THE EFFECTS OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY OF PHARMACEUTICAL MANUFACTURING COMPANIES IN KENYA

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

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DECLARATION

I declare this as my original work not a duplicate of other scholar`s works published or submitted for awarding of degrees, diplomas or certificates. Further to that, all material not my own; have been duly acknowledged and cited.

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This project is hereby submitted with the necessary approvals of my supervisor

Supervisor: Prof. Mirie Mwangi

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DEDICATION

This project is dedicated to my husband, children, parents, siblings and friends for their invaluable support when taking time to further my education for my personal, experiential and professional growth for the benefit of us all.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
APD	Accounts Payable Days
ARD	Accounts Receivable Days
CCC	Cash Conversion Cycle
COMESA	Common market for Eastern and Southern Africa
EOQ	Economic Order Quantity
EPZ	Export Processing Zone
GMP	Good Manufacturing Practices
ICP	Inventory Conversion Period
ITR	Inventory turnover ratio
JIT	Just in Time
NSE	Nairobi Securities Exchange
PPB	Pharmacy and Poisons Board
ROA	Return on Assets
SEZ	Specific Export Zone
SME	Small and Medium Enterprises
WCM	Working Capital management

ABSTRACT

Despite the extensive studies on manufacturing firms in Kenya, there has not been conclusive research on effects of WCM on the profitability of pharmaceutical manufacturing firms in particular. The research sought to assess how profitability for the 23 pharmaceutical manufacturing companies in Kenya was affected by working capital management components based on a descriptive research design. The audited financial statements from the sampled firms for the periods 2016-2020 were the source of data. Multivariate regression was used for analysis. From the regression analysis, the average payment period showed a positive effect on profitability. It therefore concludes that average payment period has a positive effect on the profitability of pharmaceutical firms in Kenya. An insignificant increase in cash conversion cycle was found on profitability. The research concluded that cash conversion cycle has no significant effect on profitability of pharmaceutical manufacturers in Kenya. The research discovered that inventory turnover days had a negative but insignificant effect on profitability of pharmaceutical firms in Kenya. The company size was found to have a significantly positive coefficient with profitability; hence, size depicts a positive effect on profitability of pharmaceutical firms in Kenya. Debt to asset ratio (leverage) was ascertained to have a positive and insignificant effect on profitability. Hence, leverage has no significant effect on profitability of pharmaceutical manufacturers in Kenya. The research suggests that pharmaceutical manufacturers in Kenya should assess working capital components and ensure that they get optimal levels whilst focusing on their growth strategies to improve financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Existence and survival of firms is highly dependent on their profitability and liquidity. This postulates that firms that efficiently manage their working capital components directly impact their liquidity and positively providing a competitive advantage and growth. It is important to balance between profitability and liquidity so as to maintain optimal levels of working capital because lack therefore increases the level of risk in the firm and minimizes the company value (Makori & Jagongo, 2013). It is however not easy to ascertain the ideal levels of working capital requirement that maximize the value of the firm. (Raheman & Nasr, 2007)

According to Eljelly (2004), working capital management (WCM) deals with planning, organizing, maintenance and control of current liabilities and current assets. The complexity in establishing the optimal levels of WCM to maximize the value of firms' is largely attributed to the strategies employed by a firm and the different effects brought about by the WCM components to different firms (Singh & Kumar, 2017). The working capital theory, the aggressive theory and the agency cost of free cash flows theories therefore, will be used in explain the relationship between components of WCM and the profitability of pharmaceutical manufacturing firms.

According to Keninvest (2020), external threats such as Covid 19 contributed to changes in the financial structure of many manufacturing firms and in a bid to adjust to the new normal, many liquid firms invested in diversification, technology and/ or complete business changes (Mayank & Karel, 2020) that might be beneficial in the short term but may not suffice in the long run if the current assets do not generate enough cash flows to

cater for those short-term liabilities. Working capital management therefore is essential to the success of many businesses in Kenya in these uncertain times. The study will therefore seek to unravel how the profitability of manufacturing pharmaceutical firms in Kenya is impacted by various components of working capital management.

1.1.1 Working Capital Management

A firm is deemed liquid and profitable when current assets exceed current liabilities enabling the firm to reach its short-term commitments (Brealey-Myers, 2002). According to Deloof (2003), Components of working capital such as Cash conversion cycle (CCC), Inventory turnover ratio (ITR), Accounts receivable days (ARD), Accounts payable days (APD) are used to investigate the liquidity of pharmaceutical manufacturers in Kenya. However, the ideal levels of working capital requirement that maximizes a firm`s profitability while minimizing risks depend mainly on the working capital management strategy by the firm (Afrifa & Padachi, 2016).

There are generally two main WCM strategies advanced by various scholars: Aggressive strategies and Conservative strategies. Aggressive strategies or policies are based on low current assets investment and high fixed assets levels. This leads to a shortage or not enough funds to run the firms operations and settle the short term obligations however the firm reaps from the long term capital gains at the expense of profitability now. Conservative policies on the other hand are characterized by higher investments in working capital and lower levels of fixed assets (Wamugo, Muathe, & Kosimbei, 2014). In so doing, the sales increases resulting to high returns on investments and ultimately the profitability of the firms. High values of current assets than current liabilities depict a working capital surplus while the low values of current assets to current liabilities result

to a deficit working capital management of which is referred to as working capital management.

According to Raheman and Nasr (2007), an optimal WCM can be attained by accurately managing and controlling the tradeoff between liquidity and profitability to increase the firm`s value. Understanding these components and variables affecting the working capital, finding a suitable mix of the current asset and current liabilities are essential in the maintenance of an efficient WCM for the firm`s profitability (Larsson & Hammarlund, 2005).

1.1.2 Profitability

Profitability refers to the gains or returns made from operations or investments of a firm. It is the ultimate objective of any business where the returns of a firm are distributed to shareholders of the firm as dividends or ploughed back to the business for reinvestment purposes (Saalemi, 2009).

It is important to differentiate between profits and profitability because the ability of a firm to make profits as indicated in the income statement (Income Expenses) does not necessary imply profitability of the company as profitability is a measure of efficiency that can predict a firm`s success or failure. According to Hofstrand (2013), profits are the net of revenues over expenses used in revenue generation by a firm. Revenues commonly referred to as Income is money generated from operating activities while expenses are the costs incurred in generation of money or revenue.

Profitability is measured through ratios such as the net/ gross profit margins, ROA and ROE or ROI among others. ROI/ ROE are ratios useful to the shareholders in accessing the return on their investment or equity (Tangen, 2003). It shows the performance of the

business in that particular period (Was it worth the investment?). ROA contributes to financial performance of businesses. The widely used measure of profitability or performance of a firm is the profit margin. It indicates that the company can generate enough revenues to cover the production costs as well as the overhead costs (Hofstrand, 2013).

The success of the any business is highly dependent on the profitability of the firm and financial managers are always looking for effective and efficient operation strategies of increasing profitability to maximize shareholder's wealth and build a competitive advantage (Reeve & Warren, 2006).

1.1.3 Working Capital Management and Profitability

Working capital management affects firms` profitability directly which supports the maximizing profit's goal of a firm but as explained in the above sections a proper mix of liquidity and profitability has to be maintained for a business to survive. According to Shin and Soenen (1998), a tradeoff between profitability and liquidity will lead to the success of the firm by ensuring survival of the business in the long term. This is achieved by focusing on profitability and preventing the risks of bankruptcy caused by liquidity issues. WCM is vital for the profitability, ultimate survival, solvency and liquidity of any business (Mukhopadhyay, 2004).

Longer accounts receivable days (ARD), cash conversion cycle (CCC) and inventory conversion period (ICP) translate to lower the profitability and liquidity while longer accounts payable day's leads to higher profitability and liquidity. Excessive holding of stocks ties up capital and increases the risks of damages or deterioration reducing both profits and liquidity status of the firm. The opportunity cost of this tied up capital means

losses in interest income if the capital had been invested (Saalemi, 2008/2009).

The longer the debtors take to pay the more the costs of debt collection, bad debts and foregone benefits on the tied up cash leading to reduced profits for the firm and the reduction in liquidity due to less cash inflows (Manaseh, 2001). Longer time taken to pay suppliers increases the liquidity of the firm as more disposable cash is available for investment hence the profitability of the firm. This is to be managed however because excessive delays may lead to loss of trust and withdrawal of services or raw materials by the suppliers and hence costs on stock outs affecting the profitability of the firms.

1.1.4 Pharmaceutical Manufacturing Firms in Kenya

A report by Keninvest (2020) indicated that Kenya supply`s 50 percent of the demand and is leading in the COMESA region at the production of pharmaceutical products. It also indicates that Kenya is the third largest exporter of Pharmaceuticals in Africa.

Despite holding only 30 percent of the Sh109.6billion of the domestic market and 70 percent by foreign manufacturers as indicated by the Pharmaceutical Industry Diagnostic Report 2020, the pharmaceutical market in Kenya is rapidly growing at an estimate of 7.6%-12% annually for the next five years. The pharmaceutical manufacturing industry in Kenya currently consists of 23 manufacturers with a majority in Nairobi and its outskirts. Five factories are located in the SEZ/EPZ zones while the others are on private land.

The emphasis and support by the government on manufacturing and universal coverage via the Big Four Agenda in Kenya and continuous review of policies and laws to support local pharmaceutical production are major contributors to the growth of Kenyan Manufacturing firms. Pharmaceuticals are one of the 18 strategic sectors in the National Industrialization Policy 2011–15 (Ministry of Industrialization, 2010). These initiatives

are geared towards boosting local manufacturing, affordable healthcare access and growth of the country`s economy.

There has been a rise in sales from $10 million to $20 million for each of the eight big pharmaceutical manufacturers in Kenya brought about by the upgrades in technology and facilities for adherence to Good Manufacturing Practices (GMP) standards. This can also be attributed to higher demand for the products. Despite the growth in the sector, the high costs of production, stiff competition from imported pharmaceutical products, high costs of credit, high initial investment requirements, strict compliance requirements and regulations by the Pharmacy and Poisons Board (PPB), pandemics such as Covid 19 among other factors discourage small firms from expanding and discourage entry into the pharmaceutical manufacturing industry.

The negative effects have been attributed to the direct impact the costs have on liquidity and profitability of the pharmaceutical manufacturing industries. High liquidity and support by the government on the other hand, have helped firms have more liquid assets allowing for expansions, profitability and growth. The sensitivity and delicate nature of the products from these pharmaceutical industries is a key concern that drives up the need for proper working capital management not forgetting the rapid changes in technology in the industry.

1.2 Research Problem

Smith (1980) postulates that the value and profitability of any firm greatly relies on the firm`s working capital management. Improper working capital management may imply cash shortages (liquidity) which makes it hard for firms to settle their short-term obligations hence financial distress which eventually forces firms to close down or

declare bankruptcy. Excess liquidity may also be as a result of lack of proper working capital management which leads to unproductive use of scarce resources, agency costs of hiring auditors and the firm is not able to maximize on capital gains from long term investments hence not attractive to investors. Of great importance to a firm therefore is creation of a tradeoff or balance between profitability and liquidity for its survival and ultimate success (Padachi, 2006).

The sensitivity and delicate nature of the products from pharmaceutical industries is a key concern that drives up the need for proper working capital management not forgetting the rapid changes in technology in the industry. Pharmaceutical manufacturing firms are characterized by longer working capital cycle which entails the average time raw materials remain in stock from purchase time, the credit period extended, the production time, time it takes before the finished goods are sold and the time it takes for an accounts receivable to pay for the goods (Raheman & Nasr, 2007). The longer the time taken through the production cycle, the more the costs involved and losses due to expiry of drugs in stock, the lesser the liquidity and the higher the strain in meeting short term obligations and remaining profitable.

Uyar (2009) noted that the value of proper working capital management has sparked interest in many researchers in the world most especially in the developed markets and now trickling down to developing markets in Africa. Deloof (2003) in his study on Belgian nonfinancial firms examined the relationship between profitability and WCM. A negative relationship was evident on gross operating income with account receivables days, inventories turnover days and accounts payables days. Many more researches on manufacturing firms in the developed countries have provided the same findings though

others have added that some other components of working capital show different effects on profits depending on the industry being studied.

In Kenya studies on profitability and the WCM of firms for instance, Kithii (2008) study on companies listed in the NSE, showed a negative relationship between the working capital components i.e. CCC and profitability. Mutungi (2008) study on oil marketing firms` performance in Kenya identified the use of aggressive working capital approaches. Similar findings by different scholar's shows profits are affected differently by various components of working capital depending on the industry of study. Gakii (2020) studied the relationship with a focus on the SMEs that are located at the Two Rivers Mall. Nduati (2014) studied the relationship in listed manufacturing firms in Kenya. Wainaina (2010) investigated the relationship in SMEs in Kenya; while Mathai (2010) studied the relationship in retail supermarkets in Kenya.

Despite the extensive studies on manufacturing firms in Kenya (Waweru & Ngugi, 2014; Mathuva, 2009; and others) there has not been conclusive research on effects of WCM on the profitability of pharmaceutical manufacturing firms in particular. This study pursued to interrelate and provide support for the relationship between profitability and the WCM components for the pharmaceutical manufacturers.

1.3 Research Objective

This study sought to analyze how profitability for the pharmaceutical manufacturing companies in Kenya is affected by the various working capital management components

1.4 Value of the Study

Findings from the study will assist managers of the pharmaceutical manufacturing firms in financial decision making of the optimal levels to working capital requirements while maximizing their firm`s value and shareholder's wealth. Managers will be able to formulate strategies and policies that improve the profitability and maximizes the firm`s value.

It will be beneficial to investors who will be able to assess the value of the firms based on the same measurement metrics in the industry. The lenders will also be able to ascertain the credit worthiness of the business by checking on the risks and decide on extension of loans to the firms or not. The general public will also gain from this study through awareness and hence help promote economic growth.

Regulators will also be able to identify the gaps and areas where changes are needed and put in more controls or relax controls in order to promote and support the pharmaceutical manufacturing firms. The study will enable scholars and students improve on existing literature and refine the studies in a bid to eliminate gaps that still exist or fill gaps in further studies

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Here we shall review existing literature on working capital components effects to profitability and value of a firm. It shows the theoretical framework, independent variables, an empirical review and lastly the conceptual framework used in the determination of the existing gaps.

2.2 Theoretical Framework

The WCM component has raised a lot of debates and concerns by many researchers and scholars. It is true that determining optimal levels of working capital to maintain while maximizes returns and reduces risks is not easy as the effects are different to different firms. Working capital theory, the aggressive theory and the agency cost of free cash flows are theories the study employed to explain the relationship between working capital management and the profitability of pharmaceutical manufacturing firms.

2.2.1 The working Capital Theory

This theory was first proposed by Mann (1918) as the cash and cash equivalent required for the running of the company`s operations. It is at the core of every business and especially manufacturing firms. The management of working Capital therefore is prime in driving up the profitability, maintaining liquidity, solvency and survival by offering a competitive advantage (Mukhopadhyay, 2004).

The CCC is vital in working capital management as it determines profitability levels and the firms` value. It is the time lags from raw materials purchase of to the time monies are collected from sale of the finished goods from manufacturing firms.

A shorter time lag translates to higher profitability while a longer time lag means lower profits for the manufacturing firms. Adequate planning and control of the working capital components should be a priority for firms with the aim of maximizing profits and shareholder's wealth (Lamberg & Valming, 2009).

2.2.2 The Aggressive Theory

The aggressive theory, according to Wamugo, Muathe and Kosimbei (2014), best works for risk taking firms because it is based on high investments in long term assets than current assets. It is beneficial to a firm capitalizing on capital gains on investments rather than profitability. It is the opposite of the Bird In hand theory that focuses more on profits today than gains in the future.

Carpenter and Johnson (1983) argue that a higher the risk leads to a higher return. This concept forces firms seeking profitability to reduce the liquidity of the firm by holding as minimal inventory as possible, minimizing the credit days to customers, holding as little cash as possible and negotiating for longer credit days from supplier. The risk is therefore higher as any delays in the working capital cycle due to an unstable economy will cause serious losses or damages.

2.2.3 The Agency Cost of Free Cash flows

This theory is credited to Jensen (1986) and it stipulates that there exists an agency conflict when managers attempt to make investment decisions for their own interest misrepresenting the interest of the shareholders due to availability of cash in hand resulting to agency costs. When more than enough cash is held by managers the tendency of misappropriation of funds increases and hence shareholders adopt various strategies to safeguard this agency relationship.

Free cash flows are the excesses on utilized funds and without controls or policy to guide how these funds are used; the agency conflict is bound to arise. Based on this fact, shareholders adopt strategies that reduce the free cash flows by way of investing in long term assets and gain profits on such investment by engaging in debt financing. An efficient working capital management is instrumental in such conflict management. This approach causes a rise in profitability by reducing liquidity due to the controls on the working capital components (Nduati, 2014).

2.3 Determinants of Profitability in Pharmaceutical Manufacturing Firms

Hifza (2011) Profitability is the ultimate goal for any business. It ensures the wealth maximization objective of the shareholders if achieved. Low or lack thereof of profitability in manufacturing firms indicates poor performance which may lead to financial distress or failure, bankruptcy or even closing down of firms. Firms may survive if able to breakeven but for survival they need to make good returns on the investments, the assets should generate adequate cash flows to cater for the short-term obligations and also sound investment decisions need to be able to make efficient utilization of the available resources while minimizing risks. Below we looked at the various determinants

of Profitability in pharmaceutical Manufacturing Firms in Kenya.

2.3.1 Working Capital Management Components

Working capital management importance cannot be overemphasized owing to the effect and impact it has on profitability as the key goal of a firm. Inventory management for instance is the key for pharmaceutical manufacturers. Decisions on the optimal level of inventory to hold helps the firms to balance between ordering costs, stock out costs and holding costs. Lack of enough inventories at hand may be detrimental to a firm by increasing costs while excessive inventory increases the risks of expiry of products, damages or spoilage among others. (Carpenter & Johnson, 1983).

It is therefore important to balance and have an optimal level of inventory to reduce costs and increase profitability by taking advantage of quantity discounts from the suppliers and meet demand (Dimitrios, 2008). Holding high levels of inventory, ties up capital reducing profits. Study by Kung'u (2016) revealed that firms using proper inventory control systems such as Just in Time by the Japanese make higher profits as these systems help maintain optimal inventory levels.

Accounts receivable management refers to the outstanding monies from customers on credit sales made to them by a firm. This is highly dependent on the collection procedure and credit policy set out by a company (Sharma & Kumar, 2011). The longer the accounts receivable days the higher the risk of default and companies should manage the credit periods to as minimal days as possible to maximize the profit maximization objectives of the firm. Oware, Samanhyia and Ampong (2015) indicated that the profitability of a company is reduced when the accounts receivable collection period is longer.

Accounts Payable management refers to the time taken to settle the suppliers or creditors. Here a longer credit period is preferred as manufacturers are able to convert the raw materials into finished goods or work in progress which they are able to sell or convert into income generating state. The proceeds are therefore used to settle these short term obligations. Shorter credit periods may force them to use debt financing to settle these obligations affecting their profitability (Igwebuike & Nwankwo, 2018).

The manufacturing firms need also put in place trade agreements with suppliers to ensure they are covered in cases of defects arising from raw materials. This is because defects in their products sold to consumers or retailers in the pharmaceutical industry are usually returned to manufacturers due to the nature of the products and if the firm was to bear the total cost by itself then it will incur huge losses. Yahaya (2016) discovered a positive relationship between the average payment period and the financial performance of the firms.

Lamberg and Valming (2009) defines the CCC as a time lag from raw materials purchase to funds collection out of the sales made on the finished goods in manufacturing firms. It is important in determining the profitability levels and firm`s value. The lower the time the firm takes to buy raw materials, manufacture products, sell and collect funds from receivables the higher the profitability and vice versa. The liquidity position of the firm increases with a good cash conversion cycle and is able to reinvest in more cash generating investments to drive up returns for maximizing shareholder’s wealth and profitability of the firm.

2.3.2 Leverage

Leverage means using debt to finance assets or business operations for the wealth maximization of a firm. In the determination of an optimal capital structure, various theories have conflicting findings. The tradeoff theory, agency theory and signaling theories postulate a positive relationship existence between leverage and profitability. The free cash flow theory by Jensen (1986) is a good example that postulates debt reducing the agency cost of free cash flow whilst increasing profitability.

It basically means debt allows firms to reduce the amount of free cash flows that managers can access due to the tendency to misappropriate the funds or invest at the expense of shareholder's interest. They act for their own interest bringing about the agency conflict which brings forth the agency costs thus the high positive relationship between leverage and profitability. It should however be used carefully and controlled because excess debt may lead into financial distress and bankruptcy. Sangeetha and Sivathaasan (2013) study also shows a strong positive relationship between profitability and leverage.

The pecking order theory by Myers and Majluf (1984) however, suggests existence of an inverse relationship between leverage and profitability. Companies are more profitable when they use less debt and more of the retained earnings to fund operations due to the exposure to interest rates among others. Booth, Aivazian, Demirg, Kunt and Maksimovic (2001), observed an inverse relation existence between the profitability and leverage ratio.

2.3.3 Firm Size

Growth is a key objective for every business as it provides more revenue from increased sales, competitive advantage, larger market share, profits, attracts investors and brand recognition among others. The rate of growth and size of pharmaceutical firms is therefore a fundamental aspect to consider when evaluating profitability. The size of a firm influences the profitability in that larger firms have a larger pool of resources, better skilled staff and efficient operations (Almajali, Alamro & Al-Soub, 2012).

Larger firms are able to diversify their risks, maximize on economies of scale and improved technologies and hence are able to better manage the firm`s operations than smaller ones. Relatively larger firms may however experience low profits when the operations are not managed effectively and efficiently. There could be a lot of wastage in the manufacturing process and monitoring and control becomes necessary to ensuring the effectiveness of the processes (Yuqi, 2007).

The growth of the firm to profitability has also had conflicting views. MacMillan and Day (1987) demonstrated that higher profitability was a result of higher growth most especially when new firms enter a new market and provide unique products gaining a large market share and increased sales. A negative relationship on the rate of growth and profitability was however postulated by Hoy, McDougall, & D'Souza (1992) on his conclusion of an existence of a minimal correlation between growth and profitability.

This has been evident in the retail sector. In a bid to increase profitability through enhanced or increased growth, most supermarkets have ended up closing down like Tuskys Supermarket. This is majorly because of lack of proper working capital management, inefficiencies in the supply value chain and management among others.

Growth of a firm should therefore not be considered in isolation when aiming at profit maximization but should be coupled up with all the other factors for better decision making (Kassim, 2011).

2.4 Empirical Literature Review

Numerous empirical reviews have explored the relationship of working capital management to profitability both locally and internationally but there are many conflicting findings and conclusions. Globally, Afza and Nazir (2009) study the relationship between WCM policies to the profitability of the firm for a sample of 204 nonfinancial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005. Using regression analysis, the outcome showed a negative relationship between the degree of aggressiveness of working capital investment and financing policies and profitability of the firms. Similarly, significant differences existed between financing policies employed by different industries and the working capital requirements. They concluded that to increase the value and profitability of the firms, the best approach on financing policies and working capital investment would be a conservative approach.

Afeef (2011) study the relationship between corporate profitability and working capital management used a sample of 131 companies listed in the Athens Stock measured through gross operating profit. There were significant returns between the cash conversion cycle and profitability and the recommendations were to keep the cash conversion cycle alongside other working capital components at optimal levels in order to maximize profits and increase shareholders value.

Venkata, Ramakrishnaiah and Chengalrayulu (2013) study the impact of receivables management on working capital and profitability focused on cement companies in India

using data for the selected cement companies from Annual Reports of 2001-2010. The statistical tool used in the assessment was the ANOVA variance of analysis. This analysis on the accounts receivable ratios, working capital ratios and profitability ratios revealed an efficiency of the receivable management in the cement industry and hence a significant impact of working capital components on profitability.

Agha, Mba and Mphil (2014) study on working capital management effects to profitability found that profitability of companies highly depends on working capital and can be enhanced through various strategies such as; minimizing the accounts receivable ratio, minimizing the inventory turnover and reducing creditors' turnover ratio. Using data from Glaxo Smith Kline pharmaceutical for years 1996-2011, working capital was measured by accounts receivable turnover, creditor`s turnover, current ratio and inventory turnover while the return on assets ratio measured profitability.

Igwebuike and Nwankwo (2018) study on how the average payments period affected profitability for quoted insurance companies in Nigeria used multiple regression technique to analyze data collected from a sample of 20 insurance companies. The findings showed a significant negative impact of the average payment period on the profitability. It was therefore recommended by the study that Nigerian insurance companies could reduce accounts payable days if they were to increase the profits of the firms.

Locally, Mutungi (2008) analyzed the impact of working capital management on the financial performance of oil marketing firms in Kenya that are registered with the petroleum institute of East Africa. The financial statements from the year 2006 to 2009 were analyzed using the regression model with the dependent variable (net operating

income) and independent variables being Inventory turnover period, average payment period, average collection period among others. The study found out that the oil firms reviewed used an aggressive working capital policy and therefore concluded that adequate levels of working capital components need to be maintained through monitoring and control for the profitability, growth and sustainability of the firms.

Apuoyo (2010) study showed that internal cash generation rate changed with the working capital need variation. The study indicated that the best sectors in managing of working capital were financial sectors and investment sectors and a positive relationship between various working capital components and profitability was evident. The study focus was on five main investment segments at the NSE in the 19 sampled listed companies in establishing the relationship between working capital management policies and profitability for companies quoted at the Securities Exchange.

Kung'u (2016) on his study on the inventory control effects on the profitability of industrial and allied firms in Kenya used a sample of 71 industrial and allied companies. Using descriptive and inferential data analysis techniques the study showed a significant positive relationship between inventory control practices and profitability of industrial and allied firms. It was recommended that for firms to increase profitability they ought to maintain ideal levels of inventory by employing inventory control systems. Use of systems necessitates the qualification on the usage by the staff and hence the management should ensure proper qualification of the staff through training.

Ngugi, Kimutai and Kibet (2019) studied how inventory management systems affected performance of manufacturing companies in Eldoret Town, Kenya. Using a cross sectional research design and the regression model of analysis, it was concluded that to

increase company performance, manufacturing companies need to employ highly efficient inventory management systems for reduction of operating costs like stock out costs, holding costs and ordering costs. It also recommended that proper training on the systems for the users will ensure effectiveness and efficiency hereby increasing the firm`s performance.

Gakii (2020) studied working capital management effects on the profitability of small and medium enterprises: a case study of retail outlets at two rivers mall. She used inferential and descriptive analysis or the regression methods for analyzing the data collected from a sample population of 45 SMEs that were at the Two Rivers Mall. The study concluded that profitability and improved operating cash flows of the SMEs are attributed to good inventory management systems and practices, proper receivable management practices, optimal payables management practices and effective strategic policies of the SMEs. It recommended that managers and owners of the SMEs at Two Rivers Mall should look into the WCM cycle, employ the above strategies to achieve efficiency, effectiveness and ultimately profitability.

2.5 Conceptual Framework

This model represents the relationship between independent variables (WCM components) and dependent variable (profitability) for the pharmaceutical manufacturing organizations in Kenya. The literature above forms the basis of coming up with the framework.

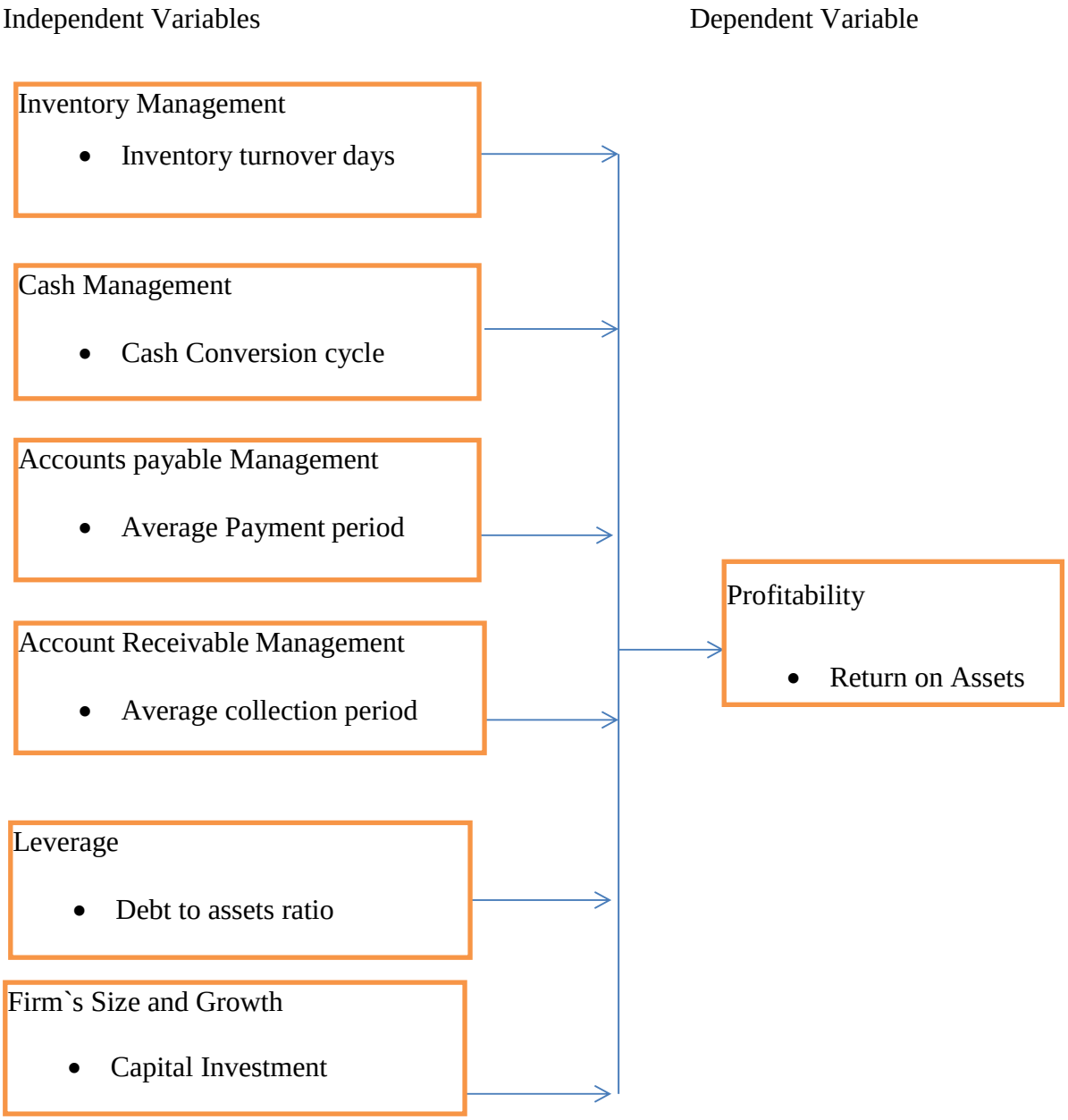

Figure 2.1: Conceptual Framework

2.6 Summary of Literature

This chapter has provided an overall review of the existing literature on the relation between working capital components; leverage, firm size and growth to the profitability of both global and local firms. The measurement, conclusions and recommendations have also been clearly highlighted to guide the users on the best practices to employ to vary the independent variables in favor of the profitability of a firm.

Although there has been extensive investigation and study on the working capital management components effect to profitability, there are no conclusive studies on the same effect specifically to the pharmaceutical manufacturing firms in Kenya. This study therefore, aims at filling the gap of such effect to pharmaceutical manufacturing firms in Kenya that are rapidly growing.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section describes the methodology of research adopted in establishing the link between working capital management and profitability of the pharmaceutical manufacturing firms in Kenya. Particularly, the research design, the population and sample, data collection methods, and techniques of data analysis employed.

3.2 Research Design

To meet any objective, you need a plan and a research design is the overall plan adopted from hypothesis writing to data analysis in a study in order to meet the objectives (Sekeran & Bougie, 2010). It provides solutions to problems and shows how to meet the objectives of the research (Kerlinger, 1973). Descriptive research design was adopted as the most appropriate in investigating the relationship between profitability and working capital management.

3.3 Population

Population is the totality of items in any study (hypothetical or real). A researcher is able to select a sample of study in an existing population (Cooper & Schindler, 2014). The target population in my case is the pharmaceutical manufacturers in Kenya.

3.4 Sample

Currently, pharmaceutical manufacturing firms in Kenya total to 23 within Nairobi and its outskirts. A stratified and random sampling method was employed in the realization of a sample size. This method of dividing the population into strata based on similar characteristics allows representativeness and accuracy reducing the sampling bias (Suter,

2012). The population therefore was stratified into three strata of large, medium and small manufacturers for ease of collecting data and analysis and all members of each stratum were considered for the study to reduce selection bias.

3.5 Data Collection

A secondary data collection method was preferred because of the data reliability it provides. Audited financial statements for the firms for the periods 2016-2020 were the source of data on both the dependent and independent variables under investigation. These financial statements provide data on the revenues, cost of sales, gross and net profits, accounts receivables, payables, cash, debt and equity useful in the determination of the measurement ratios such as CCC, ITR, APD, ARD among others regressed against the net profit (Musau, 2015).

3.6 Diagnostic tests

The model viability was ascertained using various diagnostic tests including normality, multicollinearity and heteroskedasticity. Normality assumes that the dependent variable's residual would be normally distributed and closer to the mean. The Shapiro-Wilk test was used and when one of the variables has no normal distribution it will be adjusted using the logarithmic adjustment methodology (Khan,2008).

Multicollinearity was assessed through Variance Inflation Factors (VIF). Heteroskedasticity was tested using a Breusch Pagan test to confirm whether the error variance in the regression lies among the independent variables and if data does not meet the homogeneity of variances assumption, robust standard errors will be employed. (Burns & Burns, 2008).

3.7 Data Analysis

Multivariate regression a method used to analyze effects of one or more variables to another was employed in analyzing data collected from the audited financial statements (Kothari, 2004). This method helped to determine the relationship between working capital components and profitability.

3.7.1 Analytical Model

The analytical regression model used for this study was;

$Yit = \alpha + \beta 1\ (CCC)it + \beta 2(ACP)it + \beta 3(APP)it + \beta 4(ITD)it + \beta 5(LOS)it + \beta 6(DR)it + e$

Where:

Yit = Profitability of firm i at time t

α = Constant for the independent variables

β = Regression coefficient

LOS = the size of the company

ACP = Average Collections Period

APP = Average Payment Period

ITD = Inventory Turnover Days

CCC = Cash Conversion Cycle

DR = Debt to Asset Ratio

e = the error term

3.7.2 Operationalization of Variables

Table 3.1: Operationalization of Variables

Variables	Measures	Purpose	Measurement Type
Profitability	Net Income *100 Total Assets	Firm's Profitability	%
Company`s Size (LOS)	Natural logarithm	Capital employed by the firm	In (Assets)
Debt to Assets ratio (DR)	Total Debt*100 Total Assets	Leverage of the firm	%
Inventory Turnover Days (ITD)	Inventory*365 Cost of Goods Sold	Inventory Management Efficiency	Days
Average Collection Period (ACP)	Accounts Receivables*365 Sales	Receivable Management Efficiency	Days
Average Payment Period (APP)	Accounts Payables*365 Purchases	Creditworthiness of the firm	Days
Cash Conversion Cycle (CCC)	(ARD+ITD)-APD	Working capital effectiveness	Days

3.7.3 Test of Significance

The F statistic and R2 statistic tests of significance were employed to assess the effect of working capital management on profitability of pharmaceutical manufacturing industries in Kenya. This test of significance was done for each company on the selected in the sample and compared with the companies in the population.

The research study used the acceptable convectional level of an alpha level of 0.05 hence a confidence interval of 95%. This implies that there is only a 5% chance of the relationship between the variables not truly existing and providing a confidence level of the relationship between the variables existing at 95%

ANOVA tests the fit and acceptance of the model i.e. existing or nonexistent impact on the dependent variable by the independent variables. The decision criterion for this test is; If $F < 0.05$ then there is a statistical significance and we reject the null hypothesis and accept the alternate hypothesis Warner, (2013). The variation therefore is not just by chance and the model is deemed acceptable while if $F > 0.05$ then the variations in the model is by chance therefore deemed unacceptable.

CHAPTER FOUR:

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, analysis of data is based on the study objective. It describes the data and provides an interpretation of the findings.

4.2 Descriptive Statistics

Table 4.2: Descriptive Statistics

	Units	N	Minimum	Maximum	Mean	Std. Deviation
Profitability of firm	Millions	115	-17.61	44.52	11.0505	10.68986
Cash Conversion Cycle	Days	115	1.32	340.97	67.6106	61.52580
Average Collections Period	Days	115	13.20	838.31	98.4622	111.78448
Average Payment Period	days	115	2.81	172.19	34.1317	20.77660
Inventory Turnover Days	days	115	2.00	345.98	37.5091	47.76409
Size of the company	Log	115	10.28	18.84	14.8663	2.19460
Debt to Asset Ratio	%	115	1.33	94.83	18.4124	14.46305

From these descriptive statistics, profitability of the pharmaceutical firms averaged at 11.0505 for the period between 2016 and 2020. The profitability showed a (σ = 10.69). Cash Conversion Cycle averaged at 67.6106 days with a (σ = 61.525 days). Average

Collections Period for the pharmaceutical firms averaged at 98.46 days with a (σ =111.78) days. More so, Average Payment Period averaged at 34.13days with (σ = 20.78) days. Inventory Turnover Days showed a (μ =37.51) days and (σ = 47.76) days within the period. The size of the firm showed a (μ =14.87) with a (σ = 2.195). Finally, debt to asset ratio showed a (μ =18.41) with a (σ =14.46%).

4.3 Diagnostic Tests

The researcher sought to examine the assumptions of the regression model. The model assumes that data follows a normal distribution, no linearity among the predictor variables and that the error term is not constant over time. This involved normality, multicollinearity and heteroskedasticity.

Table 4.3: Tests of Normality

	Statistic	df	Sig.
Profitability of firm	.950	115	.000
Cash Conversion Cycle	.800	115	.000
Average Collections Period	.522	115	.000
Average Payment Period	.807	115	.000
Inventory Turnover Days	.499	115	.000
the size of the company	.964	115	.004
Debt to Asset Ratio	.775	115	.000

The researcher tested the normality assumption of the data following a normal distribution using Shapiro Wilk test. Normally distributed data is the null hypothesis and it is rejected when the p-value is less than the chosen alpha level and evidence depicts that data tested is not from a normally distributed population. From the findings, all the

variables displayed significance values less than the critical 0.05 value. Therefore, the researcher rejected the null hypothesis and assumed the alternative hypothesis meaning that data for the variables is not normally distributed.

Table 4.4: Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Cash Conversion Cycle	.654	1.528
	Average Collections Period	.667	1.500
	Average Payment Period	.643	1.556
	Inventory Turnover Days	.623	1.605
	the size of the company	.874	1.144
	Debt to Asset Ratio	.680	1.472

To test multicollinearity the researcher used VIF. The findings indicate that the VIF values were less than 5. Hence, indicating that the variables variance was inflated at a very low level. The tolerance statistics were also less than 2 indicating no Multicollinearity issues in the data.

Table 4.5: Heteroskedasticity

```
------- ANOVA TABLE  --------
                 SS          df          MS           F         Sig
Model        16.251       6.000       2.708       1.115        .003
Residual    262.458     108.000       2.430    -999.000    -999.000

------- Breusch-Pagan and Koenker test statistics and sig-values --------
                LM         Sig
BP           8.125        .229
Koenker      6.705        .349

Null hypothesis: heteroskedasticity not present (homoskedasticity)

if sig-value less than 0.05, reject the null hypothesis
```

To examine the error term variance's consistency, Heteroscedasticity was tested using Breusch Pagan test. The results showed that the Breusch Pagan statistics, (8.125) had a significance value of 0.229. This means that the Breusch Pagan statistics was not significant as the significance value was greater than 0.05. Hence, the researcher does not reject the null hypothesis that the error term is constant over time. Hence, we assume that there is no heteroscedasticity in the data used in this research.

4.4 Regression Analysis

The researcher sought to establish the effect of working capital management on the profitability of pharmaceutical manufacturing companies in Kenya.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.405[a]	.164	.117	10.04321

a. Predictors: (Constant), Debt to Asset Ratio, Inventory Turnover Days, the size of the company, Average Collections Period, Cash Conversion Cycle, Average Payment Period

From the model summary, this research shows that the variables had a combined correlation coefficient of 0.405. This indicates that cash conversion cycle, average collections period, average payment period, inventory turnover days, the size of the company and debt to asset ratio have a weak correlation with profitability of pharmaceutical firms in Kenya. The summary also showed an R squared of 0.164. This indicates that 16.4% the variation of profitability of pharmaceutical firms was caused by cash conversion cycle, average collections period, average payment period, inventory turnover days, the size of the company and debt to asset ratio. Other factors contribute the other proportional change in the profitability of the pharmaceutical firms.

Table 4.7: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2133.599	6	355.600	3.525	.003[a]
	Residual	10893.528	108	100.866		
	Total	13027.127	114			

a. Independent: (Constant), Debt to Asset Ratio, Inventory Turnover Days, the size of the company, Average Collections Period, Cash Conversion Cycle, Average Payment Period

b. Dependent Variable: Profitability of firm

From the ANOVA statistics, the model shows the calculated F-statistics (3.525) greater than f-critical (2.183) indicating the model fits the data. It shows a pvalue of 0.003 which was less than the 5% alpha value. This shows that regression model fitted the data implying that the data is fitted well.

Table 4.8: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-15.762	6.889		-2.288	.024
	Cash Conversion Cycle	.019	.019	.112	1.025	.307
	Average Collections Period	-.020	.010	-.206	-1.913	.058
	Average Payment Period	.120	.056	.233	2.125	.036
	Inventory Turnover Days	-.028	.025	-.124	-1.110	.269
	Size of the company	1.474	.458	.303	3.216	.002
	Debt to Asset Ratio	.134	.079	.181	1.700	.092

From the regression analysis;

$$Yit = \alpha + \beta1(CCC)it + \beta2(ACP)it + \beta3(APP)it + \beta4(ITD)it + \beta5(LOS)it + \beta6(DR)it + e$$

Was fitted into;

$$Yit = -15.762 + 0.12(APP)it + 1.474(LOS)it$$

From the regression coefficients showed a constant of -15.762. This shows that predictor variables constant profitability of pharmaceutical firms would stand at -15.762. The equation also shows that a unit increase in cash conversion cycle would increase profitability by 0.019. A unit increase account collection period would reduce the profitability by 0.025; unit increase in average payment period would increase profitability by 0.12; unit increase in inventory turnover days would reduce profitability

by 0.28. However, the size of the company would increase the profitability by 1.474. Finally, debt to asset ratio would increase profitability by 0.134. Average payment period and size of the company show significance values below 0.05. This shows that average payment period and size of the firm have a significant effect on profitability of pharmaceutical firms in Kenya. All the other variables showed insignificant regression coefficients on profitability. This indicates that cash conversion cycle, average collections period, inventory turnover days and debt to asset ratio have no significant effect on profitability of pharmaceutical industries in Kenya.

4.5 Discussion of Findings

The findings show that, a unit increase in cash conversion cycle increased profitability of pharmaceutical firms in Kenya postulating that cash conversion cycle positively related with profitability of the firms. The findings differed with those of Agha, Mba and Mphil (2014) that cash conversion cycle had a negative effect on profitability of firms. Cash conversion cycle, however, showed an insignificant correlation coefficient with profitability indicating that cash conversion cycle has no significant effect on profitability of pharmaceutical companies. The results differ with those of Afeef (2011) that there were significant returns between the cash conversion cycle and profitability.

The results showed that increase in account collection period reduced the profitability of the sample firms. This shows that account collection period has a negative effect on profitability of pharmaceutical firms. The results concur with those of Agha, Mba and Mphil (2014) who discovered that the accounts receivable ratio have a negative effect on profitability of firms. They also concur with those of Oware, Samanhyia and Ampong (2015) who indicated that the profitability of a company is reduced when the accounts

receivable collection period is longer. These findings differed with those of Apuoyo, (2010) who found that working capital components increased profitability of firms. However, the account collection period showed an insignificant coefficient with profitability of the sampled firms. This shows that despite the negative effect of account collection period on profitability. These findings differ with those of Venkata, Ramakrishnaiah, and Chengalrayulu, (2013) of a significant impact of working capital components on profitability.

The findings showed that increase in average payment period increased profitability of pharmaceutical firms. The findings concur with those of Venkata, Ramakrishnaiah, and Chengalrayulu, (2013) who discovered a significant impact of working capital components on profitability. The results differed with those of Agha, Mba and Mphil (2014) who discovered that the average payment period possess a negative effect on profitability of firms. These findings also differed with those of Igwebuike and Nwankwo (2018) who discovered a significant negative impact of the average payment period on the profitability. However, the findings showed that the regression coefficient between average payment period and profitability was insignificant. This shows that average payment period has an insignificant effect on profitability of pharmaceutical firms in the country.

The research findings showed that an increase in inventory turnover days reduced profitability. This shows that when the pharmaceutical firms increase the inventory turnover days they experienced reduced return on assets. The findings concur with those of Ngugi, Kimutai and Kibet (2019) who discovered that the inventory turnover has a negative effect on profitability of pharmaceutical firms. However, the findings, differed

with Kung'u (2016) who indicated a positive relationship between inventory control practices and profitability.

Company size showed a positive regression coefficient with profitability meaning that large firms have high profitability ratios. The small firms that increase their level of assets experience increasing profitability ratios in their profitability metrics. The findings concur with those of Almajali, Alamro and Al-Soub (2012) who discovered that the size of a company impacts the profitability positively. However, these findings differ with those of Yuqi (2007) who found that relatively larger firms experience low profits.

Finally, debt to asset ratio measuring leverage was found to have a positive effect on profitability. They are similar to those of Sangeetha and Sivathaasan (2013) who found a strong positive relationship between profitability and leverage. Booth, Aivazian, Demirg, Kunt and Maksimovic (2001) however found an inverse relation existence between the leverage ratio and profitability.

Average payment period and size of the company show significance regression coefficient. This shows that average payment period and size of the firm have a significant effect on profitability of pharmaceutical firms in the country. All the other variables showed insignificant regression coefficients on profitability. This indicates that cash conversion cycle, average collections period, inventory turnover days and debt to asset ratio have no significant effect on profitability of pharmaceutical companies. The findings were different from those of Venkata, Ramakrishnaiah, and Chengalrayulu (2013) that showed a significant impact of working capital components on profitability.

CHAPTER FIVE:

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section looks into the summary of findings, conclusions and recommendations based on research objectives and variables of the study. The study sought to assess how profitability for the pharmaceutical manufacturing companies in Kenya is affected by the working capital management components. Descriptive and regression statistics were used for analysis.

5.2 Summary

The descriptive statistics shows that profitability of the pharmaceutical firms averaged at 11.0505 for the period between 2016 and 2020. On the other hand, cash conversion cycle averaged at 67.6106 days. Average collections period for the pharmaceutical firms averaged at 98.46 days. On the other end, average payment period averaged at 34.13days with a standard deviation of 20.78 days. Inventory turnover days showed a mean of 37.51 days within the period. The size of the firm showed a mean log of 14.87. Finally, debt to asset ratio showed a mean of 18.41.

From the model summary, this research shows that the variables had a combined correlation coefficient of 0.405. This indicates that cash conversion cycle, average collections period, average payment period, inventory turnover days, size of the company and debt to asset ratio have a weak correlation with profitability of pharmaceutical firms in Kenya. The summary also showed an R squared of 0.164. This indicates that 16.4% the variation of profitability of pharmaceutical firms was caused by cash conversion cycle,

average collections period, average payment period, inventory turnover days, the size of the company and debt to asset ratio. Other factors contribute the other proportional change in the profitability of the pharmaceutical companies.

From the regression analysis, increases in cash conversion cycle would increase profitability while increase account collection period would reduce the profitability. However, increase in average payment period would increase profitability while increase in inventory turnover days would reduce profitability. However, the size of the company was found to increase the profitability with debt to asset ratio (leverage) increasing profitability. Average payment period and size of the company showed significant regression coefficients. This shows that average payment period and size of the firm have a significant effect on profitability of pharmaceutical firms in Kenya. However, cash conversion cycle, average collections period, inventory turnover days and debt to asset ratio had no significant effect on profitability of pharmaceutical companies in Kenya.

5.3 Conclusions

From the regression analysis, an insignificant increase in cash conversion cycle would increase profitability. The study concludes that cash conversion cycle has no significant effect on profitability of pharmaceutical firms in Kenya. The study also concludes that account collection period had a negative regression coefficient with the profitability. This study concludes that has a negative non-significant effect on the profitability of pharmaceutical companies in Kenya

Average payment period showed a positive effect on profitability. Average payment period showed significant regression coefficient at the 5% significance level. This study concludes that average payment period possess a positive effect on the profitability of

pharmaceutical companies in Kenya. The study shows that inventory turnover days possess a negative regression coefficient with profitability. The variable showed insignificant regression coefficients. This study, therefore, concludes that inventory turnover has a negative but insignificant effect on the profitability of pharmaceutical firms in Kenya.

The size of the company was found to have a significantly positive coefficient with profitability. This study therefore concludes that size has a significantly positive effect on profitability of pharmaceutical firms in Kenya. Debt to asset ratio (leverage) had an insignificant and positive effect on profitability. This shows research concludes that leverage has no significant effect on profitability of pharmaceutical companies in Kenya.

5.4 Recommendations

From the regression analysis, an increase in cash conversion cycle caused insignificant increase in profitability. Consequently, even if the cash conversion cycle would cause increase in profitability, the effect would be negligible. The researcher recommends that pharmaceutical companies in Kenya, check on their cash conversion cycle and ensure that they get an optimal cycle. This would ensure that they experience a significant increase in profitability of the firms.

The study found that an increase in account collection period reduced the profitability more so return on assets. However, the regression coefficient was insignificant. This research recommends that the pharmaceutical companies in Kenya review their account collection period by reducing the number of days they take to collect their debts. This would reduce the negative effects of increased collection days on the profitability of the firms. This would be done through improved collection procedures by the firms.

On the other hand, increase in average payment period was found to increase profitability. This research recommends increase of the average payment period. This would enable them to invest the money expected to be paid to the creditors and hence experience increased returns. This is because the average payment period had a significant positive effect on profitability of pharmaceutical industries in Kenya.

The study discovered inventory turnover days had a negative but insignificant effect on profitability. This study implores the management of pharmaceutical companies in Kenya to reduce number of days they hold inventory. This would ensure that they experience increased profits within their firms.

The size of the company was found to increase the profitability. The study commends pharmaceutical company`s management in Kenya to increase their firm size through increased asset base. This is based on the findings that size had a positive effect on profitability. The management should also increase the level of income in their firms through expanded sources. The research also discovered that leverage had a positive but insignificant effect on profitability. This research recommends that management of pharmaceutical companies maintain the debts at an optimal level to get an improved profitability across their firms.

5.5 Limitations

The study was limited to working capital and profitability of pharmaceutical firms. A focus on other variables may give different results. The period of study 2016 to 2020 also limited the study. Focus on other periods may give differing outcomes.

The study was limited by the focus of the research. The study looked at working capital influenced profitability of pharmaceutical firms. This limited the application of the findings to other sectors where working capital may show different findings and effect on profitability. The study measured the working capital and profitability using specific parameters. The use of other parameters to measure the variables may give a different perspective on the effect of working capital on profitability.

The study was also limited by the data utilized in this research. This research made reference to secondary data collected from financial statements of individual firms. Use of other types of data sources may give differing results on working capital and profitability among pharmaceutical firms. It was also limited by the research methods adopted in the analysis. It employed multiple regression and descriptive statistics to show whether the working capital influenced profitability of pharmaceutical firms. The use of other types of analysis may give different results.

5.6 Areas for future studies

The study looked at working capital influence on profitability of pharmaceutical firms. This limited the application of the findings to other sectors where working capital may show different findings and effect on profitability. Further research is recommended based on other variables and factors influencing profitability. The study was focused on the period between 2016 and 2020. Other researcher should focus on other periods for comparison of outcomes.

The study measured the working capital and profitability using specific parameters. The study recommends that other researchers use other parameters to measure the variables to get a different perspective on the effect of working capital on profitability. This research

utilized secondary data collected from the firm`s financial statements. Further research should be done based on primary data collected using questionnaires or any other instrument to compare the results on working capital and profitability among pharmaceutical firms. The study used multiple regression and descriptive statistics to show whether the working capital influenced profitability of pharmaceutical firms. Further research should be done based on other statistical operations and research methods to establish how working capital affects profitability of pharmaceutical firms.

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APPENDICES

Appendix I: Pharmaceutical Manufacturing Companies in Kenya

1. Alpha Medical Manufacturers
2. Aventis Pasteur SA East Africa
3. Bayer East Africa Limited
4. Beta Healthcare (Shelys Pharmaceuticals)
5. Cosmos Limited
6. Dawa Pharmaceuticals Limited
7. Didy Pharmaceutical
8. Diversey Lever
9. EliLilly (Suisse) SA
10. Elys Chemical Industries Ltd
11. Glaxo SmithKline
12. High Chem East Africa Ltd
13. Ivee Aqua EPZ Limited – Athi River
14. Mac's Pharmaceutical Ltd
15. Manhar Brothers (Kenya) Ltd
16. Novartis Rhone Poulenic Ltd
17. Novelty Manufacturers Ltd

18. Pfizer Corp (Agency)
19. Pharmaceutical Manufacturing Co (K) Ltd
20. Pharmaceutical Products Limited
21. Phillips Pharmaceuticals Limited
22. Regal Pharmaceutical Ltd
23. Universal Pharmaceutical Limited

Source; Pipeline Pharma Website: https://www.pipelinepharma.com/pharmaceutical-companies/kenya

Appendix II: Data Collection Form

Variable	2016	2017	2018	2019	2020
Sales					
Cost of sales					
Purchases					
Gross Profit					
Net Income					
Inventory					
Accounts Receivables					
Current Assets					
Total Assets					
Accounts Payables					
Current Liabilities					
Total Debt					
Equity/ Capital					

Appendix III: Data

	Year	ROA %	CCC days	ACP days	APP days	ITD days	LOS	DR %
Alpha Medical Manufacturers	2016	5.62	35.38	86.06	71.86	21.18	20.36	15.576
	2017	7.94	44.21	93.59	65.73	16.35	20.42	20.343
	2018	15	57.66	92.85	51.64	16.45	20.56	17.663
	2019	19.78	87.61	121.34	45.83	12.1	20.59	11.569
	2020	14.34	98.69	124.47	36.18	10.4	20.73	16.279
Aventis Pasteur SA East Africa	2016	14.96	101.05	123.3	34.72	12.47	21.01	15.517
	2017	15.43	100.16	113	28.98	15.16	20.85	14.998
	2018	3.63	102.41	118.05	32.27	16.63	20.86	11.968
	2019	7.9	80.51	78.78	24.53	26.26	16.46	13.744
	2020	8.67	52.75	47.64	17.54	22.65	16.57	17.588
Bayer East Africa Limited	2016	6.64	72.66	63.37	31.29	40.58	17.11	16.305
	2017	6.73	72.88	71.67	22.36	23.57	17.21	14.239
	2018	5.46	100.55	99.48	39.22	40.29	17.43	17.965
	2019	-6.81	79.4	87.58	45.4	37.22	17.77	15.135
	2020	-7.79	113.47	131.48	48.19	30.18	17.75	17.876
Beta Healthcare (Shelys Pharmaceuticals)	2016	-17.61	67.95	96.65	40.2	11.5	17.57	7.726
	2017	-2.81	31.24	28.17	20.89	23.96	16.30	13.895
	2018	-0.88	34.83	31.5	19.42	22.75	16.42	19.015
	2019	-7.39	27.42	17.01	18.2	18.61	16.45	14.128
	2020	8.8	15.08	25.43	28.02	17.67	16.60	35.806
Cosmos Limited	2016	-2.37	32.89	34.06	31.9	30.73	16.57	23.796
	2017	31.77	45.34	47.24	30.06	28.16	16.96	10.489
	2018	13.41	51.27	21.62	34.83	18.48	17.14	18.961
	2019	6.26	33.8	29.17	46.29	20.92	17.12	14.038
	2020	7.17	27.79	148.81	23.4	12.38	15.10	15.778
Dawa Pharmaceuticals Limited	2016	11.62	137.13	145.85	22.21	13.49	15.20	15.267
	2017	11.86	195.75	218.51	62.67	39.91	15.66	36.242
	2018	8.56	206.6	222.8	34.08	17.88	15.74	26.353
	2019	6.43	193.02	208.95	31.67	15.74	15.88	22.092
	2020	12.96	165.93	778.48	28.64	16.09	15.94	34.738
Didy Pharmaceutical	2016	10.74	128.63	838.31	27.94	18.26	15.84	94.834
	2017	13.17	120.02	140.27	52.84	32.59	15.77	56.503
	2018	5.55	108.06	100.53	15.93	23.46	14.49	77.907
	2019	9.05	66.03	60.01	21.5	27.52	14.61	65.181
	2020	9.93	60.62	58.14	20.78	23.26	14.63	50.102
Diversey Lever	2016	11.32	70.82	72.22	28.4	27.43	14.90	17.162
	2017	3.93	75.73	72.47	31.79	35.05	15.16	30.792
	2018	4.77	68.94	68.28	40.17	40.83	15.33	20.423
	2019	5.38	65.32	72.97	41.81	34.16	15.44	27.124
	2020	6.78	81.82	87.62	47.19	41.39	15.59	16.513
EliLilly (Suisse) SA	2016	7.93	114.86	357.44	17.19	119.61	16.15	6.917
	2017	8.18	128.82	73.78	29.41	84.45	16.37	10.796
	2018	9.51	135.4	91.59	26.81	70.62	16.38	16.296
	2019	8.94	125.09	87.65	31.5	68.94	16.32	19.852
	2020	9.03	93.51	58.94	49.49	84.06	16.92	14.363
Elys Chemical Industries Ltd	2016	2.86	141.4	47.53	43.01	36.88	17.08	15.769
	2017	6.09	117.34	40.93	57.47	33.88	17.11	13.278
	2018	2.41	175.47	192.04	55.6	39.03	17.21	18.758
	2019	2.19	109.83	91.61	42.81	21.03	14.86	39.470
	2020	4.75	117.57	99.34	45.29	23.52	14.95	49.828
Glaxo SmithKline	2016	3.79	133.81	112.25	14.53	36.09	15.04	32.674
	2017	1.44	124.47	90.25	28.74	42.96	15.12	35.761

	2018	-1.8	125.72	90.98	18.52	53.26	15.17	56.514
	2019	1.74	173.2	200.17	40.03	113.06	15.15	35.522
	2020	1.58	176.26	164.54	55.82	166.72	15.13	45.666
High Chem East Africa Ltd	2016	1.57	238.24	207.59	46.78	77.43	15.12	25.943
	2017	2.97	144.18	33	16.41	27.59	12.77	9.815
	2018	3.62	151.84	44.03	18.13	25.94	12.84	11.400
	2019	2.71	141.48	36.65	21.35	26.18	12.74	6.536
	2020	4.08	140.13	38.44	22.62	24.31	12.67	11.367
Ivee Aqua EPZ Limited – Athi River	2016	6.82	43.93	45.76	27.03	20.2	12.7	4.465
	2017	10.7	37.98	42.1	22.83	18.71	12.71	13.179
	2018	13.82	41.94	45.07	22.8	19.67	12.72	7.095
	2019	12.53	52.66	57.88	25.89	20.67	12.94	11.325
	2020	8.48	86.22	65.86	24.78	45.14	15.17	8.478
Mac’s Pharmaceutical Ltd	2016	7.69	75.52	58.24	28.38	45.66	15.53	8.185
	2017	6.21	80.51	64.36	30.71	46.86	15.56	12.067
	2018	6.65	85.41	74.67	32.88	43.62	15.75	8.429
	2019	5.15	98.32	88.43	31.5	41.39	15.91	6.126
	2020	0.9	79.41	72.37	30.2	37.24	16.01	11.715
Manhar Brothers (Kenya) Ltd	2016	1.55	85.21	68.61	27.54	44.14	16.09	11.999
	2017	1.05	69.49	55.04	20.97	35.42	16.06	7.402
	2018	0.83	111.62	167.82	88.18	61.98	18.13	10.861
	2019	1.77	120.96	130.15	56.77	47.58	18.07	6.367
	2020	1.1	132.52	144.46	44.73	32.79	18.05	7.949
Novartis Rhone Poulenic Ltd	2016	1.37	109.17	120.32	26.84	15.69	18.07	5.626
	2017	2.93	130.75	150.02	29.06	9.79	17.73	2.833
	2018	5.5	165.69	192.55	29.73	2.87	18.18	3.775
	2019	5.93	121.93	256.82	36.89	2.93	18.31	4.397
	2020	6.99	147.74	295.01	51.81	4.54	18.5	2.672
Novelty Manufacturers Ltd	2016	44.52	26.96	63.55	54.18	17.59	14.35	16.819
	2017	21.51	94.92	93.51	29.39	13.8	14.37	14.974
	2018	26.6	68.35	73.01	12.09	7.43	14.52	11.857
	2019	28.79	49.83	57.29	17.35	9.89	14.61	16.819
	2020	23.58	52.25	78.99	37.17	10.43	14.74	14.974
Pfizer Corp (Agency)	2016	19.55	21.48	28.96	39.36	31.88	14.9	11.857
	2017	17.77	39.27	78.21	48.76	9.82	14.94	15.711
	2018	13.81	55.52	91.46	63.26	27.32	15.01	10.919
	2019	6.62	39.04	25.24	51.2	19.00	15.44	12.475
	2020	11.05	40.77	30.1	62.03	16.70	15.56	16.295
Pharmaceutical Manufacturing Co (K) Ltd	2016	8	46.39	39.95	8.04	14.48	15.67	21.805
	2017	4.8	61.12	48.19	9.14	22.07	15.91	17.510
	2018	7.07	39.16	36.88	13.35	15.63	15.9	17.458
	2019	7.36	40.63	39.54	11.99	13.08	15.97	16.283
	2020	8.02	41.44	39.92	12.53	14.05	16.03	16.470
Pharmaceutical Products Limited	2016	1.87	37.93	45.62	19.7	12.01	16.14	17.119
	2017	24.48	48.51	43.16	22.76	28.11	16.22	14.593
	2018	32.61	32.12	29.88	25.71	27.95	16.44	15.592
	2019	31.33	34.1	38.12	34.53	30.51	16.54	15.962
	2020	32.2	59.81	64.58	34.71	29.94	16.65	14.388
Phillips Pharmaceuticals Limited	2016	33.39	44.31	45.56	41.14	39.89	16.72	16.490
	2017	38.21	58.21	40.98	29.38	46.61	16.74	14.000
	2018	33.55	59.78	46.74	41.3	54.34	16.73	36.191
	2019	30.11	63.33	54.79	44.34	52.88	16.70	19.956
	2020	33.21	29.48	53.78	52.71	18.41	17.46	22.045
Regal Pharmaceutical Ltd	2016	24.64	17.23	57.45	59.49	19.27	17.72	20.563
	2017	27.94	28.12	53.84	53.49	27.77	17.82	22.872
	2018	18.98	34.42	55.72	44.97	23.67	17.89	24.159

	2019	16.53	37.71	46.36	40.38	31.73	17.96	26.554
	2020	21.14	40.94	51.64	43.66	32.96	18.02	22.168
Universal Pharmaceutical Limited	2016	15.75	340.97	13.2	18.21	35.98	18.00	24.213
	2017	14.2	255.95	49.97	81.96	27.94	18.02	15.953
	2018	13.9	262.92	78.01	24.03	18.94	16.72	13.318
	2019	11.83	181.27	89.32	19.57	11.52	16.96	16.389
	2020	6.95	196.29	107.61	26.47	15.15	17.13	15.573