EFFECT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF MANUFACTURING FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

I, the undersigned, hereby swear that this is my own original work, and that it has not been submitted for review to any other organization or university but the University of Nairobi.

Signed: _____*NWM*_____Date: _____22/11/2022

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research project is dedicated to family, my Mother Martha Njenga, who has been a constant source of support, encouragement and who have loved me unconditionally and whom good examples have taught me to work hard for the things that I aspire to achieve, my sisters Esther Wangari and Ann Wanjiru for being my cheerleaders.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ANOVA	Analysis of Variance
CCC	Cash Conversion Cycle
CMA	Capital Markets Authority
DIO	Days Inventory Outstanding
DPO	Days Purchases Outstanding
DSO	Days Sales Outstanding
FCF	Free Cash Flow
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Square
ROA	Return on Assets
ROE	Return on Equity
SME	Small and Medium Enterprises
VIF	Variance Inflation Factors
WCM	Working Capital Management

ABSTRACT

The manufacturing industry is one of the significant sectors of Kenya's economic development. However, the manufacturing sector has witnessed a slow pace of industrial growth and weak performance by majority of the enterprises that has derailed the contribution to the Kenya's economy. In recent years, companies quoted in the manufacturing segment at NSE have posted mixed outcomes. The majority of the quoted manufacturing companies' market share reveals a drop in shares' prices leading to a reduction in the entities market capitalization. In addition, most companies such as the Flame Tree Group and the Unga group have recorded very strong negative percentages for their ROA and ROE. This study sought to investigate how working capital management influences the profitability of listed manufacturing firms at the NSE. The independent variable for the research was WCM measured using DIO, DSO and DPO. Leverage and firm size were the control variables while the dependent variable was profitability measured using ROA. The study was guided by free cash flow theory, trade off theory and liquidity preference theory. Descriptive research design was utilized in this research. The 9 Kenyan listed manufacturing firms as at December 2021 served as target population. The study collected secondary data for five years (2017-2021) on an annual basis from CMA and individual firms annual reports. Descriptive, correlation as well as regression analysis were undertaken and outcomes offered in tables followed by pertinent interpretation and discussion. The research conclusions yielded a 0.351 R square value implying that 35.1% of changes in listed manufacturing firms ROA can be described by the five variables chosen for this research. The multivariate regression analysis further revealed that individually, DIO, DSO and DPO exhibited negative and not significant effect on ROA of listed manufacturing firms as shown by (β=-0.265, p=0.082); (β=-0.026, p=0.857) and (β=-0.247, p=0.112) respectively. Firm size exhibited a positive and significant influence on ROA of Kenyan listed manufacturing firms (β=0.332, p=0.026) while leverage has a negative and significant effect on ROA of listed manufacturing firms (β=-0.317, p=0.030). The study recommends that management of listed manufacturing firms should focus on enhancing their asset base as this will enhance profitability. The study further recommends the need to for listed manufacturing firms to set debt limits as high debt levels might have a negative effect on profitability. The study recommends the need for further studies focusing on other listed firms at the NSE.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Finance theory holds that working capital directly influences profitability of any firm (Raheman & Nasr, 2017). Firms whose profits are consistently positive may face bankruptcy if their working capital management procedures are inefficient (Karger & Blumenthal, 2021). Excessive liquidity levels may contribute to subpar asset returns, while inadequate liquidity levels may present issues with running day-to-day operations. A business that has a lot of working capital has more flexibility in meeting its short-term commitments. The consequence of this is increased capacity of the firm to borrow and reduced default risk. This in turn leads to decreased cost of capital and enhances profitability (Wambugu, 2020).

Free cash flow theory, trade off theory and liquidity preference theory are key theories that guide an effective working capital management. The theories put an emphasis on the need to have an optimum working capital level. The free cash flow theory by Jensen (1986) was the anchor theory and it posits that when firms have made significant working capital and the firms do not have gainful investment projects available, firm managers tend to misuse the working capital, which consequently raises agency costs and reduces profitability. Trade off theory by Myers (1984) holds that firms maintain target working capital levels by lowering the risk of shortage or excess of working capital to enhance profitability. According to Keynes (1936) liquidity preference theory, efficient working capital management would lead to more stable economic cycles, increasing profits and making it possible to increase performance.

The manufacturing and allied firms that are listed on the Nairobi Securities Exchange (NSE) were the primary focus of this research. This choice arises as some listed manufacturing companies such as Mumias Sugar have experienced financial crisis which have been attributed to WCM (CMA, 2019). Other manufacturing firms listed at the NSE such as Eveready East Africa Ltd and Unga group have also had issues. There have been cases of listed companies' failures due to mismanagement of resources and managers' opportunistic behavior in mismanaging working capital and this has resulted in job loss, closure of companies and a negative effect on the Kenyan economy.

1.1.1 Working Capital Management

As described by Adeniji (2008), working capital management is the process by which a firm allocates its liquidity to satisfy its operational needs on a day-to-day basis. Working capital is the gap between a firm's short-term assets and its short-term commitments. The term working capital refers to the money a company has on hand to use toward producing goods or offering services (Akinsulire, 2008). According to Finkler (2010), working capital management is the efficient administration of a firm's short-term assets and liabilities. In the context of accounting, current assets and current liabilities refer to assets and obligations that may be used or converted to cash within a year.

The ability of an organization to perform its operational tasks is directly proportionate to the judgments it makes regarding the proper levels of both its current assets and its liabilities (Harris, 2005). Businesses that are thriving work hard to achieve the ideal combination of income and invested capital in their finances. Holding too little or too much inventory may prevent a company from fulfilling the requirements of its

customers in a satisfactory manner. This highlights the need of ensuring a sufficient level of working capital is available to keep profits where they need to be. These assertions show that WCM is crucial to business success and has a major influence on the effectiveness of operations both now and in the future (Akoto, Awunyo & Angwor, 2013).

In operationalization of WCM choices, the Cash Conversion Cycle (CCC) is often utilized. CCC refers to the time it takes to turn an investment in input resources into cash from credit sales, less the time it takes to collect payment for products or services sold. It is the point in the business cycle at when the firm's resources are committed to an activity (Deloof, 2013). According to the results of their liquidity analysis, businesses can be classified as either aggressive, which prioritizes working capital investment and financing policies with high risk and high return, moderate, which prioritizes matching or cautious, with lower risk and return, or in between, which prioritizes a balance between the two extremes (Weinraub & Visscher, 2018). In this study, CCC metrics of Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payable Outstanding (DPO) were used as measures of WCM.

1.1.2 Profitability

Profitability refers to the ability of a firm to make income out of its resources (Srivastava & Srivastava, 2016). Profitability is reflected in the firm's Return on Assets (ROA) and value added. Profitability is the survival indicator of a firm and acts as source of fund if ploughed back into the business (Baba & Nasieku, 2016). High profit can promote financial soundness and stability of firms, and too low profit might discourage customers from buying hence leading to collapse of the same institutions. Profitability depicts the overall status of firm's financial health over a

specific duration and also indicates firm's management efficiency in using its resources to maximize the wealth of shareholders (Naz, Ijaz & Naqvi, 2016).

The focus on profitability is of importance as it majorly touches on items that directly change financial statements or the company's reports (Nzuve, 2016). The company's profitability is the primary evaluation tool used by external stakeholders. Consequently, the company's profitability is used as a metric. How successfully the company meets its financial objectives determines its profitability. The profitability of a firm is the outcome of accomplishing both internal and external goals (Nyamita, 2017).

The commonly used ratio measures of profitability are Return on Assets (ROA) and Return on Equity (ROE) (Mukasinayobye & Mulyungi, 2018). ROA is the firm's total income to its total asset and it shows how a firm is able to make income through efficient utilization of its assets. ROA is adopted in this study as an indicator of firm's profitability because it gives the comprehensive measure of overall firm's profitability and it indicates the managerial efficiency in converting the firm's asset into total earnings. ROE is the amount of profit a firm earns in comparison to invested equity by shareholders. ROE reflects firm's management efficiency in using shareholder's funds (Marozva, 2017). As the most widely used indicator of profitability, ROA was used in the current study (Fatihudin & Mochklas, 2018).

1.1.3 Working Capital Management and Profitability

According to Jensen's (1986) free cash flow theory, when there is a positive FCF, the agency conflict between shareholders and management becomes more severe. The issue arises due to the fact that there is no motivation for management to approach the capital markets in order to obtain money when the company has a cash surplus. In

contrast to the restrictions imposed by capital providers if the funds had been raised on the capital market, the company's management is now free to make any spending and investment decisions they see fit. According to this theory, the more the FCF available to managers, the less the profitability of a firm.

Myers' (1984) trade-off hypothesis suggests that in order for businesses to maximize profits, they must find a middle ground between the benefits of liquidity and the risks of illiquidity. Deterioration in a company's liquidity might lead to a company failure to meet obligations when they fall due; hence, this argument points to a detrimental connection between WCM and profitability. The trade-off model explains how a company chooses the amount of cash on hand that is most suitable for its operations by analyzing the marginal costs and benefits associated with keeping that amount of money on hand (Shin & Soenen, 1998).

Keynes (1936) formulated liquidity preference hypothesis. According to this school of thought, investors will demand a higher premium for investments with a longer time to maturity and will favor liquid over illiquid assets. This theory assumes that all other factors will remain the same. The convenience of retaining cash is referred to as liquidity. At any particular point in time, a person or company may hold onto money for a variety of reasons. Even if this theory does not directly address the link between working capital management and profitability, it is plausible to assume that a firm with adequate WCM is more likely to record better profitability (Bitrus, 2011).

1.1.4 Manufacturing Firms Listed at the Nairobi Securities Exchange

The NSE is the regulatory body in Kenya for the securities market and is the only venue where Kenyan firms may be listed. Since its founding in 1954, this institution has expanded to become East and Central Africa's preeminent stock exchange. Shares

(equity) and bonds (debt and leverage instruments) are the types of securities that are exchanged the most often. Both types of instruments fall under the category of financial instruments. The organization encourages both savings and investment by facilitating the connection between lenders and borrowers. Currently, the company has a total of sixty-three companies listed with it, and these companies are represented throughout a variety of business areas (NSE, 2021). Out of the 63, a total of 9 are in the manufacturing and allied and they will be the focus of the current study.

In terms of WCM among manufacturing firms listed at the NSE, the firms have had WCM issues that led to receivership, statutory management, hostile takeovers, and government bailouts (Doan, 2020). Many companies in Kenya, including Unga Group, Eveready East Africa and Mumias Sugar Company, have been reporting losses year after year and they have owe huge debts to their creditors and suppliers. Studies are needed to establish whether WCM of non-financial listed businesses to account for these tendencies and whether it can be used to boost profitability among these firms.

In regards to profitability, Kenyan manufacturers have seen stagnation as well as declining profits over the last five years as a result of an inconsistent working environment (World Bank, 2020). Manufacturing sector in Kenya contributed barely 8.6 per cent to the GDP in the year 2020 indicating a decline from the previous year 2019 where it contributed 9.4% (KNBS, 2021). Working capital has been hypothesized to be a significant factor influencing profitability of firms and therefore need to investigate if indeed the profitability of listed manufacturing firms in Kenya can be explained by their ability to manage working capital.

1.2 Research Problem

The relationship between WCM and profitability has for long remained a contentious topic in academic circles. The results from prior studies show varied findings both in substance and form (Mathuva, 2015). There is little to no consensus among researchers on the matter. A number have found that there is a positive linear relationship between WCM and profitability in the absence of target WCM (Ashhari, 2021), others found a negative linear relationship (Yoon & Miller, 2022) and others have found a non-conclusive relation between WCM and profitability (Beneish, 2017).

Contextually, some listed manufacturing and allied companies such as Mumias Sugar have experienced financial crisis which have been attributed to WCM. Despite the government involvement to support Mumias Sugar, the company is not able to settle down farmer's debts hence loss of raw materials and significant drop in sugar production (CMA, 2019). Other manufacturing firms listed at the NSE such as Eveready East Africa Ltd and Unga group have also had issues. There have been cases of listed companies' failures due to mismanagement of resources and managers' opportunistic behavior in mismanaging working capital and this has resulted in job loss, closure of companies and a negative effect on the Kenyan economy. This motivates the current study to investigate whether WCM influences profitability of these firms.

The empirical research conducted throughout the world has shown conflicting findings on WCM and profitability. Louw, Hall and Pradhan (2022) examine and contrast the long-run relationship between the working capital management and profitability of South African firms. The study found evidence of a long-run

relationship between working capital management and the profitability of a firm. Okphiabhele, Ibitomi, Dada and Micah (2022) investigated the relationship between working capital management and profitability of industrial goods sector in Nigeria. The results revealed that current ratio was negatively and significantly related with ROA while, CCC was positively but insignificantly related with ROA. Mardones (2022) sought to establish the effect of working capital management on the financial performance of companies listed in Latin America countries. The results show the existence of a positive and significant but non-linear relationship between investments in working capital and firm performance.

Locally, Ahmed and Mwangi (2022) sought to investigate the influence of working capital management on the financial performance of SMEs in the Kenyan county of Garissa. According to the study's regression results, accounts receivable management had a minimal influence on ROA. Inventory management has a major detrimental impact on SMEs' ROA while cash management has a beneficial and considerable impact on the ROA of SMEs. Chasha, Kavele and Kamau (2022) appraise the linkage between working capital management, liquidity and financial performance in Kenya with a keen interest on small and medium enterprises. The review of literature revealed that there is a close connection between working capital management and profitability. Wanyoike, Onyuma and Kung'u (2021) examined the effect of working capital management practices on the operational performance of selected supermarkets in Kenya. Findings revealed that inventory and creditors management practices had a very low effect on the operational performance of supermarkets in Kenya.

Although there are previous studies in this area, it is evident that previous studies in this area have arrived at contradicting findings. The previous studies have also used various operationalization and methodologies to achieve their objectives and this might explain the differences in findings. Different contextual backgrounds might also explain the differences. The lack of agreement among prior researchers, both internationally and locally, was motivation enough to pursue additional research in this field. This study leveraged on these research gaps by providing answer to the research question: What is the effect of WCM on profitability of manufacturing firms listed at the NSE?

1.3 Research Objective

The objective of this research was to determine the effect of working capital management on profitability of manufacturing firms listed at the Nairobi Securities Exchange.

1.4 Value of the Study

The conclusions will aid investors as well as practitioners understand the relationship between the two variables. The findings will also help investors and practitioners better grasp the connection between a well-rounded management team, solid operations, vigilant WCM management, and extensive public confidence in the firm and their ability to maximize profitability.

Governments, stock exchanges, central banks, and economic agencies are all examples of policymakers; they may use the findings of this study to inform their decisions on WCM and profitability. It is possible that the authorities that make policy may utilize the study's suggestions as a basis for developing efficient WCM methods to increase profitability.

This research will also provide novel insights to ongoing theoretical discussions of the free cash flow theory, tradeoff theory and the liquidity preference theory. The findings of this study are significant because they contribute to the existing empirical literature on WCM and profitability. On the basis of the recommendations and proposals made for more study, other investigations could potentially be conducted.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theoretical underpinnings of WCM and profitability are explored in depth in this chapter. In addition, it summarizes prior empirical research, points out knowledge gaps, and concludes with a conceptual framework and hypotheses that propose a likely causal link between the investigated variables.

2.2 Theoretical Framework

This section covers the theories upon which the research of working capital management and dividend payout is based. The research examined free cash flow theory, tradeoff theory and liquidity preference theory.

2.2.1 Free Cash Flow Theory

This is the anchor theory for the current study and it was developed by Jensen (1986) where FCF was described as net cash flow less the requirements of projects having a positive net present value. Jensen is credited with creating the notion of free cash flow. According to Jensen (1986), a company's agency conflict with its shareholders is intensified when it generates positive free cash flow. The problem arises due to the fact that when a business has an excess of cash on hand, there is no need for the management of that business to utilize the capital markets in order to obtain further money. In contrast to the restrictions imposed by capital providers if the funds had been raised on the capital market, the company's management is now free to make any spending and investment decisions they see fit.

The free cash flow hypothesis has its critiques who believe it encourages short-term thinking by preventing investments that might result in long-term profits (Cornett,

Guo, Khaksari, & Tehranian, 2010). If organizations' development possibilities are constrained and the surplus cash cannot be spent safely elsewhere, shareholders would rather have it returned to them via share buyback plans or dividends. Shareholders are concerned that the growth opportunities for the firms may be limited. On the other side, management would fritter away the spare cash on investments that did not produce a return, on administrative redundancy, and on benefits for management. The free cash flow (FCF) hypothesis states that when companies generate large amounts of FCF but lack access to attractive investment opportunities, the management of such companies would likely misuse the FCF, driving up agency costs (Rochmah & Ardianto, 2020).

The FCF theory is relevant to the variables of the current study as it holds that when there is surplus FCF, managers' self-interest leads to wastefulness and inefficiency at work. This study aims to investigate this phenomenon. According to this concept, free cash flow has an influence on a company's profitability because it raises agency costs inside the business. This suggests a negative relationship between working capital and profitability, as predicted by the hypothesis.

2.2.2 Tradeoff Theory

Myers' (1984) trade-off theory was crucial in the development of WCM. The theory proposes that for a firm to thrive, it must strike a balance between the rewards of liquidity and the dangers of being too illiquid. Deterioration in a company's liquidity might lead to a situation where a firm is not able to meet its maturing obligations; hence, this argument points to a detrimental connection between the variables under investigation. It might be more detrimental to a company if they attempt to increase their earnings by decreasing their degree of liquidity (Shin & Soenen, 1998). The

trade-off model explains how a company chooses the amount of cash on hand that is most suitable for its operations by analyzing the marginal costs and benefits associated with keeping that amount of money on hand. As a consequence of the low returns generated by a disproportionate allocation of resources to these assets, a company with a high percentage of current assets as an asset class should expect a low return on investment.

Critics of the tradeoff theory point to its flawed static modeling and the theory's assumption that earnings and working capital are positively correlated (Awan and Azhar, 2014: Chen and Chen, 2011: Frank and Goyal, 2003). However, proponents of the theory have justified the assumption that significant degrees of knowledge inequality occur in the real world, which is central to the theory. They stress the theory's ability to explain why an optimum amount of working capital exists, one that reduces financing costs while maximizing an organization's actual gains, according to Sheikh and Wang (2011). They also emphasize the theory's capacity to account for an optimum amount of working capital.

The notion of risk and return in finance is a cornerstone of this theory, and it is important to keep it in mind. The current study does this by demonstrating how marginal costs and benefits are used by businesses to estimate the appropriate level of cash on hand. Alternative working capital management strategies may be described using the theory, as can the costs and benefits associated with taking either an aggressive or moderate approach to working capital management. The theory's applicability suggests this may be possible. The theory will provide light on why a company should maintain a healthy balance between its WCM levels and profitability, which is the focus of this research.

2.2.3 Keynesian Liquidity Preference Theory

The Keynesian liquidity preference theory, which Keynes (1936) developed, is widely regarded as the theoretical cornerstone upon which WCM rests. Because investors dislike being in possession of assets that are difficult to sell quickly, Keynes postulated that they would demand a higher return on investments that had a longer maturity period. He maintains that this preference will exist even if all other conditions remain the same. The convenience of retaining cash is referred to as liquidity. At any particular point in time, a person or company may hold onto money for a variety of reasons (Bitrus, 2011). According to the hypothesis, companies keep cash on hand or inventory in order to satisfy their transactional, speculative, precautionary, and compensatory reasons. The necessity of the company to have cash or money on hand in order to satisfy ongoing transactions and commercial exchanges is the driving force behind the transaction motivation. Cash on hand is essential for businesses, as it allows them to meet their immediate financial obligations and pay for things like transportation, labor, and other essentials. Due to the incentive of safety, companies must have cash on hand as insurance against emergencies. Any given company will put some money away in order to weather difficult times or capitalize on unexpected business opportunities. The purpose of keeping assets in liquid form for speculative purposes by businesses, with the expectation of profiting from future changes in interest rates or bond prices, is known as the speculative motivation (Pattiruhu & Paais, 2020).

Keynes's liquidity preference theory has been subjected to a significant amount of criticism for insinuating that the interest rate will be greater when the desire for liquidity is higher, and that it will be lower when the demand for liquidity is lower. During times of economic downturn, consumers have a great desire for liquidity,

while interest rates are at exceptionally low levels. In times of inflation, consumers have a low preference for liquid assets, despite the fact that interest rates are relatively high. These empirical findings contradict Keynes's theory. This is due to the fact that Keynes did not take into consideration different income levels. The contemporary determinate theory is able to provide a satisfactory explanation for this occurrence (Gill et al., 2010). In addition, Keynes operates on the assumption that the only two options available are illiquid bonds or liquid cash. As a result, we might refer to this theory as all or nothing hypothesis. In point of fact, there are many different kinds of investable assets, each of which has a different level of liquidity (Stewart, 2011).

The Keynesian theory of liquidity preference is relevant to the current study as it relates liquidity with ability of firms to be profitable. Managers of publicly listed corporations are obligated to safeguard sufficient working capital to allow the firm to achieve its main objective of increasing shareholder value. In any case, it is reasonable to assume that profitability will be achieved by corporations when they have achieved the target level of working capital management. Yet, it is possible to have too much cash on hand, and that might lead to lost investment opportunities. For this reason, firms should work to minimize both their liquidity costs and their illiquidity premiums. In order to maximize profits, businesses should practice working capital management.

2.3 Determinants of Profitability

There are a variety of factors that might influence how much profits a company makes. These criteria are useful across a variety of different economic subsectors. Management of working capital, financial leverage, profitability, business size,

ownership structure, regulatory limits, and macroeconomic variables are among the factors that fall under this category.

2.3.1 Working Capital Management

Finance theory holds that working capital directly influences profitability of any firm (Raheman & Nasr, 2017). Firms whose profits are consistently positive may face bankruptcy if their working capital management procedures are inefficient (Karger & Blumenthal, 2021). Excessive liquidity levels may contribute to subpar asset returns, while inadequate liquidity levels may present issues with running day-to-day operations. A business that has a lot of working capital has more flexibility in meeting its short-term commitments. The consequence of this is increased capacity of the firm to borrow and reduced default risk. This in turn leads to decreased cost of capital and enhances profitability (Wambugu, 2020).

Myers' (1984) trade-off hypothesis suggests that in order for businesses to maximize profits, they must find a middle ground between the benefits of liquidity and the risks of illiquidity. Deterioration in a company's liquidity might lead to a company failure to meet obligations when they fall due; hence, this argument points to a detrimental connection between WCM and profitability. The trade-off model explains how a company chooses the amount of cash on hand that is most suitable for its operations by analyzing the marginal costs and benefits associated with keeping that amount of money on hand (Shin & Soenen, 1998).

2.3.2 Financial Leverage

Based on the sort of debt as well as the manner in which finances are used by the finance officers, financial leverage can be beneficial or cause financial distress. Prudent usage and deployment of borrowed funds results in enhanced financial

performance (Salazar, Soto & Mosqueda, 2018). Essentially, debt financing is anticipated to have an effect on a company's working capital amounts, which in turn affects the degree of financial performance (Eckbo, 2008).

The trade-off theory includes the fact that using debt has tax benefits for a business. This is one of two sets of conclusions; other study has shown that higher leverage causes share values to fluctuate more when sensitive information is involved; a company's ultimate fate depends on issues that are kept secret from the general public (Nyamboga, Omwario & Muriuki, 2014).

2.3.3 Firm Size

A company's earnings from economies of scale are inversely correlated with its size. Due to significant economies of scale, firm operational activities have a higher efficiency the larger it is. Large organizations, irrespective of its size, risk losing control of both their operational and strategic activities, which would reduce their efficiency (Burca & Batrinca, 2015).

Large companies can spread their portfolios more and have more market power. They are also more likely to experience organizational waste if the business expands quickly. "The amount of invested cash flow greatly depends on the size of the firm. When determining a company's size, as per Almajali et al., (2012) it is crucial to take its workforce, property holdings, and sales volume into account.

2.4 Empirical Review

The purpose, methods, and conclusions of studies conducted both locally and abroad that indicate a connection between WCM and profitability are examined.

2.4.1 Global Studies

Louw, Hall and Pradhan (2022) examine and contrast the long-run relationship between the working capital management and profitability of South African firms in the retail and construction industries over the period 2004–2015. Techniques used in the study included the co-integration technique as well as a Granger causality test. The study found evidence of a long-run relationship between working capital management and the profitability of a firm in most of the cases. Further to this, the presence of both unidirectional and bidirectional causality between working capital management and profitability was found. In addition, results presented in this study indicate that working capital management has a greater impact on the profitability of retail firms than construction firms. Since OLS was used, a known methodological flaw emerged when it came time to deal with outlying cases. One would have been better served by a fixed or random effect.

Okphiabhele, Ibitomi, Dada and Micah (2022) investigated the relationship between working capital management and profitability of industrial goods sector in Nigeria. Firms in the industrial goods sector were selected and their data sourced from the Nigerian Stock Exchange Factbook (2011-2020) and seventy (70) observations were obtained. The study revealed from the regression analysis carried out that a positive linear relationship exists between the variables of working capital management and ROA. Current ratio was negatively and significantly related with ROA while, CCC was positively but insignificantly related with ROA. Due to the fact that this research was carried out in Nigeria, its results cannot be extrapolated to reflect any other settings. As a result, this study displays a contextual gap.

Mardones (2022) attempts to estimate and compare how investment in working capital impacts the financial performance of companies listed on the stock exchanges in Chile, Mexico, Peru, and Brazil for the years 2000 to 2018. This study uses panel data methodology, and the results show the existence of a positive and significant but non-linear relationship between investments in working capital and firm performance. However, there are mixed results for different countries and industries that could be explained by macroeconomic variables that favour access to financing for such investments. Furthermore, the results show that investments in working capital perform better for larger companies than smaller companies. This study presents a contextual gap as it was conducted among Latin America countries which operate in a different economic and social environment from Kenya.

Using a sample of companies that were listed on the London Stock Exchange between the years 1991 and 2015, Xu et al. (2021) investigate the link between a company's profitability and the amount of working capital it maintains as well as the amount of dividends it pays out. The findings indicate that unadjusted profits have a positive and substantial effect on dividend payments made by companies, however dividend-adjusted earnings do not have a significant effect on dividend payments made by these companies. This finding contradicts the hypothesis that dividend-adjusted earnings would have such an influence. In addition, they discover that there is a link in the form of an inverted U between the amount of working capital and the dividend distribution. These results give more cohesive evidence between the profits and dividend payment, and they underline the need of taking into consideration working capital as a driver when creating a strategy for the dividend distribution of a corporation. Because the emphasis of this research was on working capital as defined

by current ratio, it does not address the relationship between WCM and the profitability of firms. This leaves a conceptual vacuum.

Altaf and Ahmad (2019) undertook a study on the association amongst working capital financing and firm performance in India spanning 2007- 2016. In arriving to the results, the study used a two-step generalized method of moments approach showed that firms that are less financially constrained are able to finance more working capital by short term debt percentage. This study utilized ordinary least square while the current study will utilize a panel data methodology presenting methodological gap. OLS may result to incorrect parameter estimates as it fails to take into consideration of time variance factor in the model. The proposed study will employ dynamic panel model.

2.4.2 Local Studies

Ahmed and Mwangi (2022) sought to investigate the influence of working capital management on the financial performance of SMEs in the Kenyan county of Garissa. A sample of 149 SMEs was selected using simple random sampling. Secondary data was evaluated using quantitative methods. According to the study's regression results, accounts receivable management had a minimal influence on return on assets. Inventory management has a major detrimental impact on SMEs' financial performance. Cash management has a beneficial and considerable impact on the performance of SMEs. This study presents a conceptual gap as some aspects of WCM such as payables management were left out.

Chasha, Kavele and Kamau (2022) appraise the linkage between working capital management, liquidity and financial performance in Kenya with a keen interest on small and medium enterprises. The analysis is based on the desk review of the

literature surrounding the stated subject area. One of the observations that were made was that poor working capital management can lead to collapse of even the most profitable corporations. Most of the literature analyzed clearly observes that, there is a close connection between working capital management and profitability. Liquidity, firm size, leverage and other financial ratios are also important factors which form part of working capital management. This study was a review of literature and therefore lacks empiricism.

Wanyoike, Onyuma and Kung'u (2021) examined the effect of working capital management practices on the operational performance of selected supermarkets with the national network in Kenya focusing on inventory and creditors' management as well as receivables and liquidity practices. Guided by descriptive research design, 52 branch managers were sampled from four major supermarkets using both the stratified and random sampling methods. Data were analyzed using both descriptive and inferential statistical analysis. Findings revealed that inventory and creditors management practices had a very low effect on the operational performance of supermarkets in Kenya. The study presents a methodological gap as it utilized primary data and therefore need for a study utilizing secondary data to confirm the findings.

Gachau (2021) 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. Multivariate regression was used for analysis. From the regression analysis, the average payment period showed a positive effect on profitability. The research also revealed that cash conversion cycle has no significant effect on profitability of pharmaceutical manufacturers in Kenya.

The research further discovered that inventory turnover days had a negative but insignificant effect on profitability of pharmaceutical firms in Kenya. This study reveals a contextual gap as the focus was pharmaceutical manufacturing firms leaving a gap on other manufacturing firms.

Muigai and Nasieku (2021) sought to establish how cash management, inventory management and accounts receivables management effects financial distress of non-financial firms listed at Nairobi Securities Exchange. The study adopted longitudinal research design and collected secondary data over ten years period (2009-2018) from a census of the 40 non-financial firms listed in Nairobi Securities exchange. Inferential statistical analysis was undertaken using the F and t-tests at 95% confidence level. The study found that cash management had a positive and significant effect on the firms' distress index. Further, the study revealed that inventory holding period was negatively and significantly related to the firms' financial distress index. The study however depicted a negative but insignificant relationship between receivables period and financial distress. The study presents a conceptual gap as the focus was on financial distress which is a different concept from profitability.

2.5 Conceptual Framework

Working capital management, as measured by Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payable Outstanding, served as the investigation's independent variable (DPO). Company size and leverage made up the control variables. Profitability serves as the dependent variable, which was determined by the ratio of net income to total assets.

Independent variables   **Dependent variable**

| Working capital management
DIO
• (Inventory/COGs)*365
DSO
• (Receivables/sales)*365
DPO
• (Payables/COGs)*365 |

| Profitability
Net income/ total assets |

| Control Variables
Firm size
• Natural log of total assets
Financial leverage
• Total debt to total assets |
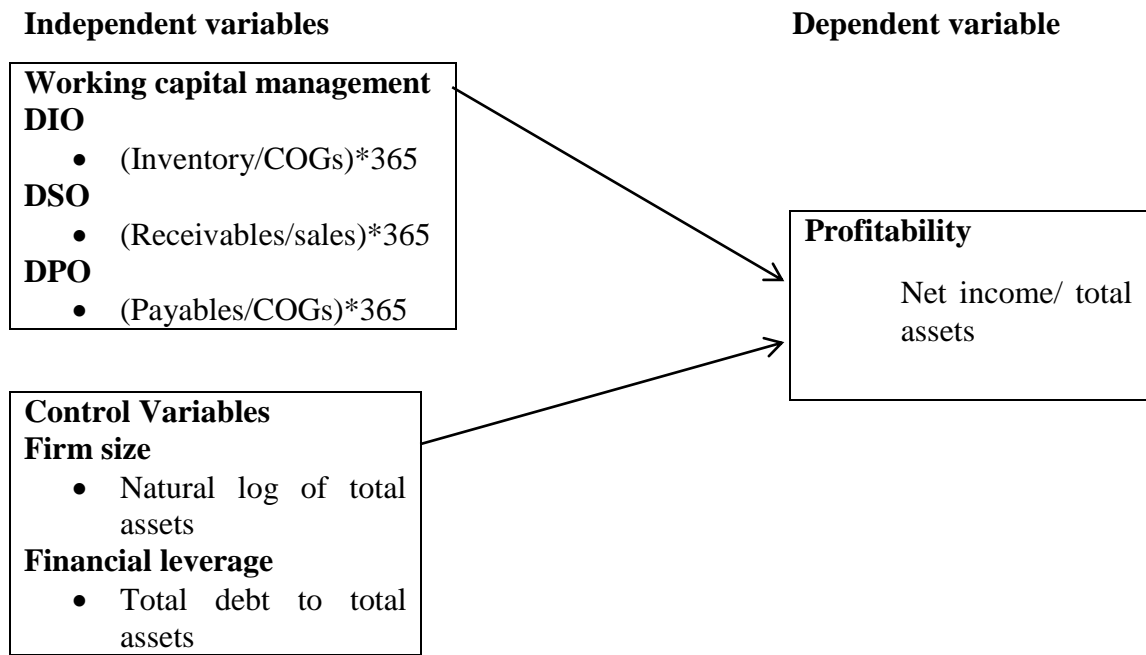
Figure 2.1: Conceptual Model

Source: Researcher (2022)

2.6 Summary of the Literature Review

Theoretical relationships between WCM and profitability have been modeled in a variety of ways. The free cash flow theory, the trade-off theory, and the Keynesian liquidity preference theory are all covered. This segment too covers the primary factors of profitability. On WCM and profitability, both local and foreign researches have been conducted.

The emprical studies indicated the existence presence of conceptual, methodological, as well as contextual gaps. Differences in the operationalization of WCM revealed conceptual gaps. Methodological shortcomings in empirical studies were exposed by the lack of agreement on standard research practices. Variations in study settings exposed a number of contextual gaps, which were uncovered during an examination of empirical studies. These discrepancies suggest that further research is needed into WCM and the connections with profitability, and they also show that there is no

empirical consensus on these hypothesized relationships. However, these gaps have also highlighted that there is a need for more research. The goal of the study was to make a contribution in this area.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methods that were used to determine whether and how WCM affects the profitability of manufacturing firms listed on the NSE. There is a strong focus on research methodology, data collection, and statistical analysis.

3.2 Research Design

A descriptive approach was used for this investigation. Examining the relationship that exists between WCM and profitability was the focus of this descriptive study's main objective. Given that the researcher was primarily interested in the phenomenon's fundamental characteristics, this approach was appropriate (Khan, 2008). It was also effective for defining the phenomena' interconnections. This design also represented the variables precisely and legitimately, yielding sufficient data to answer the research objectives (Cooper & Schindler, 2014).

3.3 Population

A population is comprised of all of the observations that have been gathered from a collection of interesting objects that have been specified in an investigation (Burns & Burns, 2008). The 9 manufacturing companies that are listed on the NSE as of December 31st, 2021 made up the research population for this study (Appendix II). Since the population was relatively small, the study was a census.

3.4 Data Collection

Annual reported financials of manufacturing businesses listed on the NSE between 2017 and 2021 was collected through publically available sources and entered into data collecting forms as the only source of information for this study. Specific data

collected included net income and total assets for profitability; inventory and cost of goods sold for DIO; receivables and total sales for DSO; payables and cost of goods sold for DPO; total assets for firm size; and total debt and total assets for financial leverage.

3.5 Data Analysis

SPSS version 24 was used to do an analysis on the data collected. Charts and tables were used to quantitatively display the results. Together, the gathered descriptive statistics and the standard deviation served as the basis for measurements of central tendency and dispersion for each variable. Both correlation and regression played a role in the construction of inferential statistics. A panel regression linearly determined the relation between dependent as well as independent variables.

3.6.1 Diagnostic Tests

The diagnostic tests performed are outlined in Table 3.1

Table 3.1: Diagnostic Tests

Assumption	Description	Test	Interpretation	Treatment
Normality	To verify normal distribution, the test is conducted	Shapiro–Wilk test	If p values are above 0.05, the variables are normally distributed	application of square roots or logs to non-normality
Multicollinearity	The phenomenon known as multicollinearity occurs when there is a connection between many variables, which then leads to the standard errors distorting the regression analysis.	VIF Test	Multicollinearity exist where the VIF > 10	Eliminate highly correlated variables.

Heteroscedasticity	to determine whether the model's or the errors' variance is different for each observation	Breusch–Pagan test	Heteroscedasticity exist where the p-value $p<0.05$)	Use Natural log of variables
Autocorrelation	To determine the value of a single variable by considering other variables that are connected to it.	Breusch-Godfrey test.	If p-values are lower than 0.05, autocorrelation is present.	Hildreth-Lu Procedure
Stationarity test	In order to evaluate whether or not a time series variable has a unit root and whether or not it is stationary	ADF test	If p values are below 0.05, unit roots exist.	Use Natural log of variables

3.6.2 Analytical Model

The equation that is shown below was relevant:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \varepsilon_{it}$$

Where: Y_{it} = Profitability measured as the ratio of net income to total assets

β_0 = y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = are the regression coefficients

X_{1it} = DIO measured as (Inventory/COGs)*365

X_{2it} = DSO measured as (Receivables/sales)*365

X_{3it} = DPO measured as (Payables/COGs)*365

X_{4it} = Firm size as measured by total assets natural logarithm

X_{5it} = Financial leverage measured as ratio of total debt to total assets

ε = error term

3.6.3 Tests of Significance

The relevance of the overall model as well as the variable was determined via the use of parametric tests. To determine whether the model was useful, the F-test was used but to determine if any given variable is statistically significant, the t-test was used.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

4.1 Introduction

This chapter presents descriptive statistics and the results and interpretations of various tests namely; test of normality, Multicollinearity, heteroskedasticity tests, autocorrelation and stationarity test. The chapter also presents the results of Pearson correlation and regression analysis.

4.2 Descriptive Statistics

This section presents the descriptive findings from the collected data. The descriptive results include mean and standard deviation for each of the study variables. The analyzed data was obtained from CMA and individual firms annual reports for a period of 5 years (2017 to 2021). The number of observations is 44 as Mumias Sugar did not have data for the year 2021. The results are as shown in Table 4.1

Table 4.1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	44	-1.2214	.3673	.026368	.2812690
DIO	44	2.5000	148.4500	57.570909	48.7157031
DSO	44	27.9400	159.2500	77.083864	38.2433565
DPO	44	30.9600	432.5600	144.014318	109.5227653
Firm size	44	4.9	7.9	6.580	.8307
Leverage	44	.0	1.9	.539	.3597
Valid N (listwise)	44				

Source: Field Data (2022)

4.3 Diagnostic Tests

The most suitable linear fair estimators were sampled before undertaking linear regression (BLUE). This study employed normality, homoscedasticity, multiple-collinearity, and autocorrelation tests. The Shapiro-Wilk test was used to estimate the

normality of data utilized in the analysis. The Breusch-Pagan test for homoscedasticity was employed to decide if the independent variables employed in the study have constant variance, while to establish multi-collinearity, Variance Inflation Factors (VIF) statistics were embraced. Autocorrelation was tested using the Durbin-Watson d statistic. Stationarity test were carried out using Levin-Lin Chu unit root test.

4.3.1 Normality Test

The normality of data can be tested using a variety of methods. The most commonly utilized approaches include the Shapiro–Wilk test, Kolmogorov–Smirnov test, skewness, kurtosis, histogram, P–P Plot, box plot, Q–Q Plot, mean and standard deviation. The most extensively used normality tests are the Kolmogorov–Smirnov test and the Shapiro–Wilk test. The Shapiro–Wilk test is better for small sample sizes (n <50 samples), while it can also be used on more extensive samples selections, whereas the Kolmogorov–Smirnov test is better for n>50 samples. As a result, the study used the Kolmogorov–Smirnov test as the numerical method of determining normality. For both of the above tests, the null hypothesis says that the data are obtained from a normal distribution population. When P-value is below 0.05, null hypothesis is rejected and the data are said to be not normally distributed.

Table 4.2: Test for Normality

	Kolmogorov-Smirnov	P-value
ROA	6.305	0.303
DIO	4.429	0.405
DSO	2.764	0.416
DPO	3.154	0.328
Firm size	4.240	0.401
Leverage	4.146	0.302

Source: Research Findings (2022)

From Table 4.2 results, all the study variables have a p value more than 0.05 and therefore were normally distributed.

4.3.2 Multicollinearity Test

Multicollinearity occurs when the independent variables in a regression model are significantly linked. Multicollinearity was assessed using the VIF and tolerance indices. When the VIF value is higher than ten and the tolerance score is less than 0.2, multicollinearity is present, and the assumption is broken. The VIF values are less than 10, indicating no problem with multicollinearity.

Table 4.3: Multicollinearity

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
DIO	0.782	1.279
DSO	0.535	1.869
DPO	0.601	1.664
Firm size	0.598	1.672
Leverage	0.621	1.610

Source: Research Findings (2022)

4.3.3 Heteroscedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated using the Ordinary Least Squares (OLS) method(s). Homoscedasticity refers to constant variance, whereas heteroscedasticity refers to non-constant variance (Field, 2009). The study used the Breusch-Pagan/Cook-Weisberg test to check if the variation was heteroskedastic. The null hypothesis implies constant variance, indicating that the data is homoscedastic. The results are as shown in Table 4.4.

Table 4.4: Heteroscedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(1)	=	0.3422
Prob > chi2	=	0.1631

Source: Research Findings (2022)

Table 4.4 reveals that the null hypothesis was not rejected since the p-value was 0.1631, which was statistically significant (p>0.05). As a result, the dataset had homoscedastic variances. Since the P-values of Breusch-Pagan's test for homogeneity of variances were greater than 0.05. The test therefore confirmed homogeneity of variance. The data can therefore be used to conduct panel regression analysis.

4.3.4 Autocorrelation Test

Serial correlation, also known as autocorrelation, makes the standard errors of coefficients appear to be less than in linear panel data models, resulting in higher R-squared and erroneous hypothesis testing Autocorrelation was tested using Durbin-Watson test. Error terms of regression variables are uncorrelated if Durbin-Watson test is equivalent to 2 (i.e. between 1 and 3). The closer the value to 2 is; the better. The results are as shown in Table 4.5.

Table 4.5: Test of Autocorrelation

Durbin Watson Statistic
2.137

Source: Research Findings (2022)

The results in Table 4.7 show that the Durbin-Watson statistic was 2.137. This shows that the error terms of regression variables are uncorrelated as the Durbin-Watson statistic was close to 2.

4.3.5 Stationarity Test

The research variables were subjected to a panel data unit-root test to establish if the data was stationary. The unit root test was Levin-Lin Chu unit root test. At a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis is that every panel has a unit root, and the alternative hypothesis is that at least one panel is stationary. Table 4.6 shows Levin-Lin Chu unit root test results.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	**Statistic**	**p value**	**Comment**
ROA	6.4722	0.0000	Stationary
DIO	7.3975	0.0000	Stationary
DSO	6.2126	0.0000	Stationary
DPO	8.2031	0.0000	Stationary
Firm size	7.8718	0.0000	Stationary
Leverage	6.8447	0.0000	Stationary

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that the data is stationary at a 5% level of statistical significance since the p-values all fall below 0.05.

4.4 Correlation Results

To determine the degree and direction of link between each predictor variable and the response variable, correlation analysis was carried out. The correlation findings in Table 4.7 display correlation nature between the research variables in relation to magnitude and direction. The correlation results disclose that DIO and ROA have a

negative as well as significant correlation (r=-0.399) at 5% significance level. DSO and DPO had negative but not significant relation with ROA as shown by p values greater than 0.05. The results also disclose that firm size has a moderate positive and significant link with ROA of Kenyan listed manufacturing firms (r=0.414) at 5 percent significance level. The relationship between leverage and ROA was negative and significant (r=0.345) at 5 % significance level.

Table 4.7: Correlation Results

		ROA	DIO	DSO	DPO	Firm size	Leverage
ROA	Pearson Correlation	1					
	Sig. (2-tailed)						
DIO	Pearson Correlation	-.399[**]	1				
	Sig. (2-tailed)	.007					
DSO	Pearson Correlation	-.246	-.090	1			
	Sig. (2-tailed)	.108	.563				
DPO	Pearson Correlation	-.212	.381[*]	-.301[*]	1		
	Sig. (2-tailed)	.167	.011	.047			
Firm size	Pearson Correlation	.414[**]	-.090	-.250	-.080	1	
	Sig. (2-tailed)	.002	.561	.102	.606		
Leverage	Pearson Correlation	-.344[*]	.210	.019	-.123	.192	1
	Sig. (2-tailed)	.022	.170	.905	.428	.212	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
c. Listwise N=44

Source: Research Findings (2022)

4.5 Regression Results

To determine the extent to which ROA is described by the chosen variables, regression analysis was used. In Table 4.8, the regression's findings are displayed.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.593[a]	.351	.266	.2410227
a. Predictors: (Constant), Leverage, DSO, DIO, Firm size, DPO				

Source: Research Findings (2022)

From the conclusions as epitomized by the R^2, the studied independent variables explained variations of 0.351 in ROA among Kenyan listed manufacturing firms. This suggests that other factors not incorporated in this study account for 64.9% of the variability in ROA among Kenyan listed manufacturing firms, while the five variables account for 35.1% of the variations.

Table 4.9: ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	1.194	5	.239	4.112	.004[b]
1	Residual	2.207	38	.058		
	Total	3.402	43			
a. Dependent Variable: ROA						
b. Predictors: (Constant), Leverage, DSO, DIO, Firm size, DPO						

Source: Research Findings (2022)

The data had a 0.004 significance level, according to Table 4.9's ANOVA results, which suggests that the model is the best choice for drawing conclusions about the variables.

Table 4.9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.471	.358		1.316	.196
	DIO	-.002	.001	-.265	-1.787	.082
	DSO	-.009	.048	-.026	-.182	.857
	DPO	-.001	.000	-.247	-1.627	.112
	Firm size	.002	.001	.332	2.316	.026
	Leverage	-.248	.110	-.317	-2.259	.030
a. Dependent Variable: ROA						

Source: Research Findings (2022)

The coefficient of regression model was as below;

$Y = 0.471 + 0.332X_1 - 0.317X_2$

Where:

Y = ROA; X_1 = Firm size; X_2 = Leverage

4.6 Discussion of Research Findings

The objective of this research was to establish the effect of WCM on ROA of Kenyan listed manufacturing firms. The study utilized a descriptive design while population was the 9 Kenyan listed manufacturing firms. Complete data was obtained from 8 firms as Mumias Sugar did not have financial results for 2021. The research utilized secondary data which was gotten from CMA and individual firms annual reports. The specific attribute of WCM considered were DIO, DSO and DPO. The control variables were leverage and firm size. Both descriptive as well as inferential statistics were used to analyze the data. The results are discussed in this section.

Multivariate regression results revealed that the R square was 0.351 implying 35.1% of changes in ROA of listed manufacturing firms are due to the five variables alterations selected for this study. This means that variables not considered explain 64.9% of changes in ROA. The overall model was also statistically significant as the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, DIO, DSO and DPO exhibited negative and not significant effect on ROA of listed manufacturing firms as shown by (β=-0.265, p=0.082); (β=-0.026, p=0.857) and (β=-0.247, p=0.112) respectively. Firm size exhibited a positive and significant influence on ROA of Kenyan listed manufacturing firms (β=0.332, p=0.026) while leverage has a negative and significant effect on ROA of listed manufacturing firms (β=-0.317, p=0.030).

These conclusions concur with those of Wanyoike, Onyuma and Kung'u (2021) who examined the effect of working capital management practices on the operational performance of selected supermarkets with the national network in Kenya focusing on inventory and creditors' management as well as receivables and liquidity practices. Guided by descriptive research design, 52 branch managers were sampled from four major supermarkets using both the stratified and random sampling methods. Data were analyzed using both descriptive and inferential statistical analysis. Findings revealed that inventory and creditors management practices had a very low effect on the operational performance of supermarkets in Kenya.

The research findings also concur with Gachau (2021) who 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. Multivariate regression was used for analysis. From the regression analysis, the average payment period showed a positive effect on profitability. The research also revealed that cash conversion cycle has no significant effect on profitability of pharmaceutical manufacturers in Kenya. The research further discovered that inventory turnover days had a negative but insignificant effect on profitability of pharmaceutical firms in Kenya.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The key aim of the research was determining how WCM influences the profitability of Kenyan listed manufacturing firms. This section includes a summary of the findings from the previous chapter as well as the conclusions and limitations of the study. Additionally, it makes recommendations for potential policy measures. The chapter provides recommendations for further research

5.2 Summary

The objective of this research was to establish the effect of WCM on ROA of Kenyan listed manufacturing firms. The study utilized a descriptive design while population was the 9 Kenyan listed manufacturing firms. Complete data was obtained from 8 firms as Mumias Sugar did not have financial results for 2021. The research utilized secondary data which was gotten from CMA and individual firms annual reports. The specific attribute of WCM considered were DIO, DSO and DPO. The control variables were leverage and firm size. Both descriptive as well as inferential statistics were used to analyze the data.

The correlation results disclose that DIO and ROA have a negative as well as significant correlation at 5% significance level. DSO and DPO had negative but not significant relation with ROA as shown by p values greater than 0.05. The results also disclose that firm size has a moderate positive and significant link with ROA of Kenyan listed manufacturing firms at 5 percent significance level. The relationship between leverage and ROA was negative and significant.

Multivariate regression results revealed that the R square was 0.351 implying 35.1% of changes in ROA of listed manufacturing firms are due to the three variables alterations selected for this study. This means that variables not considered explain 64.9% of changes in ROA. The overall model was also statistically significant as the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, DIO, DSO and DPO exhibited negative and not significant effect on ROA of listed manufacturing firms as shown by (β=-0.265, p=0.082); (β=-0.026, p=0.857) and (β=-0.247, p=0.112) respectively. Firm size exhibited a positive and significant influence on ROA of Kenyan listed manufacturing firms (β=0.332, p=0.026) while leverage has a negative and significant effect on ROA of listed manufacturing firms (β=-0.317, p=0.030).

5.3 Conclusions

The research intention of the research was establishing correlation between WCM and Kenyan listed manufacturing firms' profitability. The study concludes that DIO, DSO and DSO have no significant effect on profitability of listed manufacturing firms. The research also comes to the conclusion that WCM as measured by these three variables does not significantly affect the profitability of Kenya's listed manufacturing firms.

The research outcomes further depicted that firm size exhibited a positive as well as significant influence on profitability which might mean that an increase in asset base of a listed firm leads to enhanced profitability. This can be explained by the fact that listed manufacturing firms with more assets are likely to have developed structures to monitor the internal operations of a firm leading to better profitability. Bigger listed

manufacturing firms are also likely to have better governance structure which can also explain the high profitability associated with firm size.

The findings designated that leverage had a negative and significant effect on profitability of listed manufacturing firms. This may imply that listed manufacturing firms with high debt levels tend to have low levels of profitability. This can be clarified by the sense that debt comes with some covenants and it also imply closer monitoring of management actions which negatively affects the profitability of listed manufacturing firms.

5.4 Recommendations for Policy and Practice

The study revealed that firm size possesses a significant positive effect on profitability of listed manufacturing firms. The study recommends the need for listed manufacturing firms to enhance their asset base by allocating more funds in investing activities as this will lead to a higher profitability in the long run. Policy makers ought to develop policies on how listed manufacturing firms can enhance their asset base in the most effective way.

The study's results indicate that leverage significantly and negatively affected profitability. Hence, the research commends that listed manufacturing firms ought to come up with an optimal debt level as too much debt can be detrimental to profitability. This can be accomplished by having policies and guidelines on the amount of debt that a firm can accumulate for a given period of time.

5.5 Limitations of the Study

The focus was on various factors which are thought to influence profitability of Kenyan listed manufacturing firms. The research focused on five explanatory variables in particular. However, in certainty, there is presence of other variables

probable to influence ROA of listed manufacturing firms including internal like corporate governance attributes and dividend policy whereas others are beyond the control of the firm like interest rates as well as political stability.

In this study, a five-year period from 2017 to 2021 was selected. There is no proof that comparable results will remain the same across a longer time frame. Moreover, it is impossible to predict if the same outcomes would persist until 2021. Given that additional time contains instances of big economic transitions like recessions and booms, it is more dependable.

The quality of the data was the main restriction for this study. It is not possible to conclusively conclude that the study's findings accurately reflect the current reality. It has been presumed that the data utilized in the study are accurate. Due to the current conditions, there has also been a great deal of incoherence in the data measurement. The study made use of secondary data rather than primary data. Due to the limited availability of data, only some of the ROA drivers have been considered.

The data analysis was performed using regression models. Because of the limitations associated with using the model, like inaccurate or erroneous findings resulting from a change in the variable value, the researchers would not be able to generalize the conclusions precisely. A regression model cannot be performed using the prior model after data is added to it.

5.6 Suggestions for Further Research

This study focused on Kenyan listed manufacturing firms. Further studies can focus on a wide scope by covering other listed firms in Kenya to back or contradict the results of the current study. Further, this study focused on CCC as a measure of

WCM. Future studies should focus on other WCM measures that were not considered in this study.

The current research scope was restricted to five years; more research can be done past five years to determine whether the results might persist. Thus, inherent future studies may use a wider time span, that can either support or criticize the current research conclusions. The scope of the study was additionally constrained in terms of context where listed manufacturing firms were examined. Further studies can be extended to other listed firms to establish if they complement or contradict the current study findings. Researchers in the East African region, the rest of Africa, and other global jurisdictions can too perform the research in these jurisdictions to ascertain if the current research conclusions would persist.

The research only used secondary data; alternate research may use primary data sources such in-depth questionnaires and structured interviews given to practitioners and stakeholders. These can then affirm or criticize the results of the current research. This study used multiple linear regression and correlation analysis; future research could use other analytic techniques such factor analysis, cluster analysis, granger causality, discriminant analysis, and descriptive statistics, among others.

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APPENDICES

Appendix I: Research Data

COMPANY	Year	Firm size	Leverage	DIO	DSO	DPO	ROA
BAT	2021	7.341	0.5571	67.3500	51.2600	86.2500	0.1781
	2020	7.263	0.4924	84.0700	53.7500	89.8400	0.2227
	2019	7.251	0.8749	88.8900	47.5500	101.7200	0.1878
	2018	7.267	0.8488	73.9200	50.6800	97.4500	0.2622
	2017	7.271	0.4892	58.2900	44.4200	72.9900	0.2664
Carbacid	2021	6.545	0.1072	8.9000	36.5400	36.9500	0.0777
	2020	6.528	0.0970	9.1900	34.5700	30.9600	0.0866
	2019	6.519	0.1158	8.7000	47.4500	41.0100	0.1002
	2018	6.489	0.1323	8.1700	46.7100	42.7100	0.1219
	2017	6.473	0.1656	11.2600	45.7200	40.7800	0.1325
Eveready	2021	5.395	0.5574	137.5600	71.2300	432.5600	-1.2214
	2020	5.759	0.2372	139.3100	67.1900	424.3100	-0.1947
	2019	5.888	0.0119	131.9500	62.6000	319.2500	0.3531
	2018	6.035	0.0085	139.6300	66.8300	353.8000	-0.1809
	2017	6.179	0.0360	108.7900	70.8900	304.7900	0.3070
Unga Group	2021	7.027	0.4312	34.5200	94.7800	103.8600	0.0512
	2020	6.997	0.4353	32.2500	98.6100	109.8700	0.0789
	2019	6.976	0.5064	32.6600	109.2600	99.0500	-0.0007
	2018	6.922	0.4194	28.0600	80.7200	112.8300	0.0609
	2017	6.938	0.3824	27.5300	80.8300	63.0400	0.0717
BOC Kenya	2021	6.299	0.2776	3.8000	159.2500	40.3600	0.0108

COMPANY	Year	Firm size	Leverage	DIO	DSO	DPO	ROA
	2020	6.331	0.2908	4.5100	158.3200	39.5200	0.0151
	2019	6.348	0.2770	6.0000	153.6300	41.4500	0.0104
	2018	6.347	0.2366	2.5000	154.9000	167.5800	0.0346
	2017	6.366	0.2615	2.5000	154.9000	167.5800	0.0295
EABL	2021	7.940	1	18.2300	29.3600	259.3700	0.1323
	2020	7.853	0.8365	17.8900	27.9400	205.3800	0.0897
	2019	7.824	0.8202	22.6300	36.3400	231.5000	0.1159
	2018	7.791	0.8878	12.5500	38.5300	247.0300	0.1642
	2017	7.826	0.7937	15.1700	46.6600	325.3100	0.1190
Mumias	2020	7.197	1.9142	137.2500	117.5600	56.3600	-0.9623
	2019	7.382	0.9686	131.8200	115.7300	53.0700	-0.2824
	2018	7.428	0.7179	138.6300	101.5500	31.2000	0.0555
	2017	7.310	0.7097	118.6300	119.8900	48.7400	-0.2273
FTG Holdings	2021	6.358	0.5366	69.8500	54.2100	206.3100	0.0197
	2020	6.265	0.5580	101.3500	53.8400	195.2200	0.0184
	2019	6.226	0.5648	70.3400	57.4500	217.1500	0.0237
	2018	6.182	0.5272	65.9100	51.6600	188.7300	0.0953
	2017	6.123	0.5613	148.4500	44.1400	193.0800	0.1348
Kenya Orchards	2021	5.134	0.7601	49.6500	78.6500	93.2100	0.0620
	2020	5.059	0.7884	55.3100	107.6500	96.6200	0.0776
	2019	5.035	0.8577	42.0400	89.2800	71.4500	0.0530
	2018	4.951	0.8909	32.6300	77.7600	87.7200	0.0422
	2017	4.896	0.9235	34.4800	100.9000	108.6700	0.3673

Appendix II: Manufacturing Firms Listed at the NSE

1) A. Baumann & Co Ltd

2) B.O.C Kenya Ltd

3) British American Tobacco Kenya Ltd

4) Carbacid Investments Ltd

5) East African Breweries Ltd

6) Eveready East Africa Ltd

7) Kenya Orchards Ltd

8) Mumias Sugar Co. Ltd

9) Unga Group Ltd

Source: NSE (2022)