented. Weighted average cost method was used to obtain the data from nine manufacturing firms for each year.

Table 3.1 Data Sources

Data	Source
Return on Assets (Profitability)	Nairobi Stock Exchange
Average Collection Period	Nairobi Stock Exchange
Inventory Conversion Period	Nairobi Stock Exchange
Average Payment Period	Nairobi Stock Exchange
Cash Conversion Cycle	Nairobi Stock Exchange

Source: Author, 2022

3.8 Testing of Hypotheses

The hypothesis tests attempt to assess if there is any evidence to contradict a proposed parameter. The study used 95% confidence level and hence the level of significance of 5%. For the effect of independent on dependent variable to be considered statistically significant, p-value has to be not more than 0.05 (significance level). Hypotheses tests are used to give confidence on the assumption that the error term is

normal and independently distributed with a mean of zero and a variance of the Square of the standard deviation.

There are two main types of hypotheses discussed in this study:

Null hypothesis H_0: $r(\beta) = \theta_0$

Alternative hypothesis, H_1: $\theta \neq \theta_0$ or 1.

Where; $\theta = r(\beta)$ represents the real parameters and θ_0 is the hypothesized value. In hypothesis testing, it is treated a true (but unknown) value of θ, and this value either satisfies H_0 or does not satisfy. The goal of hypothesis testing is to assess whether or not H_0 is true and consistent with the observed data.

3.9 Ethical Consideration

The researcher obtained the authority from National Commission for Science, Technology, and Innovation (NACOSTI) and Rongo University Postgraduate School to conduct this study from allied firms listed on Nairobi Stock Exchange in Kenya. All necessary guidelines of conducting a research were put into consideration

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This section presents regression results as well as their interpretation in line with the study objectives, which are to determine effect of ACP, CCC, ICP and APP on profitability of NSE-listed manufacturing and allied companies. The pooled ordinary least squares analysis is tested which gives the researcher an eye-brow to run the subsequent test of random effects method due to its insignificant attributes. With the aid of Hausman test criterion, the researcher chose random effect method as a way of analyzing panel data showing that the differences of intercepts observed in various variables is due to randomness of sample unlike as in fixed effects model which assumes that the difference is due to different factors like capital, production among others.

4.1 Normality Test

Normality test usually help the researcher to determine whether the data follow normal distribution or not. The p-value is compared with the level of significance and results discussed as follows
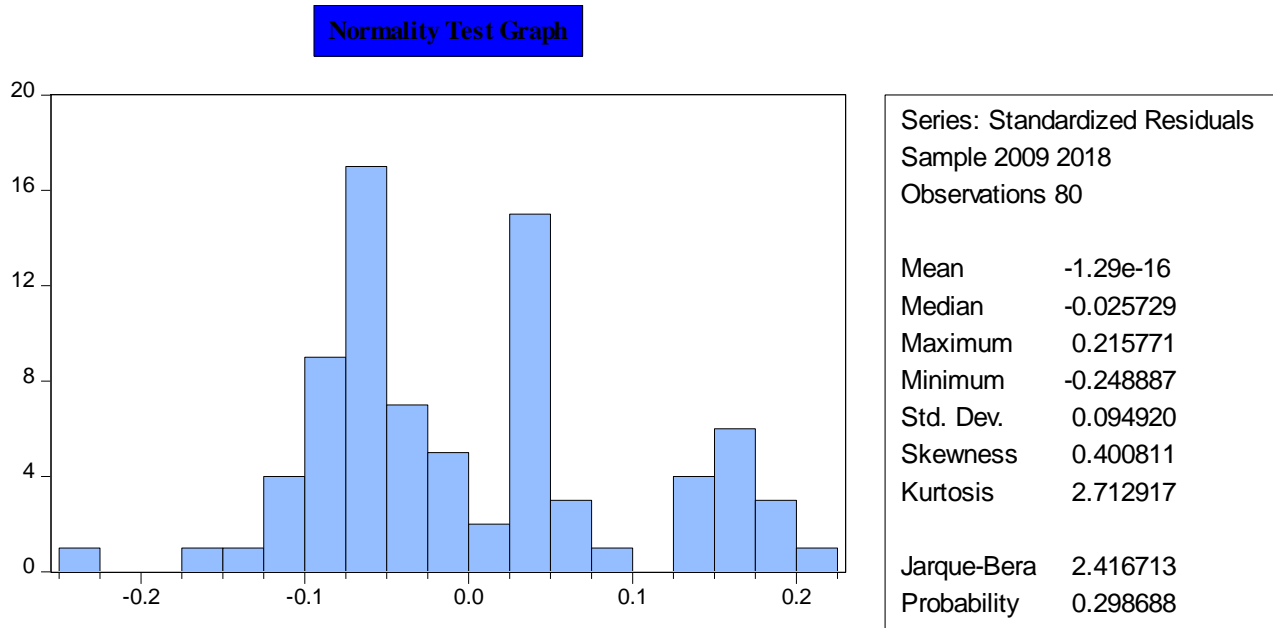
Normality Test Graph

	Series: Standardized Residuals
	Sample 2009 2018
	Observations 80
Mean	-1.29e-16
Median	-0.025729
Maximum	0.215771
Minimum	-0.248887
Std. Dev.	0.094920
Skewness	0.400811
Kurtosis	2.712917
Jarque-Bera	2.416713
Probability	0.298688

Figure 4.1: Normality Test

The probability value from the histogram is found to be 0.298688 which is greater than the 5% level of significance. The study concludes that the panel data followed the normal distribution.

4.2 Stationarity

The study has employed ADF test technique in analysis of stationarity. Schwarz selection criteria has been carefully used with 1 lagged variable as the maximum lag in the model.

Table 4.1 Stationarity Test

Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Total number of observations: 71
Cross-sections included: 8 (1 dropped)   **ADF-Fisher Chi-square**

Variables	Probabilities	T-statistics
ACP	0.0186	29.8822
ICP	0.0289	28.3227
APP	0.0132	31.0559
CCC	0.0453	26.6681
ROA	0.0003	42.7310

Source: Author, 2022

With the help of ADF-Fisher test, all variables are stationary at 5% level of significance using 1 lagged variables.

4.3 Trend Analysis

This refers to a statistical procedure that is used to show the movement of observed data over a given time period. Moreover, trend analysis is based on premise that what has happened in the past can give investors insight into what might happen in future. As a result, trend analysis is often used to forecast the likely future trends of a data set. This section sets out the trend analysis for dependent variable and independent variables.

4.3.1 Return on Assets

Figure 4.2 displays trend of profitability of manufacturing and allied firms listed in NSE measured using ROA from 2009 to 2018.
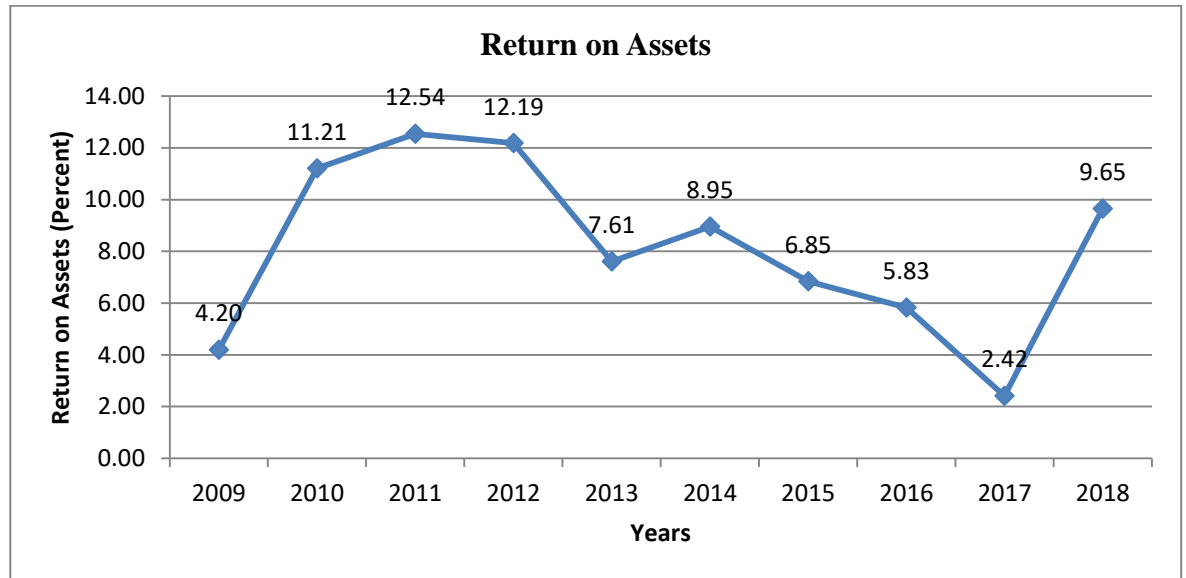
Figure 4. 2: Trend of Return on Assets (2009-2018)

Results revealed that average ROA among NSE-listed manufacturing and allied firms in the year 2009 was 4.20, then it increased to 11.21 in 2010 and to 12.54 in 2011. In the year 2012, return on assets decreased to 12.19 and 7.61 in 2013, but it increased to 8.95 in 2014. This figure decreased to 6.85 in 2015, 5.83 in 2016 and to 2.42 in 2017, before increasing to 9.65 in 2018. This trend shows that ROA among NSE-listed manufacturing and allied firms has been fluctuating (decreasing and increasing) for the last ten (10) years. The study results conform to Iqbal and Zhuquan, (2015) findings that return on assets of firms fluctuates over the years.

4.3.2 Cash Conversion Cycle

Figure 4.2 shows the trend of cash conversion cycle among manufacturing and allied firms listed in NSE for duration between 2009 and 2018.
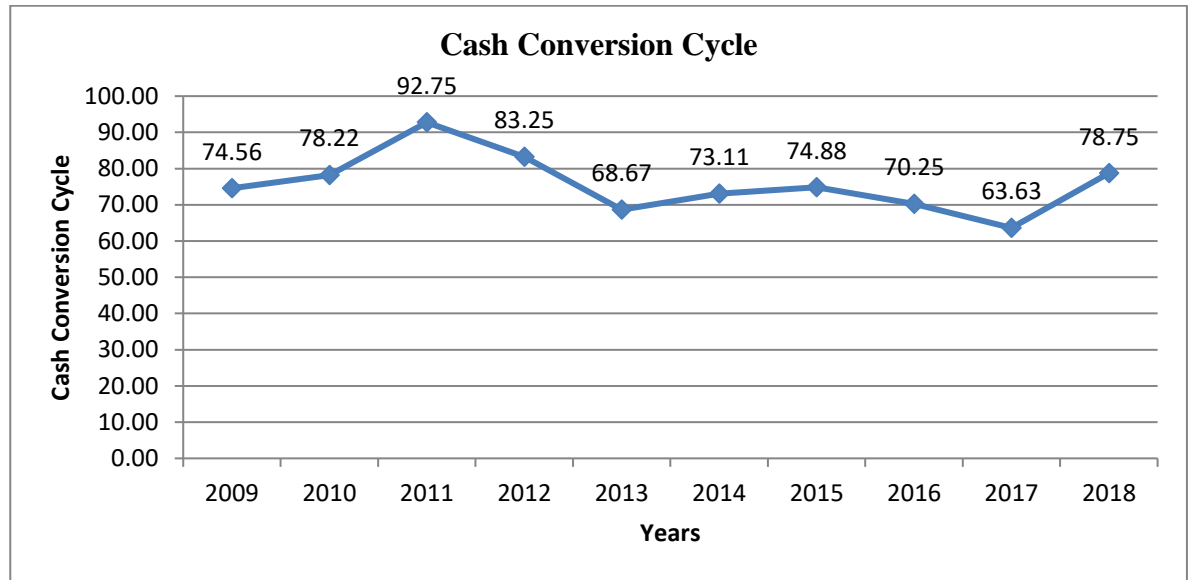
Figure 4. 3: Trend of Cash Conversion Cycle (2009-2018)

The results presented in Figure 4.2 show that the average cash conversion cycle among NSE-listed manufacturing and allied firms was 74.56 in the year 2009, 78.22 in 2010 and 92.75 in 2011. In the year 2012, the average cash conversion cycle decreased to 83.25 and further to 68.67 in 2013. Results show that CCC increased to 73.11 in 2014 and further to 74.88 in 2015. In the year 2016, cash conversion cycle among manufacturing and allied firms listed in the NSE decreased again to 70.25 and further to 63.63 in 2017, before increasing to 78.75 in 2018. The results conform to the findings of Abdusalam, (2013) who revealed that cash conversion cycle in organizations shows the degree of performance; furthermore, through the CCC an organization is in a position to know the point of weakness which needs improvements.

4.3.3 Average Payment Period

Figure 4.3 shows the trend of average conversion period among NSE-listed manufacturing and allied firms from 2009 to 2018.
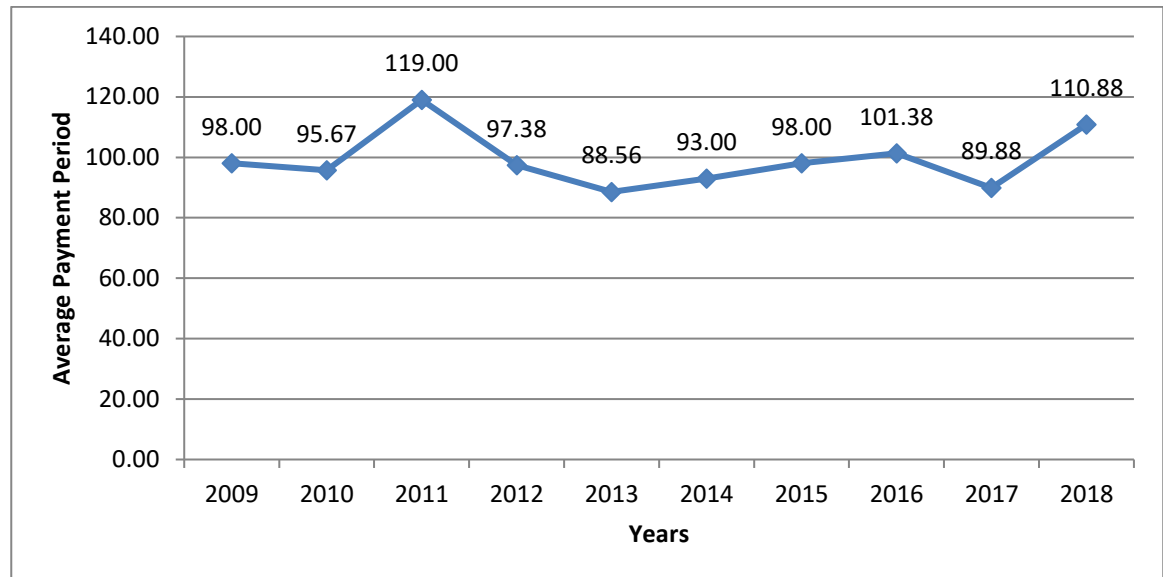

Figure 4. 4: Trend of Average Payment Period (2009-2018)

The APP among manufacturing and allied firms listed in NSE was 98.00 in the year 2009, 95.67 in 2010 and 119 in 2011. The results further show that the average payment period decreased to 97.38 in 2012, 88.56 in 2013 and 88.56 in 2013, before increasing to 93.00 in 2014 and further to 98.00 in 2015 and 101.38 in 2016. The figure then declined to 89.88 in 2017, but later heighted to 110.88 in 2018. Iqbal and Zhuquan, (2015) indicated that it is beneficial for an organization to manage the day-to-day account payable so as to ensure no problems are associated with the account.

4.3.4 Inventory Conversion Period

Figure 4.4 shows the trend of inventory conversion period among manufacturing and allied firms listed in NSE for the duration between 2009 and 2018.

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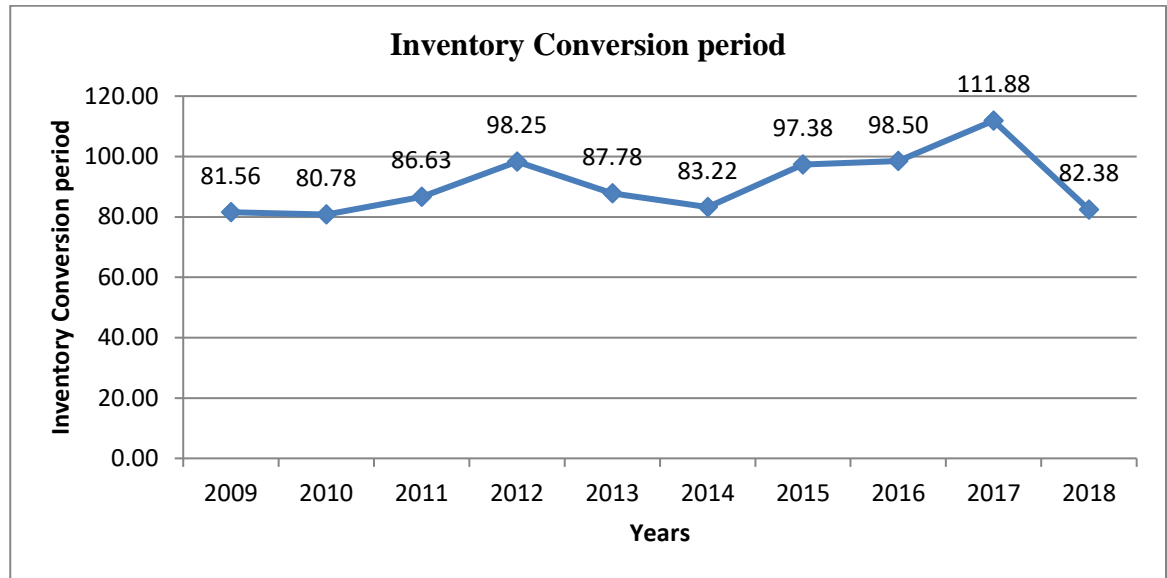
Figure 4. 5: Trend of Inventory Conversion Period (2009-2018)

The average ICP among NSE-listed manufacturing and allied firms was 81.56 in the year 2009, 80.78 in 2010, it then increased further to 86.63 in 2011, 86.63 in 2012 and 98.25 in 2013. In the year, 2013, inventory conversion period decreased to 87.78, and further to 83.22 in 2014, before increasing to 97.38 in 2015, 98.50 in 2016 and to 111.88 in 2017. However, the following year it fell to 82.38. Makori and Jagongo (2013) concluded that increase in inventory to a reasonable level increases the organization's profit.

4.3.5 Average Collection Period

The trend of ACP among manufacturing and allied firms listed in NSE for the duration between 2009 and 2018 is shown in Figure 4.5.
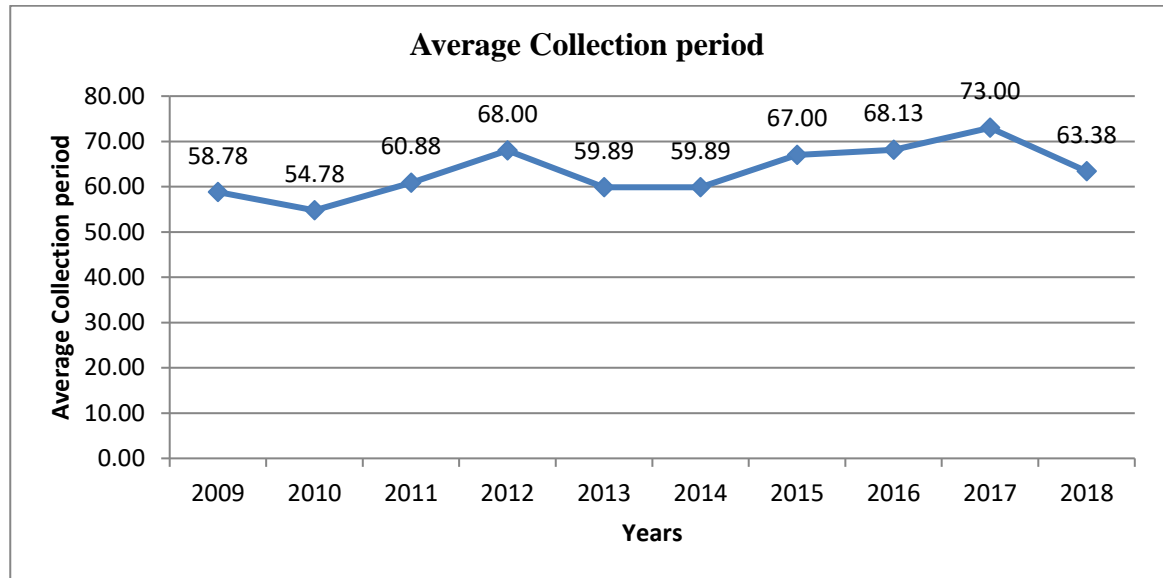
Figure 4. 6: Trend of Average Collection Period (2009-2018)

The average collection period among NSE-listed manufacturing and allied firms was 58.78 in the year 2009, 54.78 in 2010, 60.88 in 2011 and 68.00 in 2013. In the year 2013, the average collection period decreased to 59.89 and remained constant in 2014, before increasing to 67.00 in 2015, 68.13 in 2016 and 73.00 in 2017. However, it decreased again to 63.38 in 2018. Jakpar, Tingg and Siang (2017) found that purchases made by customers in the sector do not require a payment made in full at the time of purchase.

4.4 Pooled Ordinary Least Squares

Wooldrige, (2010), pooled ordinary least squares is employed when different samples are listed each year/month/period of the panel data. In this regression model, one type of model has constant coefficients, referring to both intercepts and slopes. This model, with the help of Breusch-Pagan criterion helped the researcher in deciding

whether to go for random effect model or continue using pooled ordinary least squares (POLS).

The following table was extracted from POLS analysis.

Table 4.2: The Pooled Ordinary Least Squares

Dependent Variable: ROA

Method: Panel Least Squares

Date: 07/13/22   Time: 21:07

Sample: 2009 2018

Periods included: 10

Cross-sections included: 8

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.145929	0.054867	-2.659674	0.0096
ACP	-0.001981	0.000276	-7.171558	0.0000
APP	0.001254	0.000329	3.816699	0.0003
CCC	0.001727	0.000313	5.519258	0.0000
ICP	0.001002	0.000334	3.000663	0.0037

The probability values of all independent variables were found to be less than 5% level of significance as shown from the table 4.1

ACP=0.0000<0.05

APP=0.0003<0.005

CCC=0.0000<0.005

ICP=0.0037<0.005

H_0: POLS is appropriate than FEM or REM

H_1: POLS is not appropriate than FEM or REM

Pooled ordinary least squares results showed that the null hypothesis was rejected at 5% level of significance which led to the acceptance of the alternative hypothesis that POLS is not appropriate than fixed effects model or random effects model. POLS failed to be appropriate due to existence of endogenous regressors.

Based on these findings, the researcher performed random effects model as shown in table 4.2

4.5 Hausman Test

Also known as Durbin-Wu-Hausman (DWH). In a regression model, the Hausman test, also known as the Hausman specification test, is used to find endogenous regressors (Bryman, 2012). Existence of endogenous regressors in regression model can cause OLS estimators' failure. As a result, it is presumed that there exists no link

between the error term and predictor variable. Moreover, null hypothesis is that random effect is the preferred model, whilst alternative hypothesis is model with a fixed effect. Because one of the presumptions of OLS is that there exists no correlation between a predictor variable and the error term, having endogenous regressors in a model will cause ordinary least squares estimators to fail.

Table 4.3: Hausman Test

Correlated Random Effects - Hausman Test

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.312287	4	0.6785

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ACP	-0.003059	*-0.002376*	0.000000	*0.3147*
APP	-0.000092	*0.000351*	0.000000	*0.1488*

CCC	0.001482	*0.001674*	0.000000	*0.5563*
ICP	0.000258	*0.000446*	0.000000	*0.4921*

Interpretation

After pooled ordinary least square was found to be inappropriate in this study, it showed that there was a likelihood of existence of endogenous regressors and, therefore, the researcher used random effect model to analyze panel data with the aid of Hausman test. From table 4.2, it is observed that Hausman results showed a probability value of 0.6785 which is greater than 5% level of significance (0.05) hence significant for the study. The p-values for all explanatory values were also observed to be greater than 5% level of significance.

ACP=0.3147>0.05

APP=0.1488>0.05

CCC=0.5563>0.05

ICP=0.4921>0.05

H_0: REM is appropriate than FEM

H_1: REM is not appropriate than FEM

Hausman test results showed that the null hypothesis was accepted while rejecting the alternative hypothesis meaning that, random effects model was the appropriate model employed in the study.

4.6 Random Effects Model

According to Wikipedia, which is also called variance components, is a statistical model where the model parameters are random variables. Random effects model help researcher to control unobserved heterogeneity when the heterogeneity is constant over time and not correlated with independent variables. The variable results are said to be significant when probability values are greater than the significance level and insignificant when probability values are less than significance level (5%).

The table below shows results obtained from random effect tests.

Table 4.4 Cross-Section Random Effects Test Equation

Dependent Variable: ROA

Method: Panel Least Squares

Date: 07/13/22   Time: 21:11

Sample: 2009 2018

Periods included: 10

Cross-sections included: 8

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	0.155445	0.143371	1.084217	0.2821
ACP	-0.003059	0.000956	-3.198679	0.0021
APP	-9.20E-05	0.000586	-0.156861	0.8758
CCC	0.001482	0.000642	2.308555	0.0240
ICP	0.000258	0.000592	0.436473	0.6639

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.843383
Adjusted R-squared	0.818048
S.E. of regression	0.062694

$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_1 ICP_{it} + \beta_1 APP_{it} + \beta_1 CCC_{it} + \delta_{it} + \mu_{it}\ldots\ldots\ldots(4.1)$$

ROA_{it} = 0.0310774958373 - 0.00237562449622*ACP_t +

 (0.0021) [-3.198679]   (0.8758) [-0.156861]

0.000350740653128*APP_t+0.00167403407435*CCC_t+0.000445678654058*ICP_t

   (0.0240) [2.308555]   (0.6639) [0.436473]

+0.062694……………..(4.2)

ROA_{it} =0.0311−0.0024 ACP_t +0.0004 APP_t +0.0017 CCC_t+0.0004

(0.002)   [-3.199]   (0.876)   [-0.157]   (0.024)   [2.307]

$ICP_t + 0.062694....(4.3)$

(0.664) [-0.1567]

Key: *(***) represents probability values;*

[***] represents t-statistics

Equation 4.3 is the final regression equation which links exogenous and endogenous variables of the study. It was observed that the y-intercept was 0.0311, average collection period was inversely proportional to return on asset with a negative coefficient of 0.0024, average payment period was directly proportional to return on asset with a positive coefficient of 0.0004, cash conversion cycle was directly related with return on assets with a positive coefficient of 0.0017, and inventory conversion period was directly proportional to return on assets with a positive coefficient of 0.0004.

4.7 Discussion of Research Findings

The R-squared, being a goodness –of-fit, was found to be 0.843383. This means that independent variables (ACP, ICP, APP and CCC) explain 84.33% of variation in dependent variable (return of assets).

4.7.1 Return on Assets on Average Collection Period

Average collection period (ACP) was found to be inversely proportional to NSE-listed manufacturing and allied firms' profitability (ROA), depicted by $\beta_1 = -0.0024$. This means that an increase in one unit of average collection period across time as

well as panels would result to a 0.0024 decline in profitability of firms. The association was significant since p-value of 0.0021 which is below 0.05 level of significance level. In the long run, ACP tends to reduce the amount of returns on assets because, the longer the time taken to collect revenue (credit given to debtors), the less the amount of money debtors are likely to pay due to lump sum amount or default. If the collection period is prolonged, it might lead to writing off due to bad debt. Moreover, results conform to Kwaku and Mawutor (2014) findings that ACP had negative influence on listed companies' performance in Ghana. In addition, Ngendakumana, Jagero and Gondo (2017) established a weak negative correlation between ACP and smart bags limited manufacturing firms' profitability.

4.7.2 Return on Assets on Average Payment Period

The study observed that average payment period (APP) had a direct relationship with profitability of manufacturing and allied firms listed in NSE (ROA) as illustrated by beta coefficient (0.0004). This meant that a one unit increase in ROA led to a 0.0004 units increase in APP. However, the relationship was found to be insignificant because the p-value (0.8758) was greater than 0.05 level of significance. This finding is contrary to Kioko and Sitienei (2015) arguments that APP negatively impacted organization profitability of cement companies.

4.7.3 Return on Assets on Cash Conversion Cycle

Cash conversion cycle (CCC) was found to be directly related to the profitability (ROA) of manufacturing and allied firms listed in NSE as depicted by $\beta_3=0.0017$. This means that a one unit increase in CCC across time as well as panels

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(manufacturing and allied firms) would increase firms' profitability by 0.0017. The p-value was found to be 0.0240 which is less than 5% significance level thus showing a statistical significant association. This result supports the conclusion of Muya and Gathogo (2016) that CCC positively influenced company's profitability in Kenya. This implies that improvement in CCC will lead to improvement of NSE-listed manufacturing and allied firms' profitability.

4.7.4 Return on Assets on Inventory Conversion Period

Inventory conversion period (ICP) was found to be directly proportional to the profitability of NSE-listed manufacturing and allied firms as depicted by a positive beta coefficient (0.0004). However, this relationship was insignificant because p-value (0.0.6639) was greater than 0.05 level of significance. This finding is contrary to Munene and Tibbs (2018) argument that ICP negatively and significantly influenced ROA.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter sets out a summary of findings, conclusions and also recommendations. Moreover, conclusions and also recommendations are determined on assessing study purpose which is to examine effects of WCM on profitability of manufacturing and allied firms listed on NSE, Kenya.

5.2 Summary of Study Findings

This segment summarizes results obtained on effects of average collection period, inventory conversion period, and average payment period and cash conversion cycle on profitability of manufacturing and allied companies listed on NSE.

5.2.1 Average Collection Period and Profitability

The study established that ACP had significant inverse impact on manufacturing and allied firms' profitability (ROA) listed in NSE. ACP is an important part of WCM because it determines a company's cash flow. It is the time span a credit facility is widened and when payment is actually received. A loosened credit policy may result in a rise in sales in industries with high competition, but it also raises the chance of loss because of client default, however, results of regression analysis showed that in order to boost profitability, businesses should lower their debtor days. As a result, the inverse relation between the firm's profitability and ACP of account receivable will tend to lower the firms' profitability if the collection period of account receivable is

high. The inference is that businesses need to use cautious credit techniques to reduce bad debts.

5.2.2 Average Payment Period and Profitability

The study established that APP had an insignificant effect on manufacturing and allied firms' profitability (ROA) listed in NSE. The average payment period is the time taken for a company to repay its debtors.

5.2.3 Cash Conversion Cycle and Profitability

The study has established that CCC has significant positive effect on profitability (ROA) of manufacturing and allied firms listed in NSE. CCC is a type of cash management that is seen to be key aspect in improving company's performance. This is because it reveals how effective a company is in paying invoices and collecting receivable. The positive association CCC with profitability supports the theory that resources are normally blocked at diverse supply chain phases, prolonging operational cycle. Moreover, this could result in higher earnings as a result of more sales, especially if the cost of the tied up cash is less than benefits of having more inventories as well as extending credit to diverse customers through strategies such as implementing cash-generating models and securing trade credit from suppliers, as well as a bigger proportion of current liabilities.

Cash conversion cycle in organizations shows the degree of performance; furthermore, through the CCC an organization is in a position to know the points of weakness which needs improvement. The primary responsibility of shareholders in a company is to assess and forecast the company's cash flow. Moreover, this aids in

long-term and also short-term inflows as well as outflows' identification, allowing for the timely identification of cash shortages and excesses through the creation of financing and investment strategies. It can also be used to arrange for timely supplier payments in order to retain reputation and consumer trust, reducing the risk of bankruptcy. Cash management is typically centered on CCC, which is regarded critical in supporting organization performance since it represents the efficiency with which the firm pays debts, sells products, and collects payments. Firms can increase their profitability by assuring a minimum duration of CCC by ensuring less time in inventory selling, payment collection and the greatest amount of time for credit payment.

5.2.4 Inventory Conversion Period and Profitability

ICP has insignificant influence on manufacturing and allied firms' profitability (ROA) listed in NSE according to the study. The duration taken by a corporation to obtain raw materials, create them, and sell the completed goods is a minor factor of its profitability.

5.3 Conclusion

This study therefore came to a conclusion that ACP had a significant inverse influence on NSE-listed manufacturing and allied firms' profitability (ROA). This meant that a reduction in average collection period led to enhancement in profitability (ROA) of NSE- listed manufacturing and allied firms.

The study concluded also that ICP had an insignificant effect on NSE-listed manufacturing and allied firms' profitability (ROA). This implied that a change in

inventory conversion period will not affect profitability (ROA) of listed firms in NSE significantly.

Further, this study concluded that average payment period (APP) had an insignificant influence on NSE-listed manufacturing and allied firms' profitability (ROA). The results suggested that change in APP will not significantly influence profitability of listed firms in NSE.

In addition, the study concluded that CCC had positive significant influence on profitability (ROA) of manufacturing and allied firms listed in NSE. This implied that improvement in profitability of listed firms in NSE will result from an increase in CCC.

5.4 Recommendations

The research found that average collection period negatively affected profitability of manufacturing and allied firms. Hence, the study recommended that listed manufacturing and allied firms ought to minimize amount of time they provide their consumers to pay for products they've purchased on credit. In addition, the firms should come up with a credit policy to reduce and define credit duration (the period granted to debtors) to settle their debts. They should further establish tactics to ensure their consumers adhere to payment plan, that is, they make timely payments on their debts. Firms also require excellent credit management techniques, credit assessments of prospective purchasers, and measures to avoid tying up funds in receivables for prolonged periods of time.

The study revealed that CCC had a positive influence on listed manufacturing and allied firms' profitability. Therefore, firms ought to take effective measures to reduce the CCC. This can involve developing relationships with debtors to make it simpler to collect receivables, taking proper steps to avoid bad debts, for example analyzing payment risk of the customers, and, most importantly, establishing an efficient cash management system.

5.5 Areas for Further Research

The researcher assessed manufacturing and allied firms listed on NSE and hence the findings were not generalized to other categories of companies listed in NSE. As such, further studies need to be conducted on how WCM affects other companies' profitability in the NSE. This study found that WCM explains 84.33% of the NSE-listed of manufacturing and allied firms' profitability. This study hence suggested further researches on other factors that influence profitability of manufacturing and allied firms listed in NSE. In addition, the research looked at profitability in terms of ROA. As such, further studies need to be conducted on effect of WCM on other profitability measures such as return on equity (ROE) and return on investment (ROI).

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Appendix I

Introduction letter from Rongo University.

RONGO UNIVERSITY

OFFICE OF THE DEAN

SCHOOL OF GRADUATE STUDIES

Tel. 0771349741   P.O. Box 103 - 40404
                                   RONGO

Our Ref: MBM/6418/2015   Date: Friday, September 18, 2020

The Chief Executive Officer,

National Commission for Science, Technology & Innovation, off Waiyaki Way, Upper Kabete, P.o Box 30623-00100, Nairobi-KENYA.

Dear Sir,

RESEARCH PERMIT FOR MR. JACOB OGADA ADUDA-

MBM/6418/2015

We wish to inform you that the above person is a bona fide graduate student of Rongo University in the School of Business, Human Resource and Development pursuing a Master's degree in Business Management_ He has been authorized by the University to undertake research titled; "Effects of Working Capital Management on Profitability of Manufacturing and Allied Firms Listed on Nairobi Securities Exchange, Kenya".
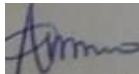
This is, therefore, to request the commission to issue him with a research permit to enable him proceed for field work.

RONGO UNIVERSITY

Your assistance to him shall be highly appreciated.

THE DEAN

Thank you.

SCHOOL OF SRADUATE STUDIES

Dr. Edward Anino   P. BOX   ROSCO

DEAN   SCHOOL   OF
GRADUATE STUDIES Copy to;
Vice Chancellor
          Deputy Vice Chancellor (Academic and Student Affairs).

          Dean, School of Business, Human Resource and

          Development HOD, Business Studies

APPENDIX II

Authority from National Commission for Science, Technology and Innovation

REPUBLIC OF KENYA

Ref No: **287302**

NATIONAL

SCIENCE, TECHNOLOGY & INNOVATION

Date of Issue: **26 /October/ 2020**

RESEARCH LICENSE

This is to Certify that Mr. Jacob Aduda Ogada of Rongo University, has been licensed to conduct research in Nairobi on the topic: **Effects of Working Capital Management on Profitability of Manufacturing and Allied Firms Listed on Nairobi Securities Exchange, Kenya** for the period ending: **26/October/2021.**

License No: **NACOSTI/P/20/7**

Applicant Identification Number

28730

Director

NATIONAL

SCIENCE,TECHNOLOGY &

INNOVATION

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