

**EFFECT OF WORKING CAPITAL MANAGEMENT ON
FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN
KENYA**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
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DECLARATION

This project is my original work and has not been presented for a degree in any other university.

Sign _____

Date _____

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This project has been submitted for review with our approval as University supervisors.

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DEDICATION

I dedicate this piece of work to my father Mzee Francis Nyabenge for his wise encouragement to pursue the MBA program and my late mum Lorna Nyabenge whose continuous support for personal development in every sphere of life I will remember for ages.

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ABSTRACT

The main purpose of this research was to establish the effect of working capital management on financial performance of manufacturing firms in Kenya. In addition, this study sought to determine the effect of specific working capital components on profitability of manufacturing firms in Kenya. This study employed panel data methodology and a population constituting nine manufacturing firms in Kenya was examined. The data for the study was derived mainly from secondary data sources including Capital Markets Authority library and Nairobi Securities Exchange library. The results from regression analysis indicated that only 26% of variations on financial performance of manufacturing firms could be attributed to working capital management and the remaining portion being influenced by other factors outside the scope of this study. This study further revealed that working capital variables accounts collection period, inventory conversion period and average payables period were inversely related to financial performance as was measured by Return on Assets. This implies that effective working capital management policies may be implemented to improve financial performance of manufacturing firms. This study utilized a number of regression models with each model regressing each working capital variable against the Return on Asset. An overall regression equation that constituted all the relevant working capital variables subject to a set of control variables was used to study the variations in return on assets. The various regression models produced different results each time the regression was conducted with individual working capital variables. Results for this study was obtained using SPSS tool. Multiple correlation analysis was performed with each of the unique models to examine the significance of relationship amongst the various independent variables and the dependent variable. With all the variables incorporated in one model, multiple correlation co-efficient was observed to be 63%. The raw data obtained from financial reports of the firms under study were analyzed using Ms Excel spreadsheets after which regression analysis was performed with the aid of SPSS.

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ABBREVIATIONS

NSE Nairobi Securities Exchange

CMA Capital Markets Authority

SPSS Statistical Package for Social Sciences

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

For a long time research on corporate finance has traditionally revolved around long term financial decisions with emphasis on investments, dividend policies, capital structure or firm valuation. Current assets and current liabilities have however proven to be crucial components of total assets and must therefore be carefully analyzed. Management of working capital demands a careful investigation since it plays a fundamental part in the overall corporate strategy of creating value to the shareholder (Howarth and Westhead, 2003)

The main components of working capital are inventories, accounts payables and payments to be received from customers after sales. Success of a business depends heavily on the ability of the managers to effectively manage receivables, inventories and payables (Filbeck and Krueger, 2005). Working capital needs for a firm dictates its liquidity and profitability, and consequently affect its financing and investing decisions.

Working capital management refers to the administration of all aspects of current assets, namely cash, inventories, marketable securities and debtors, and current liabilities. In general, working capital management is a simple and straight forward concept of ensuring the ability of a firm to fund the difference between short term assets and short term liabilities (Harris, 2005).

Working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of a business (Mukhopadhyay, 2004). Every organization requires a necessary amount of working capital regardless of its size or nature of business. Working capital management plays a key role in making comparisons between liquidity and profitability among firms (Eljely, 2004), providing a basis for financing decisions and composition of current assets.

Working capital management enables companies to achieve optimal balance between working capital components (Gill, 2011). Efficient management of working capital is fundamental to organizations as it plays a crucial role in creating shareholders' value (Nazir and Afza, 2008). Most organizations therefore aim to establish an optimal level of working capital that enhances their value (Deloof, 2003).

The level of working capital and the efficiency in working capital management directly affects the growth of a firm. High levels of current assets may result in low returns from a firm's investment; however, firms with very few current assets stand the risk of incurring shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, 2000).

There are two very important terms to be noted while discussing working capital management, namely the gross working capital and net working capital. Overall investment in current assets constitutes the gross working capital. A portion of the investment in working capital is financed by short term financing (current liabilities). The difference between current assets and current liabilities constitute the net working capital.

1.1.1 Working Capital Management Decisions

Working capital management is a very important element in the financial management decisions of a firm. Inventory is an important current asset that forms a major component of working capital. Inventories may constitute different things e.g. raw materials, work-in-progress or finished goods. A company must strive to maintain an optimum balance between sales and tied-up capital. A larger inventory reduces the risk of stock outs, and may also lead to higher sales. Low inventory levels may lead to loss of business in case of higher demand.

A company accrues accounts receivable when it sells goods on credit. The company might receive cash on goods sold in weeks, or months depending on payment agreement. Sound credit management policies must therefore be developed by the company with respect to credit analysis, debt collection policy and terms of sale. As much as an efficient collection policy significantly improves a company's working capital position, an aggressive collection policy may sour the relations between the company and its debtors and thus may adversely affect its sales.

Another component of working capital is the accounts payable. Firms delay payments to their suppliers in order to evaluate the quality of their purchases. This practice can be viewed as a flexible and an inexpensive source of financing for firms. But on the aspect where suppliers offer discounts for early settlement on their invoices, the practice may become rather costly for the firm.

Cash, just like inventories, is a very significant component of the working capital. Companies hold reasonable amount of idle cash in order to improve their liquidity position. Holding too much cash at hand, however, impacts the cost of capital needed in financing maturing obligations. It's imperative that the firm attains an optimum balance between cash at hand and amount to be invested in marketable securities since cash deficits will most likely result in transaction costs.

Cash conversion cycle provides an important parameter for gauging the effectiveness of working capital management. Cash conversion cycle measures the time lag between purchases for raw materials and the time cash is collected from credit sales. The longer the time lag, the larger the investment in working capital. A longer cash conversion cycle will likely increase profitability due to higher sales, but may equally negatively impact corporate profitability if the cost of investing in large inventories outweighs the benefits of holding more inventory (DeLoof, 2003).

1.1.2 Financial Performance

As the Du Pont model indicates, return on assets (ROA) is the product of net income per sales, usually called the operating profit margin, and sales per total assets, usually called the asset turnover. Total assets include fixed assets and current assets, but current assets constitute gross working capital. Hence, working capital management decisions directly impacts the assets turnover, which consequently affects the overall return on assets.

Financial performance in manufacturing firms is greatly impacted by working capital decisions a firm undertakes given the fact that working capital primarily constitutes current assets and current liabilities. Some of the key current asset instruments that are encountered on daily basis include inventories, cash and accounts receivables. The effectiveness with which a firm manages its inventory has direct impact on the overall sales, and consequently sales revenues. Maintaining low levels of inventory may lead to stock outs leading loss of sales. On the other hand, high levels of inventory may result in huge amounts of capital tied up thus leading to loss of investment opportunities or high costs of short term financing.

It is therefore imperative for financial managers to efficiently manage their working capital in order to maximize shareholder's value (Howorth and Westhead, 2003). In

practice, working capital management has been identified as an important factor in manufacturing firms where many financial managers are striving to establish basic working capital drivers and an optimum level of working capital (Lamberson, 1995).

1.1.3 Working Capital Management and Financial Performance

Working capital management practices in a firm greatly affect the firm's financial performance since such practices affect a firm's revenue streams and financing costs for short term capital requirements. Efficient management of various working capital components carries a direct influence on a firm's financial performance. Working capital policy that ensures shorter cash conversion cycle with low number of days is preferred for profitability as it is expected to reduce the need for external financing.

Inventories form a core element in working capital management and therefore call for effective management of inventory levels. To effectively manage their inventory, manufacturing firms are expected to apply a number of procedures namely: just-in-time, make to order and lean manufacturing initiatives in order to improve on their processes (Bisjoly, 2009). By applying such procedures firms ensure that their inventory levels are maintained at optimum and thus ensuring minimum financing costs due reduced levels of short term capital held. Proper management of inventory is hence expected to enhance financial performance by improving on revenues and reducing on capital costs.

1.1.4 Manufacturing Firms in Kenya

There are currently 9 manufacturing firms listed at the NSE (NSE Handbook, 2014). Manufacturing sector in Kenya constitutes 70% of industrial sector contribution to the GDP, with construction, mining, building and quarrying contributing the remaining 30% (Kenya Economic Report, 2013). The manufacturing sector in Kenya has been identified as a key player for achieving a sustained annual growth in GDP of 10%.

Significance of working capital management in Kenyan companies cannot be understated. However, there are few studies with reference to Kenya on working capital management and firm profitability, especially in the manufacturing sector (Makori and Jagongo, 2013). Nairobi Securities Exchange boasts over 50 listed companies majority of which are in the commercial, manufacturing and banking sectors. Nairobi Securities

Exchange is the fourth largest in Africa in terms of market capitalization at BP 8.3B and with annualized returns at 36%, making it the second best performing market on the continent(Capital Markets Outlook, 2013).

This paper intends to investigate the relationship between working capital management and financial performance of manufacturing firms listed he Nairobi Securities Exchange. The key objective will be to establish a significant statistical relationship between return on asset (ROA) and the various components of working capital for the selected listed firms.Relevant data will be obtained from comprehensive financial reports for the selected listed companies ranging from the year 2009-2013.

1.2 Research Problem

The primary objective of a firm is to increase shareholders' value. One of the major determinants of a firm value is its profitability; working capital management affects the profitability of the firm, its risk and consequently its value (Smith, 1980). Working capital is focal in maintaining liquidity, survival, solvency and profitability of a firm (Mukhopadhyay, 2004). This study is expected to establish a framework that incorporates various working capital components in a manner that optimizes profitability and liquidity with the aim of shareholders' wealth maximization.

In the studies conducted by Deloof (2003), Raheman & Nasr (2007) and Teruel&Solano (2007), it was concluded that a negative relationship exists between profitability of a firm and cash conversion cycle. Thus it is possible to increase firm profitability through more efficient working capital management. According to Soenen (1993), the negative relationship between working capital components and profitability of a firm is different for different industries. Most studies conducted on the relationship between working capital management and profitability predominantly identify return on assets (ROA) as the appropriate measure for profitability, but according to Deloof (2003), profitability should be measured by gross operating income divided by total assets less financial assets. He argues that for a number of firms, financial assets, which are mainly shares in other firms, are a significant part of total assets. For that reason return on assets should not be used as a measure for profitability for such firms since their operating activities will contribute little to the overall ROA.

Makori & Jagongo (2013) conducted a study on the relationship between working capital management and firm profitability. Data was obtained from financial reports for manufacturing and construction firms listed at the Nairobi Securities Exchange for the period ranging between 2003 and 2012. Nzioki et al. (2014) conducted a study on management of working capital and its effects on profitability of manufacturing companies listed at the Nairobi Securities Exchange between 2006 and 2010. Mwangi, Muathe & Kosimbei (2014) analyzed the effects of working capital management on performance of non-financial firms listed at the Nairobi Securities Exchange for the period 2006-2012. Omesa et al. (2013) examined the relationship between working capital management and corporate performance of 20 manufacturing firms listed at the Nairobi Securities Exchange for the period ranging between 2007 and 2011. However, these studies put great emphasis largely on the listed manufacturing firms. This study intends to integrate other sectors of the securities exchange with evidence of working capital management practices.

This study will attempt to answer a number of questions derived from the topic. The paper will attempt to establish how working capital management practices affect financial performance of manufacturing firms listed at the Nairobi Securities Exchange. It will further attempt to establish any significant statistical relationship between working capital components and financial performance of firms. Finally this research will seek to answer the question on what capital management policies play the greatest role in financial performance.

1.3 Objectives of the Study

1.3.1 Main Objective of the Study

The main objective of this study is to establish the relationship between working capital management decisions and profitability of manufacturing firms in Kenya.

1.3.2 Specific Objectives of the Study

This study intends to achieve a number of specific objectives namely to examine the impact of specific working capital components on financial performance of manufacturing firms. The study intends to establish a statistical relationship between working capital components and ROA.

1.4 Value of the Study

The findings of this study are expected to highlight the importance of effective working capital management policies to financial performance of firms. This study aims to ascertain the need for incorporation of working capital management policies in formulation of overall corporate strategies, given the influence of working capital management on profitability and, by extension, the value of the firm.

The following stakeholders will be the greatest beneficiaries of the findings of the study.

1.4.1 Corporate Sector

This study will highlight the significance of working capital management on financial performance of firms. The findings will provide a framework for working capital strategies for corporate institutions that are focused on value creation to their shareholders. Corporate managers will appreciate the value that lies in effective management of working capital components.

1.4.2 Investors

Firms that put in place effective working capital management policies will be viewed as profitable firms with prospects for future value creation. Such firms will be perceived to offer stock with promising returns with respect to capital gains and dividends.

1.4.3 Banking Sector

The findings from this study will assist commercial banks with credit appraisal for firms seeking financing. Firms with sound working capital management policies are assumed to maintain sufficient liquidity levels thus enabling them to meet their short term debt obligations as they mature. On the contrary those firms lacking effective working capital strategies may be viewed as high risk by commercial creditors as their ability to honor their immediate obligations may never be gauged.

1.4.4 Researchers

This research will build on existing body of knowledge and point out areas for further research, hence researchers who wish to study the area of working capital management will be made aware of the areas that require further studying.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, the first part (section 2.2), will assess the existing theoretical body of knowledge on working capital management. The second part (section 2.3) will mainly focus on the empirical literature where various studies conducted by different authors on working capital management will be reviewed. The various components of working capital will be discussed in section 2.4 and measures for financial performance in section 2.5. Before conclusion on the chapter (section 2.5).

2.2 Theoretical Literature Review

A number of theories exist **on** working capital management and they will form the theoretical foundation of this section on literature review.

2.2.1 Sagan's Money Manager Factor

Sagan (1955) emphasized the need for management of working capital accounts and warned that it could vitally affect the health of a company. He discussed mainly the role of money manager inefficient working capital management. He noted that money manager's operations were primarily in the area of cash flows generated from the regular business transactions. He alluded that the money manager must be familiar with what is being done with inventories, receivables and payables because they all affect cash position. Sagan concentrated mainly on the cash component of working capital. He suggested that the money manager should make decisions based on the cash budget and total current assets position rather than on the basis of traditional working capital ratios, this way the manager will avoid unnecessary borrowing even if the net working capital position is low. This study highlights the need to improve collection of receivables but does not provide a method of achieving it.

2.2.2 Walker's Three Propositions

Walker (1964) developed a theory of working capital management by empirically testing, though partially, three propositions based on risk-return-tradeoff of working capital management. Walker studied the effect of change on the level of working capital on the

rate of return in nine industries for the year 1961 and found the relationship to be negative. Based on his observation, he developed three propositions:

Proposition I- If the amount of working capital is to fixed capital, the amount of risk the firm assumes is also varied and the opportunities for gain or loss are increased. He further stated that if a firm wants to achieve the lowest possible risk, it should use equity for financing working capital. But by doing so the firm reduces its opportunities for high returns on equity as it does not take advantage of leverage.

Proposition II- The type of capital (debt or equity) used to finance working capital directly affect the amount of risk the company assumes as well as the opportunities for gain or loss. He suggested that the debt-equity ratio and the maturity period for debt affects the risk-return-tradeoff. Long periods for debt translated to lower risk since management would have adequate time to raise funds to meet debt obligations. But long-term debt is very costly, and on the basis of this he developed the third proposition.

Proposition III- The greater the disparity between the maturities of a firm's debt instruments and its flow of internally generated funds, the greater the risk and vice-versa. Thus Walker tried to build up a theory of working capital management by developing three propositions. But he only empirically tested the first proposition only.

Weston and Brigham (1972) extended the second proposition suggested by Walker by dividing debt into long-term debt and short-term debt. They suggested that short-term debt should be used in place of long-term debt whenever their use would lower the average cost of capital to the firm. They suggested that a business would hold short-term marketable securities only if it had excess funds after meeting short-term debt obligations. They further suggested that current assets should expanded to the point where marginal increase in returns on these assets would just equal the cost of capital required to finance such increases.

2.2.3 Van Horne's Probabilistic Cash Budget

Van Horne (1969) attempted to develop a framework in terms of probabilistic cash budget for evaluating decisions concerning the level of liquid assets and the maturity composition of debt involving risk-return-tradeoff. He proposed calculation of different forecasted liquid assets requirements along with their subjective probabilities under

different possible assumptions of sales, receivables, payables and other related receipts and disbursement.

Van Horne proposed preparing a schedule showing, under each alternative of debt maturity, probability distribution of liquid asset balances for future periods, opportunity cost, maximum probability of running out of cash and number of future periods in which there was a chance of cash stock-out. Once the risk and opportunity cost for different alternatives were estimated, the firm could determine the best alternative by balancing the risk of running out of cash against the cost of providing a solution to avoid such a possibility depending on management's risk tolerance limits.

Van Horne study presented a study of risk-return-tradeoff of working capital management by considering some of the variables probabilistically. This framework is, however, limited because of the difficulty in obtaining information about probability distributions of liquid asset balances, the opportunity cost and the probability of running out of cash for different alternatives of debt maturities.

2.2.4 Warren & Shelton's Financial Simulation

Warren & Shelton (1971) applied financial simulation to simulate future financial statements of a firm, based on a set of simultaneous equations. Financial simulation approach makes it possible to incorporate both the uncertainty of the future and the many interrelationships between current assets, current liabilities and other balance sheet items. The strength of simulation is that it permits the financial manager to incorporate in his planning both the most likely value of an activity and the margin of error associated with this estimate.

Warren & Shelton presented a model in which twenty simultaneous equations were used to forecast future balance sheet of the firm including forecasted current assets and forecasted current liabilities. Current assets and current liabilities were forecasted in aggregate by directly relating to firm sales. Individual working capital accounts can also be forecasted in larger simulation systems. Moreover, future financial statements may be simulated over a range of different assumptions to portray inherent uncertainty of the future.

2.2.5 Capital Asset Pricing Model (CAPM) for Working Capital Management Decisions

Cohn & Pringle (1973) illustrated the extension of CAPM for working capital management decisions. They tried to interrelate long-term investment and financing decisions and working capital management decisions through CAPM. They emphasized that an active working capital management policy based on CAPM could be employed to keep the firm's shares in a given risk class, where risk is unsystematic risk. Owing to the lumpy nature long-term financial decisions, the firm is continually subject to shifts in risk of it's for its equity. The fluid nature of working capital, on the other hand, can be exploited to as to offset or moderate such swings. For example they suggested that a policy using CAPM could be adopted for the management of marketable securities portfolio such that the appropriate risk level at any point in time was that which maintains the company's common stock at a constant level.

2.2.6 Metzler's Acceleration Principle

Metzler (1941) postulated that firms liked to maintain inventories in proportion to output and they succeeded in achieving the desired level of inventories in a unit-time period. That is to say, any discrepancy between the actual level and desired level of inventory is adjusted within the same time-period. Such an instantaneous adjusted is, however, not a realistic assumption to make.

Goodwin (1948) modified Metzler's theory to provide for partial adjustment. Goodwin assumed that firms assumed that firms attempted only partial adjustment of the discrepancy between the desired stocks as determined by level of output and the existing stock.

2.3 Determinants of Financial Performance in Manufacturing Firms

Financial performance of manufacturing firms is greatly impacted by the efficiency with which firms manage their working capital. Profitability and liquidity which are directly related are determined by the amount of capital held up in short term marketable securities vis a vis long-term debt.

A popular measure for working capital management is referred to as the cash conversion cycle (CCC) which is defined as the sum of average collection period and average days of inventory less days accounts payables (Keown et al., 2003). The larger the cash conversion cycle the greater the investment held in working capital. A longer cash conversion cycle may improve profitability in firms as it may lead to higher sales. But profitability may also decrease in the case where cost on investment in working capital exceeds the benefits of holding large inventories (Deloof, 2003).

Firms must strive to develop proper working capital policies in order to achieve a desirable trade-off between profitability and liquidity (Rehman& Nasr, 2007).

2.4 Empirical Literature Review

This section will present a chronology of various studies that have been conducted on the relationship between working capital management and profitability, and that have been supported by appropriate sets of data. These studies have been conducted in various markets and the results are diverse, but majority of these studies have concluded that a negative relationship exists between working capital management and financial performance of firms. Authors of these studies have used a number of variables and various methodologies.

Omesa et al. (2013) studied the relationship between working capital management and corporate performance of firms listed at the Nairobi Securities Exchange. A sample of 20 listed firms was selected and 5 years data ranging from 2007 to 2011 was collected. Principal component analysis technique is used for analysis due to its simplicity and its ability to extract required data from confusing data sets. By using Principal Component Analysis (PCA) and multiple regressions, working capital variables average collection period (ACP) and cash conversion cycle (CCC), and control variables Net Working Capital Turnover Ratio, Fixed Financial Ration and Current Liabilities, the results indicated a significant relationship at 95% confidence with performance as measured by return on equity (ROE).

Gakure et al. (2012) studied the relationship between working capital management and profitability of 15 manufacturing companies listed at the Nairobi Securities Exchange (NSE) from the year 2006 to 2010, and for a total of 75 firm year observations. They used secondary data collected from a sample of 18 firms listed at the NSE. Regression model

was used to analyze the relationship between independent and dependent variables. Regression analysis and Pearson's correlation techniques were used to analyze the data. The results found a strong negative relationship between a firm's performance and its liquidity. The study further indicated a negative co-efficient relationship between average payables period, accounts collection period, inventories holding period and profitability. Cash Conversion Cycle was however found correlate positively with firm's profitability. A study conducted by Mathuva (2010) on the effects of working capital management on corporate profitability showed that a highly significant relationship exists between cash collection period and profitability. He indicated that more profitable firms had a shorter cash collection period. The study further indicated that a highly significant positive relationship exists between inventory conversion period and firm profitability. The study explained that firms that sufficiently hold high inventory levels evade costs that are associated with interruption in the production process or loss of business due to stock outs. Further the studied established the existence of a highly significant positive relationship between average payment period and profitability. Mathuva contends that the longer a firm takes to honor its responsibility for credit purchases, the more profitable the firm is. In his study, he collected data from a sample of 30 firms listed at the NSE for the duration between 1993 and 2008. He applied the Ordinary Least Squares technique and the fixed effects regression model to perform the analysis.

Nzioki et al. (2013) conducted research on management of working capital and its effects on profitability for manufacturing companies listed at the Nairobi Securities Exchange. Diagnostic research design was used and the study targeted all the listed firms under the manufacturing segment of the Nairobi Securities Exchange. Data on selected firms was collected from consolidated financial reports ranging from the year 2006 and 2010. Multiple regression and correlation analyses were applied to establish the relationship between various components of working capital and the gross operating profit for the firms. The results indicated a positive correlation between gross operating profit with the average payment period and average collection period, and a negative correlation with the cash conversion cycle (CCC). This study recommended that managers should emphasize on reducing the cash conversion cycle and collect their receivables as soon as possible.

Afza & Nazir (2007) investigated the relationship between aggressive and conservative working capital policies in public limited companies trading at the Karachi Stock Exchange, and selected from 17 industrial groups. A sample of 263 public limited companies was selected and cross sectional data for the period 1998-2003 was collected. Least Significant Difference (LSD) test and analysis of variance (ANOVA) techniques were used to analyze the data. The results indicated significant differences among working capital policies in different industries. Ordinary least squares regression analysis indicated a negative relationship between profitability and aggressiveness of working capital policies.

Izadima & Taki (2010) studied the influence of working capital management on profitability for listed firms on Tehran Stock Exchange during the period 2001 to 2008. In this study, ROA is used as a measure for profitability. The results revealed a significant negative relationship between cash conversion cycle and ROA, and also huge investment in inventories as well as accounts receivables result in declining profitability.

YaghoobNejad et al. (2010) scrutinized the relationship between working capital management and profitability. A sample of 86 active firms listed at the Tehran Stock Exchange was selected and data was obtained over the period 2002-2007. For analysis, this study applied regression and Pearson's correlation techniques. The results indicated a negative relationship between working capital management and profitability. The results also showed that increase in accounts collection period, accounts payable period, inventory turnover period and cash conversion cycle negatively impacted profitability. The study alluded that managers can increase shareholders' value through reduction of days accounts receivable, days accounts payable, inventory turnover period and cash conversion cycle.

Deloof (2003) tested the relationship between working capital management and profitability of Belgian companies for the duration 1960 to 1992. In this study Deloof used number of days accounts receivable, cash conversion cycle and inventories as indicators of trade credit. Cash conversion cycle was used as key indicator for working capital management. The results indicate that management can increase profitability through reduction in number of days accounts receivable, inventories turnover and also through reduction in cash conversion cycle.

Oladipupo & Okafor (2013) studied the effects of working capital management policy of firm's profitability and its dividend payout policy. The study was concentrated on the extent to which effects of working capital management affected firm's profitability and dividend payout. Relevant data was acquired from 12 manufacturing companies trading at the Nigerian Stock Exchange from the year 2002 to 2006. Pearson's product moment correlation technique and ordinary least squares regression method were used to analyze the data. The results indicated that shorter cash conversion cycle and debt ratio enhanced corporate profitability. While the level of debt had a significant negative effect on corporate profitability, the influence of working capital management on profitability appeared to be statistically insignificant.

2.5 Summary of Literature Review

The body of theoretical literature has mainly emphasized the importance of working capital management and its influence on firm profitability. The literature has highlighted the need for firms to develop sound working capital management policies in order to improve their profitability and ensure a lasting value addition to their shareholders.

Throughout the literature different components of working capital have been discussed including accounts receivable, inventory management and accounts payable. Measures of working capital, most importantly the cash conversion cycle, have been discussed throughout the literature. Furthermore, the body of empirical literature has fairly confirmed the existence of relationship between working capital management and profitability in firms.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the first section will discuss research design which will form the basis of this study. Section 3.3 will describe the target population of this study while sample size and sampling techniques will be justified in section 3.4. Data collection that will focus on secondary data will be described in section 3.5 before data analysis' tools and models are discussed in section 3.6.

3.2 Research Design

Research design is the plan and structure of investigation so conceived in order to obtain answers to research questions (Kothari, 2004). The plan is the overall scheme or program of the research (Robson, 2002). The main objective of this study will be to determine the relationship between working capital management decisions and financial performance of manufacturing firms in Kenya.

This study will apply both descriptive as well as quantitative research techniques. The main objective of descriptive research will be to provide information on characteristics of the chosen population or phenomenon. Descriptive research will be considered prior to quantitative research design as it provides an overall overview as to what variables to test quantitatively.

3.3 Population

A population is an entire group of individuals, events, or objects having common characteristics that conform to desired specifications (Mugenda & Mugenda, 2003). The population of interest in this research will constitute both manufacturing firms listed at the Nairobi Securities Exchange and non-listed manufacturing firms over the period 2009-2013.

3.4 Sample Design

The sample for this research will constitute both manufacturing firms listed at the Nairobi Securities Exchange and non-listed ones. Explanations of items from the financial reports that are inconsistent with reasonable expectations will be removed

This study will pursue a census survey technique in which all manufacturing firms listed at the NSE will be studied given the reasonably small number of firms involved. Firms that are adversely affected by the regulators decision leading to either delisting or suspension from trading will not be included in this research. Firms that are newly listed under the manufacturing and allied sector, and therefore having insufficient historical data will equally be excluded from the study.

3.5 Data Collection

Data collection refers to gathering of empirical evidence in order to gain insights about a situation and answer questions that prompt research (Flick, 1988). There are two types of data namely primary and secondary data. Primary refers to first-hand information collected from a respondent; on the other hand secondary data refers to data that has already been collected and passed through statistical processes (Chandarin, 2004).

This study will utilize secondary data which will be obtained from comprehensive financial reports containing profit after tax, current assets, current liabilities, fixed assets and long-term debt and equity. Financial reports from the selected firms will be obtained from Nairobi Securities Exchange library, Capital Markets Authority library and from the website of the firms under study.

3.6 Data Analysis

Data analysis may be described as the entire process that starts immediately after data collection and ends at the point of interpretation and processing of data (Cooper & Schindler, 2008). The key purpose for this study will be to establish the relationship between working capital management and financial performance of manufacturing firms in Kenya.

Quantitative research approach will be applied to arrive at the findings of this study. Given the time series nature of the data for this study, panel data methodology will be used. The benefit of panel data is that it assumes that different companies are heterogeneous in nature, it equally considers the variability in the data, and it provides more instructive data, and hence panel data provides more efficiency than cross-sectional data methodology (Baltagi, 2001). Panel data utilizes observations that carry both cross-sectional and time series dimensions.

3.6.1 Dependent Variable

Return on Assets (ROA) will be used as the dependent variable in this study, and therefore a measure for profitability in the selected firms. ROA will seek to explain how efficiently firms are utilizing their resources in their quest to maximize their profits. Increasing ROA corresponds to increase in profitability (Gitman, 2002). ROA has been used by a number of authors to measure profitability including Afza&Nazir (2008), Mohamad &Saad (2010), Padachi (2006), and Ching et al. (2011).

3.6.2 Independent Variables

The average collection period (ACP), the cash conversion Cycle (CCC), Inventory conversion period (ICP) and the average payment period (APP) will be used as the independent variables considered in working capital management. ACP refers to time taken to collect receivables from customers; APP is the time taken to pay firm suppliers; ICP refers to time taken to convert inventory into sales while CCC is the overall measure of working capital as it shows the time-lag between payment for purchases and collection of sales.

3.6.3 Control variables

The size of the firm will be used as a control variable in this study, and this will be achieved by obtaining the natural logarithm of total assets. Other control variables in this study will be growth in sales, firm leverage and current ratio. These variables have been used by Deloof (2003), Nazir&Afza (2009), Raheman& Nasr (2007) and Huang et al. (2009) in their studies.

3.6.4 Research Model

Descriptive and quantitative statistical techniques will be used to investigate the effect of working capital management decisions on profitability of firms. Multivariate regression model based on panel data from comprehensive annual reports from the selected firms will be employed to examine the relationship between WCM and profitability.

The effect of working capital management on financial performance will be modeled using the following regression equations:

ROA = f (ACP, ICP, APP, CCC, GROWTH, LEV, CR, SIZE)

$$\text{Model1: } ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 ACP_{it} + \varepsilon_{it}$$

$$\text{Model2: } ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 ICP_{it} + \varepsilon_{it}$$

$$\text{Model3: } ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 APP_{it} + \varepsilon_{it}$$

$$\text{Model4: } ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 CCC_{it} + \varepsilon_{it}$$

$$\text{Model5: } ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_1 ICP_{it} + \beta_1 APP_{it} + \beta_2 GROWTH_{it} + \beta_3 DR_{it} + \beta_4 CR_{it} + \beta_5 SIZE_{it} + \varepsilon_{it}$$

ROA = Return on Assets

GROWTH=Sales growth

DR= Debt Ratio

SIZE=Company size as measured by natural logarithm of sales

CR= Current ratio

ACP= Average collection Period

ICP= Inventory Conversion Period

APP = Average Payment Period

CCC= Cash Conversion Cycle

Subscript i, denotes firms starting from 1,2,...,n and t denotes time in years starting from 1,2,...,N ; ε denotes error term of the model; β_i denotes regression model co-efficient

In the first model, The ACP will be regressed against the ROA. In the second model, the ICP will be regressed against ROA while the third model regresses APP against ROA. The fourth model regresses CCC against ROA. Finally the three WCM variables namely ACP, APP and ICP will be regressed together against ROA.

To support regression analysis, correlation analysis will be performed to examine the relationship between working capital components and financial performance in the selected firms. The integrity of the model will be curtained through analysis of variance. The descriptive and quantitative statistics will be conducted using Statistical Package for Social Sciences (SPSS).

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, results and discussion. The data used in this study has been analyzed using descriptive and quantitative research techniques. This is to enable the performance of the multivariate regression analysis on the panel data that has been collected for this particular study. The data used in this study has been sourced mainly from secondary data sources. This chapter specifically, seeks to answer and accomplish the research questions and objectives as stated in chapter one of determining the relationship between the working capital management decisions by manufacturing firms and financial performance of those manufacturing firms. This chapter is organized into sections, where the first section (section 4.2) will provide an analysis of the financial performance of the manufacturing firms as measured by the return on assets. Section 4.2 will also analyze the various working capital management decisions by the manufacturing firms listed at the NSE. Section 4.3 will explore the results generated by this study and finally section 4.4 will provide both a theoretical and practical discussion of the results of the study.

4.2 Data Analysis

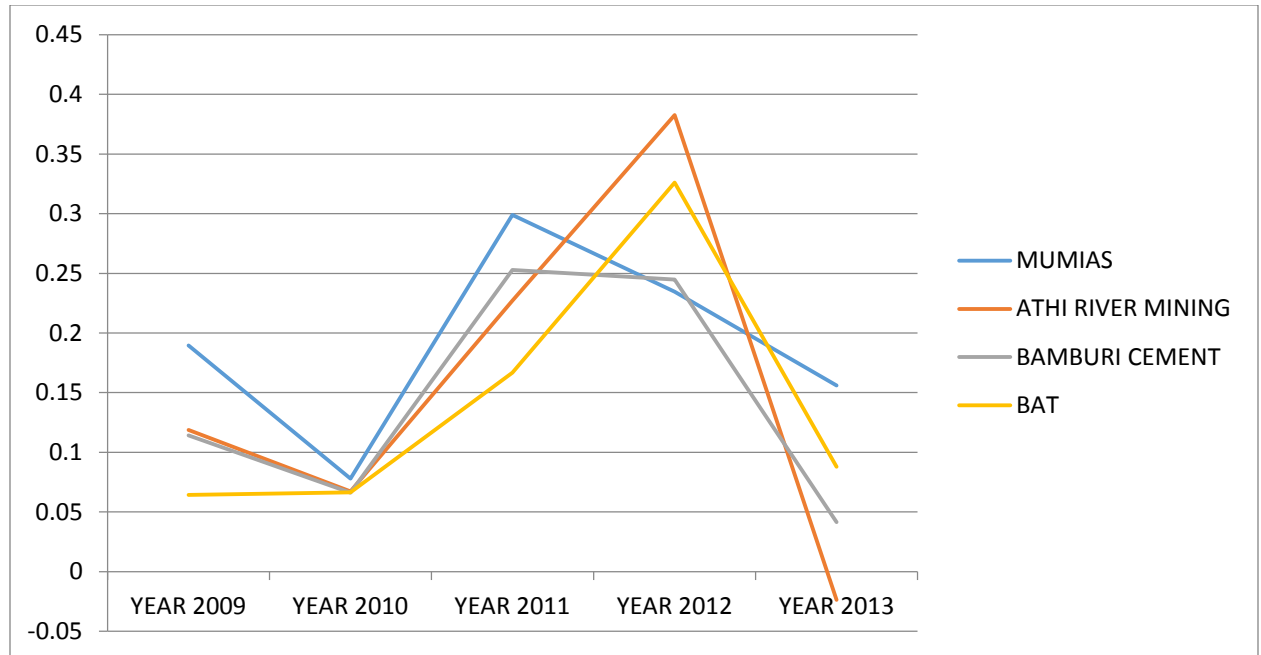
This section will provide an analytical perspective of the data used in this particular study and how the results of this study will affect the overall perspective on the achievement of the research objectives.

4.2.1 Financial Performance

To be able to measure financial performance and profitability of the manufacturing firms listed at the NSE; return on assets (ROA) has been used as a yardstick for this particular study. Nazir and Afza (2009) used the same yardstick as a measure of financial performance. This section will provide detailed information on the return on asset for the manufacturing firms listed at the NSE.

The return on assets for the manufacturing firms in Kenya has been increasing steadily over the last few years mainly due to the good economic conditions. This implies that the profitability of the manufacturing firms has also been increasing at a steady rate.

Chart 4.1: ROA for the Largest 4 Manufacturing Firms Listed at the NSE



As shown above the return on assets for the manufacturing firm has been increasing steadily for the past four years with an exception of last year when the return on asset fell sharply due to the harsh economic conditions in the country.

The data analyzed in this section has been drawn from panel data that utilizes both a cross-sectional and time series dimension.

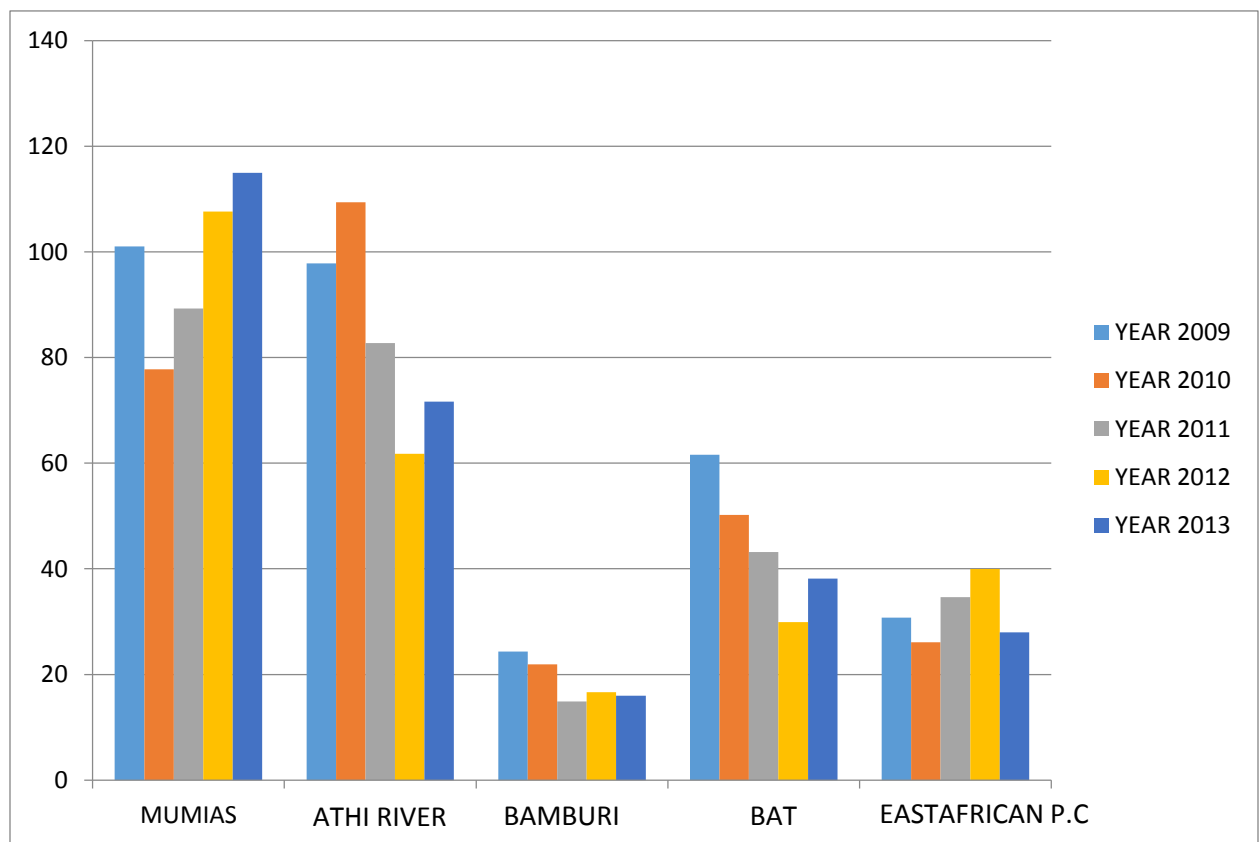
The table that follows shows the data that will be used in the multivariate regression analysis.

4.2.2 Working Capital Management Strategies

There are a number of working capital management strategies that can be used by the manufacturing firms to increase profitability. These include manipulation of the average collection period (ACP), inventory conversion cycle (ICP), average payable period (APP) and the cash conversion cycle (CCC). However, according to the Capital Market Authority Annual Report, 2012 most manufacturing firms employ the average collection period (ACP) to maximize their earnings potentials and therefore, their financial performance.

The chart below provides an insight into how the 5 largest manufacturing firms listed at the NSE have able to use the ACP in their working capital management.

Chart 4.2: ACP for the 5 Largest Manufacturing Firms Listed at the NSE



Source: Capital Market Authority

4.3 Results

This section provide the results of the multivariate regression analysis so as to provide an answer to the research questions for this study and enable an assessment of the extent to which the research objectives have been achieved.

4.3.1 Model 1: $ROA = f(ACP, GROWTH, LEV, CR, SIZE)$

Given the control variables, the model with average collection period (ACP) as the only variable of interest explains only 32% of the variations in the value of return on assets. The remaining portion is explained by other factors that have not been considered for this particular study.

Moreover, the multiple correlation co-efficient for this model is significant at 63%.

Table 4.1: The Extent of Model Relationship for ACP

Regression Statistics	
Multiple R	0.63
R square	0.40
Adjusted R square	0.32
Standard error	0.19
Observation	44

Source: SPSS output

The results of the regression will provide coefficients that will be placed in the model regression equation that was stated in the research methodology section.

$$ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 ACP_{it} + \varepsilon_{it}$$

Table 4.2: Regression Model

Variables	Coefficients	Standard Error
Intercept	0.60	0.574
ACP	-0.001	0.001
Growth	0.10	0.121
DR	-0.053	0.094

CR	0.054	0.019
Size	-0.03	0.031

Source: SPSS output

The implication of the results will be to come up with a definitive model as shown below that is capable of predicting the value of return on assets.

$$ROA_{it} = 0.60 + 0.10GROWTH_{it} - 0.053DR_{it} + 0.054CR_{it} - 0.03SIZE_{it} - 0.001ACP_{it} + \varepsilon_{it}$$

The model shows that average collection period (ACP) is inversely related to the return on asset which implies that stringent working capital management policies are likely to increase financial performance.

Table 4.3: Analysis of Variance

	d.f	Sum of Square	Mean of Square	F	Significance F
Regression	5	0.86	0.17	5.01	0.001
Residual	38	1.31	0.03		
Total	43	2.17			

Source: SPSS output

The analysis of variance (ANOVA) table shows that the variance of the difference of the means between the regression model and the residual is significantly lower and thus the model can be relied upon for prediction.

4.3.2 Model 2: ROA = f (ICP, GROWTH, LEV, CR, SIZE

The model with inventory conversion period (ICP) as the only variable of interest explains only 30% of the variations in the value of return on assets. The remaining portion is explained by other factors that have not been considered for this particular study.

Moreover, the multiple correlation co-efficient for this model is significant at 62%.

Table 4.4: The Extent of Model Relationship for ICP

Regression statistics	
Multiple R	0.62
R square	0.38
Adjusted R square	0.30
Standard error	0.19
Observation	44

Source: SPSS output

The results of the regression will provide coefficients that will be placed in the model regression equation that was stated in the research methodology section.

$$ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 ICP_{it} + \varepsilon_{it}$$

Table 4.5: Regression Model for ICP

Variables	Coefficients	Standard Error
Intercept	0.49	0.59
ICP	-0.001	0.001
Growth	0.095	0.12
DR	-0.01	0.09
CR	0.05	0.02
Size	-0.03	0.03

Source: SPSS output

The implication of the results will be to come up with a definitive model as shown below that is capable of predicting the value of return on assets.

$$ROA_{it} = 0.49 + 0.095GROWTH_{it} - 0.01DR_{it} + 0.05\beta_3CR_{it} - 0.03SIZE_{it} - 0.001ICP_{it} + \varepsilon_{it}$$

The model shows that inventory conversion period (ICP) is inversely related to the return on asset which implies that stringent working capital management policies are likely to increase financial performance.

Table 4.6: Analysis of Variance

	d.f	Sum of Square	Mean of Square	F	Significance F
Regression	5	0.83	0.17	4.73	0.002
Residual	38	1.34	0.04		
Total	43	2.17			

Source: SPSS output

The analysis of variance (ANOVA) table shows that the variance of the difference of the means between the regression model and the residual is significantly lower and thus the model can be relied upon for prediction.

4.3.3 Model 3: ROA = f (APP, GROWTH, LEV, CR, SIZE)

30% of the variations in the value of the return on assets are explained by the model with the average payable period (APP) as the only variable of interest with the rest of the variables being control variables. The remaining portion is explained by other factors that have not been included in the study.

Moreover, the multiple correlation co-efficient for this model is significant at 62%.

Table 4.7: The Extent of Model Relationship for APP

Regression statistics	
Multiple R	0.62
R square	0.39
Adjusted R square	0.30
Standard error	0.19

Observation	44
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Source: SPSS output

The results of the regression will provide coefficients that will be placed in the model regression equation that was stated in the research methodology section.

$$ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 APP_{it} + \varepsilon_{it}$$

Table 4.8: Regression Model for APP

Variables	Coefficients	Standard Error
Intercept	0.59	0.64
APP	-0.0004	0.001
Growth	0.08	0.12
DR	-0.07	0.11
CR	0.05	0.02
Size	-0.03	0.03

Source: SPSS output

The implication of the results will be to come up with a definitive model as shown below that is capable of predicting the value of return on assets.

$$ROA_{it} = 0.59 + 0.08GROWTH_{it} - 0.07DR_{it} + 0.05CR_{it} - 0.03SIZE_{it} - 0.0004APP_{it} + \varepsilon_{it}$$

The model shows that average payable period (APP) is inversely related to the return on asset which also implies that stringent working capital management policies are likely to increase financial performance.

Table 4.9 Analysis of Variance for APP

	d.f	Sum of Square	Mean of Square	F	Significance F
Regression	5	0.84	0.17	4.77	0.002
Residual	38	1.34	0.04		
Total	43	2.17			

Source: SPSS output

The analysis of variance (ANOVA) table shows that the variance of the difference of the means between the regression model and the residual is significantly lower and thus the model can be relied upon for prediction.

4.3.4 Model 4: ROA = f (CCC, GROWTH, LEV, CR, SIZE)

The model with cash conversion cycle (CCC) as the only variable of interest explains only 30% of the variations in the value of return on assets. The remaining portion is explained by other factors that have not been considered for this particular study.

Moreover, the multiple correlation co-efficient for this model is significant at 62%.

Table 4.10: The Extent of Model Relationship for CCC

Regression statistics	
Multiple R	0.62
R square	0.38
Adjusted R square	0.30
Standard error	0.19
Observation	44

Source: SPSS output

The results of the regression will provide coefficients that will be placed in the model regression equation that was stated in the research methodology section.

$$ROA_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DR_{it} + \beta_3 CR_{it} + \beta_4 SIZE_{it} + \beta_5 CCC_{it} + \varepsilon_{it}$$

Table 4.11: Regression Model for CCC

Variables	Coefficients	Standard Error
Intercept	0.28	0.52
CCC	-0.0002	0.001
Growth	0.09	0.12
DR	0.003	0.11

CR	0.06	0.02
Size	-0.016	0.03

Source: SPSS output

The implication of the results will be to come up with a definitive model as shown below that is capable of predicting the value of return on assets.

$$ROA_{it} = 0.28 + 0.09GROWTH_{it} + 0.003DR_{it} + 0.06CR_{it} - 0.016SIZE_{it} - 0.0002CCC_{it} + \varepsilon_{it}$$

The model shows that cash conversion cycle (CCC) is inversely related to the return on asset which also implies that stringent working capital management policies are likely to increase financial performance.

Table 4.12: Analysis of Variance for CCC

	d.f	Sum of Square	Mean of Square	F	Significance F
Regression	5	0.82	0.16	4.63	0.002
Residual	38	1.35	0.04		
Total	43	2.17			

Source: SPSS output

The analysis of variance (ANOVA) table shows that the variance of the difference of the means between the regression model and the residual is significantly lower and thus the model can be relied upon for prediction.

4.3.4 Model 4: ROA = f (ACP, ICP, APP, CCC, GROWTH, LEV, CR, SIZE)

When all the variables are incorporated in the model, 26% of the variations in the value of return on assets are explained by the model. The remaining portion is explained by other factors that have not been considered for this particular study.

However, the multiple correlation co-efficient is significant at 63% which implies that the variables for this particular study are significantly correlated.

Table 4.13: The Extent of Model Relationship (Entire Model)

Regression statistics	
Multiple R	0.63
R square	0.40
Adjusted R square	0.26
Standard error	0.19
Observation	44

Source: SPSS output

The results of the regression will provide coefficients that will be placed in the model regression equation that was stated in the research methodology section.

$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 ICP_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 GROWTH_{it} + \beta_6 DR_{it} + \beta_7 CR_{it} + \beta_8 SIZE_{it} + \varepsilon_{it}$$

Table 4.14: Regression Model (Entire Model)

Variables	Coefficients	Standard Error
Intercept	0.79	0.68
ACP	-0.001	0.001
ICP	0	0
APP	-0.0004	0.001
CCC	-0.0002	0.001
Growth	0.11	0.13
DR	-0.07	0.14
CR	0.05	0.02
Size	-0.04	0.04

Source: SPSS output

The implication of the results will be to come up with a definitive model as shown below that is capable of predicting the value of return on assets.

$$ROA_{it} = 0.79 - 0.001ACP_{it} - 0.004APP_{it} - 0.0002CCC_{it} + 0.11GROWTH_{it} - 0.07DR_{it} + 0.05CR_{it} - 0.04SIZE_{it} + \varepsilon_{it}$$

The model depicts a pattern which shows that for a manufacturing firm to maximize its earnings potential, it has to employ slightly stringent working capital management policies.

Table 4.15: Analysis of Variance (Entire Model)

	d.f	Sum of Square	Mean of Square	F	Significance F
Regression	8	0.87	0.11	3.46	0.005
Residual	36	1.30	0.04		
Total	44	2.17			

Source: SPSS output

The analysis of variance (ANOVA) table shows that the variance of the difference of the means between the regression model and the residual is significantly lower and thus the model can be relied upon for prediction.

4.4 Summary and Interpretation of Findings

The purpose of this study was to determine the relationship between working capital management decisions and the profitability of manufacturing firms in Kenya. This entailed the determination of a multivariate linear regression model where return on assets was used as a yardstick to measure profitability or financial performance while average collection period (ACP), inventory conversion cycle (ICP), average payable period (APP) and the cash conversion cycle (CCC) were used as a yardstick to measure working capital management decisions. Control variables were introduced in this study to neutralize the effects of other variables that might have an impact on the relationships being studied.

Secondary data sources were mainly used for this particular study and these were sourced from the Capital Market Authority and the Nairobi Securities Exchange Library. The data comprised a collection of cross-sectional panel data which was compiled from detailed raw data for the variables of interest.

The findings from the multivariate regression analysis indicate that each component variable of the working capital management decision when analyzed separately had an

average adjusted R square of 30%. This implied that a slightly lower proportion of the variations in the return on asset are explained by each of these components when analyzed individually. However, there was a slightly higher multiple correlations coefficient for each of these components of working capital management decisions. The results of the F-test showed that the model for each of these components of working capital management decisions was statistically significant.

The overall model explained only 26% of the variations in the return on assets but was also statistically significant when subjected under the F-test. Moreover, all the components of the working capital management decisions were inversely related to the return on assets for the manufacturing firms in Kenya. The study found the overall model to be significantly reliable for prediction.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Deloof (2003), contend in their working capital management principle that the larger the cash conversions cycle the greater the investment held in working capital. A longer cash conversion cycle may improve profitability in firms as it may lead to higher sales. But profitability may also decrease in the case where the cost of investment in working capital exceeds the benefits of holding large inventories. This confirms the findings of this study which state that to improve a firm's financial performance and the overall profitability, stringent working capital management policies ought to be adopted.

Firms must strive to develop proper working capital policies in order to achieve a desirable trade-off between profitability and liquidity (Rehman& Nasr, 2007). This provides guidance on the need to maintain a proper balance between profitability and liquidity so as to achieve improvement in the overall financial performance.

The results of this study underlie the dynamic nature and the challenging scenarios provided by the working capital management strategies employed by manufacturing firms. Other research observations note the use of less stringent working capital management as a prelude to favorable financial performance by the manufacturing firms. However, the results of this study show that stringent working capital management decisions will act to increase a firm profitability and overall financial performance for the manufacturing firms. For instance, by reducing the average collection period (ACP) to customers it is possible for the manufacturing firms to speed up the cash collection process. This will avail the funds which will be used for other profitable investments opportunities. The same logic can be applied to the average payable period (APP), where by increasing the APP for the suppliers will reduce the amount of cash moving out and this will release the funds for other profitable ventures. However, it must be noted that all these working capital management decisions will have their negative consequences and therefore, for maximum profitability it is important to have a balance between stringent and less stringent working capital management policies.

5.2 Conclusion

Given that multivariate regression model explained a small proportion of the variation in the return on assets, the study concludes that there are other variables which have not been included in this study that might provide a better explanation for the movement in the return on asset or otherwise the overall profitability of the manufacturing firms in Kenya.

The fact that the co-efficient of the component working capital management variables were negative indicates that for profitability within the manufacturing firms, stringent working capital management measures are needed. This implies that shorter average collection period will have an effect of increasing available cash for investment and consequent profitability.

The overall model with all the component working capital management variables included explained only 26% of the variations in the return on asset. The other portion was explained by other factors outside the study.

Despite the model being weak in terms of its explanatory power, the results of this study show that the model has got a very strong predictive power as depicted by the analysis of variance where the F- test was significant. Additionally, the inclusion of the control variable brought stability in the multivariate regression model.

Given from the findings of the study that less than 30% of variations can be attributed to working capital management in manufacturing firms in Kenya, this study has proved that effective working capital management practices will play a crucial role in improving the overall profit margins for manufacturing firms. The inverse relationship between Accounts Collection Period and Return on Assets indicates that working capital management policies that promote shorter receivables collection period will ultimately lead manufacturing firms to increased profitability. The study has indicated an inverse relationship between average payables period and return on asset, this observation could be taken to explain Deloof (2003) observation that indicated that longer payables periods had possibility of reducing a firm's earning if the cost of financing purchases was higher than the benefits.

5.3 Recommendations to Policy and Practice

In an attempt to take advantage of the opportunities arising from the relationship between working capital management decisions and the profitability of the manufacturing firms in Kenya, the study provides the following recommendations;

It is important for manufacturing firms that employ the working capital management strategies to balance between profitability of the firm and the firm's liquidity. This is because there is an implicit trade-off between liquidity and profitability. Effective working capital management will ensure that firms do not hold excess inventory that may prove costly in the short term due to cost of capital investment and firm's inability to meet its short term financial objectives due resulting illiquidity.

It is important for manufacturing firms to make a preliminary cost-benefit analysis of the various working capital management decisions before committing the firms' resources towards a specific decision. Proper working capital management practices will enable a firm to effectively manage its capital budgeting function especially with manufacturing firms whose massive chunk of capital needs are channeled to their industrial operation activities. Effective capital management policies will therefore enable firms to carefully evaluate their financing needs whether long term or short term.

Manufacturing firms in Kenya should also incorporate a formal risk management framework in their application of the various working capital management strategies.

Although tight working capital management policies have a higher likelihood of improving a firms' financial performance it is imperative for the firm to take a broader perspective of the implication of a particular decision. Trade policies that may involve stringent receivables collections mechanisms may irritate loyal customers exposing the firm to probable risk of losing future business. It is therefore imperative for firms to be cautious when dealing with their clients even as they attempt to reduce their receivables collection period.

5.4 Limitations of the Study

The main challenge for this particular study was in obtaining data directly from the manufacturing firms. This is because reliable data for the component working capital management variables such as the average collection period is rarely published. However, to mitigate this effect data was sought from the Nairobi Securities Exchange Library which facilitated the assessment of the research objectives. In addition, there were difficulties in the compilation of the relevant data for the study since majority of the data published was in raw form. To mitigate this effect, data was compiled and analyzed using excel spreadsheet so as to convert the raw data into relevant data for analysis. Finally, the choice of the items to include in the control variables was also challenging. However, this was mitigated by referring to the various body of literature to come up with the items to include in the control variables.

5.5 Suggestions for Further Research

Given the scope and limitations of this study, the researcher suggests a number of areas for further study. The scope of this study should be expanded to include other variables not identified in this study as captured by the error term. To get a better perspective of the relationship between working capital management decisions and the firms' profitability, this study should be conducted in a different industry/sector other than manufacturing sector. The study can also be improved by using a different yardstick to measure financial performance. Rather than using the return on asset as a yardstick for financial performance, return on equity may be used instead.

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Appendix A - Regression Analysis Data

ROA	ACP	ICP	APP	CCC	GROWTH	DR	CR	SIZE
0.19	101.00	34.48	108.67	26.81	0.00	0.43	1.36	16.68
0.12	77.76	32.63	87.72	22.67	0.32	0.40	2.00	16.72
0.11	89.28	42.04	71.45	59.87	0.01	0.38	2.20	16.96
0.06	107.65	55.31	96.62	66.34	-0.02	0.43	1.25	17.13
-0.08	114.95	86.48	170.10	31.33	-0.23	0.51	0.84	17.12
0.07	51.72	115.08	37.36	129.45	0.00	1.65	1.51	13.31
0.02	54.40	160.18	53.50	161.07	-0.01	1.48	1.41	13.58
-0.24	50.00	167.96	71.43	146.53	-0.16	1.39	1.11	13.50
0.13	46.92	204.01	80.81	170.12	0.00	2.13	1.26	13.20
0.11	53.05	143.10	69.48	126.67	0.03	1.71	1.56	13.21
0.08	97.81	120.30	100.60	117.50	0.00	0.66	1.08	16.31
0.07	109.36	106.68	89.53	126.51	0.16	0.72	1.46	16.62
0.07	82.71	93.39	125.28	50.83	0.37	0.70	0.84	16.84
0.07	61.77	148.10	114.19	95.68	0.39	0.74	1.22	17.11
0.07	71.67	86.04	81.61	76.10	0.24	0.72	0.95	17.21
0.30	24.33	8.34	75.86	-43.20	0.00	0.35	2.58	17.28
0.23	21.92	69.67	103.13	-11.54	-0.06	0.35	1.72	17.32
0.25	14.90	60.62	57.45	18.07	0.28	0.28	2.62	17.33
0.17	16.67	74.04	81.82	8.89	0.04	0.28	2.35	17.58
0.13	16.00	76.95	75.21	17.74	-0.10	0.27	2.68	17.58
0.23	61.57	96.88	123.69	34.75	0.00	0.53	1.05	16.15
0.38	50.22	95.61	108.38	37.44	0.08	1.07	0.92	15.52
0.24	43.16	102.59	83.07	62.68	0.22	0.54	1.17	16.22
0.33	29.88	134.47	123.70	40.65	0.49	0.53	1.31	16.44
0.31	38.12	138.45	156.71	19.86	-0.04	0.53	1.18	16.54
0.12	102.96	124.65	204.86	22.75	0.00	0.23	2.64	14.50
0.06	84.99	145.34	251.25	-20.93	-0.10	0.26	2.15	14.46
0.12	106.11	109.17	256.52	-41.25	0.04	0.27	1.94	14.41
0.14	69.74	127.26	325.97	-128.97	0.07	0.27	2.08	14.51

0.12	94.98	124.76	332.26	-112.52	-0.04	0.21	2.23	14.78
0.27	90.21	68.13	71.34	87.00	0.00	0.15	10.63	14.13
1.14	63.07	99.94	70.77	92.23	0.12	0.57	5.79	12.86
0.93	93.51	50.37	45.23	98.66	-0.07	0.67	8.84	12.91
0.27	73.01	27.14	44.12	56.03	0.60	0.18	4.26	14.52
0.29	57.29	33.66	59.04	31.91	0.03	0.13	6.70	14.61
0.15	126.82	157.23	79.99	204.05	0.00	0.53	1.36	15.08
0.06	110.24	93.70	75.29	128.64	0.28	0.50	1.28	15.32
0.09	121.02	71.88	85.94	106.96	0.38	0.54	1.16	15.42
0.12	174.39	112.96	167.15	120.19	-0.13	0.53	1.20	15.65
0.09	0.00	0.00	0.00	0.00	-1.00	0.55	0.00	15.73
0.16	30.76	52.00	78.61	4.15	0.00	0.49	2.07	16.30
-0.02	26.07	58.86	72.34	12.59	0.16	0.53	1.59	16.31
0.04	34.61	72.56	76.22	30.95	0.08	0.54	1.51	16.42
0.09	39.95	116.28	158.91	-2.68	-0.09	0.56	1.09	16.60
-0.07	27.97	85.18	97.55	15.61	-0.08	0.67	1.02	16.45

Source: Capital Market Authority

Appendix B - Manufacturing Firms in Kenya

B.O.C Kenya Ltd

Eveready E A Ltd

British American Tobacco Kenya Ltd

Mumias Sugar Co. Ltd

Athi River Mining

Eveready East Africa Ltd

Bamburi Cement

East African Portland Cement

Carbacid Investments Ltd