

**THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT
AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN
NAIROBI COUNTY**

BY

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REG NO: D61/79939/2012

**RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS OF THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION, SCHOOL OF BUSINESS,**

UNIVERSITY OF NAIROBI

2014

DECLARATION

This research project is my original work and has not been presented for examination to any other university

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

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DEDICATION

This research paper is dedicated to my dear parents Mr. and Mrs. Livingstone Ragen for laying a strong foundation to my life. My special dedication to my husband Paul Okoth, my dear son William, my niece Stacy and my nephew Rowan who are always the source of my strength, joy and desire to excel academically. I thank God for having you in my life.

ACKNOWLEDGEMENTS

I thank God for His Grace throughout this journey and for granting me courage, good health that was essential for this study.

I wish to express my sincere gratitude and appreciation to my supervisor Ms. Winnie Nyamute, Lecturer department; Accounting and Finance, whose guidance, suggestions and patience was enormous and inspirational despite her busy schedule.

Special thanks goes to my colleagues and a number of people who contributed greatly to completion of this research project.

May God bless you all.

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LIST OF ABBREVIATIONS

AP	-Accounts Payable
AR	-Accounts Receivable
CCC	-Cash Conversion Cycle
DER	-Debt Equity Ratio
ERS	-Economic Recovery Strategy
FDI	-Foreign Direct Investment
GDP	-Gross Domestic Product
ICR	-Interest Coverage Ratio
INV	-Inventories
KIP	-Kenya Integrated Programme
MAPSKID	-Master Plan For Kenya's Industrial Development
MDGs	-Millenium Development Goals
NES	-National Export Strategy
OLS	-Ordinary Least Square
R&D	-Research and Development
ROA	-Return On Assets
ROE	-Return On Equity
UNIDO	-United Nations Industrial Development
WCM	-Working Capital Management

ABSTRACT

Working capital management is a very important component of financial performance because it directly affects the liquidity and profitability of the company. Management performance would be improved by managing working capital efficiently. The study aimed at investigating the relationship between working capital management and financial performance in manufacturing firms in Nairobi County.

The study was narrowed down to manufacturing firms within Nairobi County and the period of study was five years. The study used qualitative research design. The sample size of the study constituted 20 manufacturing firms in Nairobi County. Data for the study was obtained from audited financial statements of the sampled firms. Descriptive statistics was used to state the mean of the variables. Correlation analysis was used to determine the degree of association between the firm's performance and return on assets. Regression analysis was used to determine the cause-and-effect relationship between working capital management and firm's performance.

The study found that there exist a negative relationship between average collection period and firm's performance among the manufacturing firms in Nairobi County of -0.001. However, the study found a positive relationship between average payment period and return on assets of 0.004. There also exists a positive relationship between inventory turnover period and return on assets 0.018. Moreover, control variables; current ratio and debt ratio have a significant effect on firms' performance. The study concludes that working capital management is a very important component of financial performance because it directly affects the liquidity and profitability of the company.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

During the economic recession, firms start to seek ways to improve and intensify their actions. External factors have a huge impact to organizational operations, and in this situation enhancing the effectiveness of internal functions becomes increasingly important. Emphasizing the role of working capital management is significant in these challenging times as pay attention to improving and managing working capital as well as improve their financial performance. In large firms, efforts are made to optimize cost-effectiveness to relate to working capital management. By systematic working capital management, liquidity problems can be prevented which strengthens a firms' ability to cope with unexpected changes. Economic crisis has influenced the external financing resources as lenders are choosing the target investments more carefully, forcing companies to find funding internally.

According to Raheman and Nasr (2007), the role of working capital management has become an essential part of firms' financial plans. As financing operations advance, firms are trying to release money from their own operations which results in effective working capital management. In this study, the relationship that exists between working capital management and financial performance will be studied, focusing on manufacturing firms in Nairobi County.

1.1.1 Working Capital Management

Working capital management is the management of the short-term investment and financing of a company. It is a category of resources that includes cash, inventory and receivables, minus whether a company owes in the short terms. Working capital comes straight from the balance sheet, and it is often calculated according to the formula: Working capital = current assets – current liabilities or Inventories + Accounts receivables – Account payables – Advances received = Working capital (Hoffmann, 2010).

The term working capital refers to a firm's short-term assets or currents assets. Managing the firm's working capital is a day-to-day activity which ensures that the firm has sufficient resources to continue its operations. This involves a number of activities related to the firm's receipt and disbursement of cash (Ross 2007). Most firms require certain levels of working capital to deal with variable and somewhat unpredictable financial inflows and outflows. Challenges such as disconnected supply chains processes, excessive stocks caused by non-bridged interfaces, inadequate trade credit terms, and suboptimal loan decisions require higher working capital than necessary. While the latter two originate from the financial area, connecting supply chain activities and reducing stock and inventory belong to the operating area. Companies tend to try to have less capital tied up in non-productive stocks, shorten the collection period for account receivables, and stretch cash payments for accounts payable as far as possible (Hofman and Kotzap, 2010).

Working capital management plays an important role in maintaining the financial health of the company during the normal course of business (Bender 2009). Short-term finance is an essential part of working capital management. Working capital is the only investment a company makes

without expecting a defined return. The investment is needed in order to keep the business going rather than to produce something from itself. Because of this, many firms have over-invested in working capital leading to cash flow problems and to a decrease in shareholder value. For many businesses the components of working capital represent the largest items on the balance sheet. Despite this they tend not to be seen as issues demanding strategic consideration or top management attention. (Bender 2009).

Hofmann and Kotzap (2010) states that the management of working capital includes all aspects of the administration of current assets and liabilities. According to Brealey (2011), working capital management aims to minimize the capital to be tied up in the company's turnover process by reducing current assets and extending current liabilities. Companies invest in short-term assets, which are inventories, accounts receivables, cash and short-term securities. Each of these need to be managed (Brealey 2011).

According to Sherr (1989), there is no need of working capital management in a "perfect" world. In such world, there would be no uncertainty, no transaction cost, information search costs, scheduling costs, or production and technology constraints. The unit cost of producing goods would not vary according to the amount produced. Firms would borrow and lend at the same interest rate. To be realistic, that is impossible. Sherr (1989) explains that the reality is characterized by the company's considerable uncertainty regarding the demand, market price, quality, and availability of its own products and those of suppliers. Working capital management often offer a substantial advantage over other techniques available to the firm (Sherr, 1989).

1.1.2 Financial Performance

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues (Bernardin and Russel, 1998). Financial Performance is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same sector or to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregation. According to Richard et. al(2009), firm's performance encompasses three specific areas which include accounting measures, market measures and some firms use both of them.

According to Ittner and Larcker (2008), accounting measurement is the computation of economic/financial activities in terms of money, hours and other units or a measurable element that is used to compare and evaluate accounting data. Accounting is often quantified in terms of money but can also be recorded in terms of alternative units, number of labor hours, number of jobs created, etc. The different accounting measurements provide a better view of the overall health of the firm by allowing varying methods of comparison and evaluation (Ittner and Larcker 2008). Despite most economic theories analyzing the choice of performance measures indicate that performance measurement and reward systems should incorporate any financial or nonfinancial measure that provides incremental information on managerial effort (Ittner and Larcker 2008).

Market based measures are policy instruments that use markets, price, and other economic variables to provide incentives for polluters to reduce or eliminate negative environmental externalities. Market measures seek to address the market failure of externalities (such as

pollution) by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services. Market measures are also referred to as economic instruments, price based instruments or new environmental policy instruments.

1.1.3 Working Capital Management and Financial Performance

Working capital management is a very important component of financial performance because it directly affects the liquidity and profitability of the company. It deals with current assets and current liabilities. Working capital management is important due to many reasons. For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, 2000). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Abuzar, 2004).

Theoretically, Raheman and Nasr (2006) states that there is a strong positive relationship between variables of working capital management and profitability of the firms. They demonstrates a considerable positive relationship between liquidity and profitability and positive relationship exists between size of the firm and its profitability. Furthermore, there is a significant relationship between debt used by the firm and its profitability.

Managers spend considerable time on day-to-day problems that involve working capital decisions. Theoretically, the reason for this is that current assets are short-lived investments that are continually being converted into other asset types (Rao, 1989). With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. Liquidity for the ongoing firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets (Soenen, 1993). Taken together, decisions on the level of different working capital components become frequent, repetitive, and time consuming. Working capital management is a very sensitive area in the field of financial management. It involves the decision of the amount and composition of current assets and the financing of these assets. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinary within a year and such temporary investment as may be readily converted into cash upon need. The working capital management of a firm in part affects its financial performance.

1.1.4 Manufacturing Firms in Kenya

Kenya manufacturing firms are among the key productive firms identified for economic growth and development because of their immense potential for wealth, employment creation and poverty alleviation. In addition, manufacturing firms continue to provide impetus towards achievement of Millennium Development Goals (MDGs) both in the medium and long term particularly goal one on Eradication of extreme Poverty and hunger and goal eight on Global Partnerships for Development.

Manufacturing firms are expected to play a key role in the growth of the Kenyan economy. The overall goal of the firms is to increase its contribution to Gross Domestic Product (GDP) by at

least 10 per cent per annum. The sector registered a growth of 10 per cent in the medium term period, (2008-2012) which was largely driven by local, regional and global markets. The key objectives of the sector are: strengthen production capacity and local content of domestically manufactured goods; increase the generation and utilization of Research and Development (R&D) results; raise the share of products in the regional market for 7 to 15 per cent; and develop niche products for existing and new markets.

However, the financial performance of the sector has been affected by low capital injection, use of obsolete technologies and high costs of doing business which is attributed to poor state of physical infrastructure, limited access to finance, limited research and development, poor institutional framework, and inadequate managerial, technical and entrepreneurial skills. This has as a result led to the limited local and Foreign Direct investment (FDI) in the country and the high outflow of investment to the neighboring countries.

Despite these many challenges and issues, the implementation of the Economic Recovery Strategy (ERS) from 2003-2007 resulted in improved performance of the manufacturing sector. For instance, the sector reported an annual growth rate of 5.5 percent between 2003 and 2007. Employment within the formal manufacturing sector grew by an annual average of 2.6 percent in the same period leading to the proportion of employees in the formal manufacturing to total employees averaging 15.7 percent. Moreover, 1.88 million people were employed in both formal and informal sectors.

During the period 2003 – 2007, the National Exports Strategy (NES) was formulated to improve competitiveness of the sector. NES has assisted in deepening of markets for manufacturers in traditional markets and expansion into new markets. In implementing NES, the government and

United Nations Industrial Development Organization (UNIDO) implemented Phase 1 of the Kenya Integrated Programme (KIP) whose objective was to help increase productivity, develop productive capacities in the Leather, Apiculture and Fish processing with high export potential. The Programme that ended in 2006 resulted in a National Study on apiculture; study report on value chain analysis of the Leather and Leather products and strengthening some related institutions; and regulations on quality and safety of fish products as well as capacity building of stakeholders in the sector.

This has increased production, improved earnings and conformity to international standards in the identified sectors. A National Policy was prepared in line with the Vision 2030 to guide the development of the manufacturing sector which takes over from the Sessional Paper No. 2 of 1997 on Industrial Transformation to the year 2020. Similarly, a Master Plan for Kenya's Industrial development (MAPSKID) has been developed and will provide the roadmap for development of the industrial sector.

1.2 Problem Statement

Working capital management (WCM) is essential for firms to survive because of its effects on financial performance especially on profitability, risk and its value (Smith, 1980). Firms can maximize their value by having an optimal level of working capital (Deloof, 2003). Accounts receivables, which is a part of trade credit, stimulates sales because it allows customers to assess product quality before paying (Long, Malitz and Ravid, 1993; and Deloof and Jegers, 1996). The negative side of granting trade credit and keeping inventories is that money is locked up in working capital (Deloof, 2003). Another component of working capital is accounts payable, which is in other words not extending trade credit but receiving it from a supplier. Receiving

such a trade credit from a supplier allows a firm to assess the quality of the products bought, and can be an inexpensive and flexible source of financing for the firm (Deloof, 2003; and Raheman and Nasr, 2007). The flipside is that receiving such a trade credit can be expensive if a firm is offered a discount for the early payment. This is also the case with uncollected and extended trade credit, which can lead to cash inflow problems for the firm (Gill et al., 2010). This made the researcher investigate the relationship that exists between working capital management and financial performance in manufacturing firms in Nairobi County.

Manufacturing firms in Kenya have an important component of the national economy in sustaining the livelihoods of millions and contributing significantly to the gross domestic product. However, manufacturing firms have remained hostage to different debilitating conflicts which affects their performance. For instance, firms against customers, investors against communities and business rivals against each other are some of the common conflicts. At the same time, lack of clear and effective regulations and policy guidelines has made it difficult to resolve some of these issues. Despite all these, there is an increasing demand among the manufacturing firms coupled with rapid increase in population and diversifying export potential, which calls for advanced intents to strengthening of key firm institutions. In order to resolve the issues and avoid conflicts, effective working capital management is needed among the manufacturing firms in order to improve performance.

In a study done by Lazaridis and Tryfonidis (2006) on the liquidity of a manufacturing firms in Kenya and its capital management found that a more liquid company can invest its capital in something more productive than working capital. They also found that capital efficiency adds to shareholder value as the present value of cash flows increases. Their study looked at only one aspect of working capital management and left out other aspects. Padachi (2006) did a study

about the impact of an optimal inventory management on manufacturing firm's performance in Kenya. His study found that by minimizing inventory levels of manufacturing firms might not be able to take advantage of sudden upturns in their demand and miss out on sale. This study also left out other aspects of working capital management that affects financial performance of a firm. Raheman and Nasr (2007) looked at how reduction of working capital improves a firm's profitability. They found that that when a company reduces the amount of financing working capital improves its profits. They also found that companies can try to finance their working capital with short-term liabilities and shareholders' equity.

In Kenya, Okumu (2010) conducted a study about working capital management in the banking sector, he found that for a bank to be effective, working capital management should be part of the company's strategic and operational processes. However, this study is built in a banking context and not in manufacturing firm's context. Simiyu and Akoth (2007) in their study about the relationship between the liquidity and profitability in organizations found that there is no positive relation between the firm's profitability and its liquidity level. This study examined the relationship that exists between working capital management and financial performance. In order to fulfill this, it sought to answer the following research questions: is there an efficient working capital management that can improve financial performance of Kenya's manufacturing firms?; and which are the key metrics that are used to define working capital management efficiency Kenya's manufacturing firms?

1.3 Objective of the Study

The objective of the study was to investigate the relationship between working capital management and financial performance in manufacturing firms in Nairobi County.

1.4 Value of the Study

- The findings of this study benefits policy makers of manufacturing firms in the country since they will be able to understand the relationship that exists between their working capital management and their financial performance and take action to efficiently manage their working capital for better performance of the firms.
- The findings of this study benefits scholars who will take similar study in future. It will provide them with an understanding of the topic and be able to develop literature review based on the findings of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses available literature on the working capital management and financial performance. It will cover the theoretical review, empirical review and provide a summary of literature review while identifying key findings & research gaps.

2.2 Theoretical Review

Working capital is an important tool for growth and profitability for corporations. If the levels of working capital are not enough, it could lead to shortages and problems with the day-to-day operations (Horne and Wachowicz, 2000). Working capital is also called net working capital and is defined as current assets less current liabilities (Hillier et al., 2010). Both components of working capital explains the financial performance of a firm. According to Berry and Jarvis, (2006), current assets are normally divided in cash and cash equivalents, short-term investments, trade and other receivables, prepaid expenses, inventories and work-in-progress. Current liabilities are divided in trade payables, short-term debt and accrued liabilities (Berry and Jarvis, 2006).

WCM is part of the financial management of a firm that reports its financial performance. Other parts are capital budgeting and capital structuring (Sharma and Kumar, 2011). According to Raheman and Nasr (2007), working capital management is vital for firms, especially for manufacturing, trading and distribution firms, because it directly affects their profitability and

liquidity. It is possible that inefficient WCM can lead to bankruptcy, even if the profitability of a firm is constantly positive (Kargar and Bluementhal, 1994). Raheman and Nasr (2007) state that excessive levels of current assets can easily lead to a below average return on investment for a firm. An efficient WCM has to manage working capital in such a way that it eliminates risks of default on payment of short-term obligations on one side and minimalizes the change of excessive levels of working capital on the other side (Eljelly, 2004).

Accounts receivables can be seen as short-term loans to customers given by the supplying firm. Giving these credit terms to customers are an important way of securing sales (Berry and Jarvis, 2006). Although the total amount of receivables on a balance sheet of a firm could be constant over time, its components are continually shifting and therefore careful monitoring is needed (Firth, 1976). When the accounts receivables keep growing, funds are unavailable and therefore can be seen as opportunity costs. According to Berry and Jarvis (2006) a firm setting up a policy for determining the optimal amount of account receivables have to take in account: the trade-off between the securing of sales and profits and the amount of opportunity cost and administrative costs of the increasing account receivables; the level of risk the firm is prepared to take when extending credit to a customer, because this customer could default when payment is due; and the investment in debt collection management.

Account payables are the opposite of account receivables, instead of giving a credit on a sale, a firm receives a credit. Hampton and Wagner (1989) explain explains that when a firm makes a purchase on credit, it incurs an obligation to pay for the goods according to the terms given by the seller hence an accounts payable. Until the cash is paid for the goods the obligation to pay is recorded in accounts payables⁷. Account payables can be seen as a short term loan, or in other words, a source of funding. Leach and Melicher (2009) explains the typical account payable

policy which is “2 in 10, net 30”. This means that if a firm pays within 10 days it receives a discount of 2 percent, if not, the total bill has to be paid in thirty days. This means that a firm has to pay 2 percent for only 20 days, which is in fact a very expensive loan. To make this clearer the 2 percent can be transformed in an annual rate of 43 percent, which is enormous compared to normal annual rates. It is also possible that the policy is net 30, which means that the due date is within thirty days, without any discount (Leach and Melicher, 2009).

Inventory represents a large part of the total assets of many firms and an effective management is needed for normal production and selling operations of the firm and for keeping the costs of holding inventory at a minimum (Firth, 1976). The goal of inventory management is to minimize the costs of storing and financing goods while maintaining a level of inventories that satisfies the amounts of sales of a firm (Hampton and Wagner, 1989). Deloof (2003) argues that with inventory management there is a trade-off between sales and costs. If a firm keeps more stock it could result in more sales, but it will also be more costly. A firm needs to determine an optimal level of the amount of stocks.

A firm has to look at each of the three parts of WCM and try to determine the optimal level based on the trade-offs (Howorth, 2003). Deloof (2030 also states that the optimal level can be reached if it maximizes the value of a firm. WCM is a simple and straightforward concept, which is ensuring enough financial resources to fund the current liabilities and current assets (Harris, 2005). In practice, WCM is one of the most important issues in an organization where Chief Financial Officers are struggling to reach the optimal level of each of the three parts of WCM parts (Lamberson, 1995).

2.2.1 The Cash Conversion Model

Brigham and Houston, (2004) states that the cash conversion cycle focuses on the length of time between when the firm makes payments and when it receives cash inflows. The key terms used in the model are; inventory conversion period, which is the average time required to convert materials into finished goods and then to sell those goods, receivables conversion period, which is the average length of time required to convert the firm's receivables into cash, payables deferral period, which is the average length of time between the purchase of materials and labour and the payment of cash for them.

Cash conversion cycle which nets out the 3 periods just defined and which therefore equals the length of time between the firm's actual cash expenditure to pay for productive resources (materials and labour) and its own cash receipts from the sale of products (that is, the length of time between paying for labour and materials and collecting on receivables)

Cash conversion cycle = Inventory conversion period + receivables collection period – payables deferral period

A shorter cash conversion cycle would lead to profitability of the firm but the firm has to exercise caution to avoid negative effects on the firm's other operations. The cash conversion cycle can be shortened by reducing the inventory conversion period and accounts receivable collection period and by lengthening the payables deferral period.

2.2.2 Quantity Theory of Money

According to the 'quantity theory' money is held only for purpose of making payments for current transactions (Keynes, 1936). This theory was proposed by Irving Fisher in 1911.

Fisher's version of the quantity theory can be explained in terms of the equation of exchange model.

$$MV = PT \dots\dots\dots (i)$$

Where M is the nominal stock of money in circulation, V is the transaction velocity of circulation of money, that is, the average number of times the given quantity of money changes hand in transactions, P is the average price of all transactions and T is the number of transactions that take place during the time period. Both MV and PT measure the total value of transactions during the time period and so must be identical. Thus, 'the equation' is really an identity which must always be true; it tells us only that the total amount of money handed over in transactions equal to the value of what is sold.

2.2.3 Baumol Model

Baumol model of cash management provides a formal approach for determining a firm's optimum cash balance under certainty. It considers cash management similar to an inventory management problem. As such firms attempt to minimize the cost of holding cash and the cost of converting marketable securities to cash. This model makes the following assumptions: the firm is able to forecast its cash needs with certainty, the firm's cash payments occur evenly over a period of time, the opportunity cost of holding cash is known and it does not change over time and the firm will incur the same transaction cost whenever it converts securities to cash.

The firm incurs a holding cost for keeping the cash balance. If the opportunity cost is k and cash balance is C, then the firm's holding cost for maintaining an average cash balance is as follows:

$$\text{Holding cost} = k(C/2)$$

The firm incurs a trading cost whenever it converts its marketable securities to cash. Total number of transactions during the year will be total funds requirements, T, divided by the cash balance, C, that is, T/C. The per transaction cost is assumed to be constant. If per transaction cost is c, then the total trading cost will be: Trading cost = c (T/C)

The total annual cost of the demand for cash will be: Total cost = $k(C/2) + c(T/C)$

The optimum cash balance, C, is obtained when the total is minimum. The formula for the optimum cash balance is as follows:

$$C = \sqrt{\frac{2cT}{k}}$$

A limitation of the Baumol model is that it does not allow cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows.

2.3 Empirical Studies

One of the most common measure of working capital is the current ratio. “Current ratio is a measure of relative liquidity that takes into account differences in absolute size. It is used to compare companies with different total current assets and liabilities” (Louderback, et. al., 2000). Current ratio is computed by dividing current assets by current liabilities. It gives a measure of the available current assets for every peso of current liability.

Lee (1999) found that systematic differences exist among liquidity and solvency measures for small companies versus large companies listed in the Disclosure, Inc. database for December 31,

1996. Eljely (2004) examined the relationship of liquidity and profitability as measured by current ratio and cash gap in Saudi Arabia. He used a sample of 29 joint stock companies and found significant negative relation between the firm's profitability and its liquidity level, as measured by current ratio using correlation and regression analysis. He presented evidence of negative relation between current ratio and profitability. His study pointed to reduction in profitability due to lost profits and unnecessary costs resulting from excessive liquidity. He concludes that current ratio is a good proxy variable for working capital management.

Joshua Abor's (2005) research paper about the effect of capital structure on profitability in Ghana revealed a significant relationship between financial leverage and profitability. His study demonstrated that the use of short-term debt improved the companies' profitability. Results of the study showed a significantly positive relation between the ratio of short-term debt to total assets and return on equity (ROE), as well as a significantly positive association between the ratio of total debt to total assets and ROE.

Afza and Nasir (2007) looked at the relationship between working capital management policy and financial performance among the 208 public limited companies listed in the Karachi Stock Exchange. They measured aggressive working capital investment policy in terms of low level of investment in current assets as percentage of total assets and found no significant relationship between working capital management policy and financial performance. Similarly, Wajahat and Syed (2010) studied the relationship between profitability and working capital policy of Swedish companies. They used 37 listed companies in the OMX Stockholm Stock Exchange and found no significant relationship between profitability and working capital management policy when grouped as aggressive, defensive or conservative based on cash conversion cycle. The ratio of current asset to total assets of the observations in this study was another possible proxy variable

for working capital management, but the data failed the tests of normality. Because of this limitation, dummy variables were used instead to capture the effect of working capital management policy on profitability.

The study of Falope and Ajilore (2009) also found no significant variations in the effects of working capital management between large and small firms in Nigeria using a sample of 50 quoted companies. With these conflicting results on firm size and profitability, this study will examine the relationship between working capital management and financial performance of manufacturing firms in Nairobi County. Binti and Binti (2010) conducted a study on the effect of market valuation and profitability in Malaysia. They used Ordinary Least Square (OLS) regression analyses on 172 listed Malaysian firms. They found that current ratio is negatively significant to financial performance. Their study emphasized the importance of proper management of working capital as it affects firm's market value and profitability. They concluded that working capital management should be part of the company's strategic and operational processes in order to be effective.

Aquino, R. (2010) studied the capital structure of listed and unlisted Philippine firms. Results indicated that higher debt is associated with high growth rates and profitability in unlisted firms. His study showed that high debt ratio is positively associated with the firm's growth rate and profitability, although he observed the opposite among the listed firms, which he attributed to the cautiousness of large listed firms on the effect of reliance on debt financing on their share prices.

Wajahat and Syed (2010) study revealed that the size of the firm has inverse relationship with profitability. On the other hand, Amarjit, et.al. (2010) found no significant relationship between firm size and gross operating profit ratio.

2.4 Summary of Literature Review

In a study done by Binti and Binti (2010), the effect of market valuation and profitability in Malaysia was studied. The study found that current ratio is negatively significant to financial performance. It left out the gap of how financial performance is affected by inventories, accounts receivable and payable. Eljely (2004) on the other hand examined the relationship of liquidity and profitability. Financial performance is not only shown by profitability but also return on assets something that the study will fulfill.

In as much as Afza and Nasir (2007) looked at the relationship between working capital management policy and financial performance, their study measured aggressive working capital investment policy in terms of low level of investment in current assets as percentage of total assets. This study will measure working capital management in terms of gross operating profit.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the process that was followed in this study. The sections that were covered were: the research design; target population; sample size, technique and justification; data collection; and data analysis.

3.2 Research Design

The study used qualitative research design. Babbie (2001) defines the design as describing and understanding rather than explanation and prediction. The researcher employed a descriptive research survey. The descriptive design was used to obtain and describe information regarding the relationship between capital working management and financial performance.

3.3 Population

According to Ngechu (2004), a study population is a well-defined or specified set of people, group of things, households, firms, services, elements or events which were being investigated. The target population of this study come from the manufacturing firms within Nairobi County for a period of five years between 2009-2013. There were 149 manufacturing firms in Nairobi County. This made a target population of 149 manufacturing firms.

3.4 Sample

Strydom and Venter (1996) describes sampling as the process of taking a portion of a population as a representative of that population. The researcher used purposive sampling technique to sample manufacturing firms in Nairobi County. Purposive sampling is done on the basis of the researchers own knowledge of the population, its elements and the nature of the research objective. Purposive sampling procedures draws a representative sample, from whose findings generalizations to the bigger population can be made and that people who do not fit the requirements are eliminated and it is less expensive as it involves lesser search costs (Gillham, 2000). The sample size was therefore 20 manufacturing firms in Nairobi County.

3.5 Data Collection

Data was gathered through the websites. The type of data that was gathered from the websites were account receivables, account payables, inventory levels, revenues, cost of goods sold, industry sector, current ratios, leverage ratio, fixed financial assets, total assets, profitability ratios and earnings before interest, taxes, depreciation and amortization. Data that was not available through the website was supplemented by the annual reports of the firms.

3.6 Data Analysis

Data analysis involves organizing, accounting for and explaining the data; that is, making sense of the data in terms of respondents' definition of the situation noting patterns, themes, categories and regularities (gay, 1992).

Test of significance

To test for statistical significance in the working capital management policies across groups of companies, the 't' statistic will be used. The test of significance was done at the individual company level and then compared for all the companies in the sample. The research study used 95% significance level. The 95%, a significance of $p= 0.05$ was used since it is the generally accepted conventional level in social sciences research. This indicates that 95 times out of 100, the researcher was sure that there is a true or significant correlation between the two variables, and there is only a 5% chance that the relationship does not truly exist.

Regression Analysis

In order to identify the relationship that exists between working capital management and financial management, the study used Ordinary Least Square (OLS) analysis. The OLS regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross-section firm data and time series data are pooled together in a single column assuming that there is no significant cross-section or temporal effects.

During the analysis, the study used Cash Conversion Cycle (CCC), Interest Coverage Ratio (ICR), Debt-Equity Ratio (DER), Accounts Receivables (AR), Accounts Payables (AP) and Inventories (INV) as the independent variables while ROA was used as dependent variables. All the variables were counted yearly.

The general model is

$$ROA_{it} = \alpha + \sum \beta_i X_{it} + \varepsilon_{it} \quad (1)$$

Where:

ROA_{it} = Return on assets of firm i at time t

£: = The intercept of equation.

β_i: = Coefficients of X_{it} variables.

X_{it}: = Different independent variables of firm 'i' at time 't'.

Converting the general least square model with our variables, the model for the study was:

$$ROA_{it} = \text{£} + \beta_1 CCC_{it} + \beta_2 ICR_{it} + \beta_3 DER_{it} + \beta_4 AR_{it} + \beta_5 AP_{it} + \beta_6 INV_{it} + \varepsilon_{it} \text{_____} (2)$$

Variables

1. Return on Assets

There are two different measurements of financial performance when studying the relation between WCM and financial performance. The simplest form among the two measurements is Return on Assets (ROA), which is measured by dividing net income with total assets. According to Padachi et al. (2006) ROA is a good measure for financial performance because it relates the performance of a firm with its assets. The financial performance measure that will be used in this study is GOP. This is because GOP is used by influential studies such as Deloof (2003), Raheman and Nasr (2007) and Lazaridis and Tryfonidis (2006).

2. Cash Conversion Cycle

The working capital cycle represents the time difference between the acquisition of raw materials and other inputs, and the receiving of cash from the sale of the finished goods. The Cash Conversion Cycle (CCC) is a part of this working capital cycle. The CCC is the time lag between the paying of the raw materials and the receipt of money from the sale of goods. In other words,

the period between the acquiring of raw materials and the paying of these materials plus the cash conversion cycle forms the working capital cycle of a firm. The cash conversion cycle is measured using the following formula:

Cash Conversion Cycle = the number of days inventories + the number of days accounts receivables – the number of days accounts payables.

3. Debt Equity Ratio

There are two ways to measure leverage that is used in the literature on the relationship between firm profitability and WCM. The first is calculated by dividing total debt with total assets. This is used in the studies of Raheman and Nasr (2007), Samiloglu and Demirgunes (2008), Sharma and Kumar (2011), Shin and Soenen (1998) Lazaridis and Tryfonidis (2006) and Karaduman et al. (2011). The other measurement does not include account payables and is calculated by dividing short term bank loans plus long term bank loans with total assets. This is used in the studies of by Deloof (2003), Padachi et al. (2010), Zariyawati et al. (2009), Lazaridis and Tryfonidis (2006) and Falope and Ajilore (2009). In this study the second measurement will be used, because account payables is studied individually and therefore it's logical to choose the control variable of debt where the account payables are excluded.

4. Accounts Receivable

Accounts Receivable (AR) are number of days account receivables. Although the total amount of receivables on a balance sheet of a firm could be constant over time, its components are continually shifting and therefore careful monitoring is needed. When the accounts receivables keep growing, funds are unavailable and therefore can be seen as opportunity costs.

Accounts payables will be used as the number of days account payables which will be determined by dividing account payables by cost of goods sold divided by the number of days in a year (365). AP is a short term loan that affects the financial performance of a firm.

5. Inventory

Inventories (INV) will be used as the number of day's inventory which is found by dividing inventories by cost of goods sold divided by the number of days in a year (365). Inventories represent a large part of total assets that affects the financials of a firm.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents analyzed data that was collected, interpretation and discussion of findings. Ordinary Least Square (OLS) analysis through correlation and regression models of analysis was used. The section is divided into three sections; descriptive, correlation and regression analysis. The study relied on secondary data only.

4.2 Reliability Analysis

The study used Cronbach statistics to test for reliability. In Cronbach, any alpha of more than 0.7 shows that data was reliable. The findings are presented in table 4.1 below.

Table 4.1: Reliability Statistics

Cronbach's Alpha	N of Items
.921	20

The findings shows Cronbach alpha of 0.921 which is more than 0.7 indicating that data was reliable.

4.2 Descriptive Statistics

This section sought to provide a description of the variables for the averages of the variables used in describing the relationship between variables. Results are presented in table 4.2 below.

Table 4.2: Descriptive Statistics for the Averages of Variables

	Mean ^b	Root Mean Square	N
ROA	.3032	.38388	20
CCC	83.3453	103.62963	20
ICR	1.7434	1.89270	20
DER	.2776	.36031	20
AR	73.4688	85.34880	20
AP	119.8316	149.45420	20
INV	88.2920	105.09236	20

a. Coefficients have been calculated through the origin.

In the findings above, there were 20 observations which were used for this study for all the variables. Mean score for the dependent variable (ROA) was 0.3032. Mean scores for

independent variables, Cash Conversion Cycle (CCC), Interest Coverage Ratio (ICR), Debt-Equity Ratio (DER), Accounts Receivables (AR), Accounts Payables (AP) and Inventories (INV), were 83.35, 1.74, 0.28, 73.47, 119.83 and 88.29 respectively.

The mean for ROA shows that over the period under study, ROA was averaging at 30.32%. The descriptive statistics for average AR explains that average collection period for the companies under study was 73 days. Average mean for AP explains the average payment period for the companies which was at 119 days. Mean score for INV explains the inventory turnover period which is at 88 days averaged on all the 20 manufacturing companies under study.

4.3 Correlation Analysis

Pearson correlation was used to examine if there was any correlation or degree of association between firms performance and return on assets. Table 4.3 presents the results.

CCC = Cash Conversion Cycle

ICR = Interest Coverage Ratio

DER = Debt-Equity Ratio

AR = Accounts Receivables

AP = Accounts Payables

INV = Inventories

Table 4.3: Correlation Analysis

	ROA	CCC	ICR	DER	AR	AP	INV
Pearson Correlation	ROA	1.000					
	CCC	.368	1.000				
	ICR	.121	-.027	1.000			
	DER	-.048	-.198	-.416	1.000		
	AR	-.263	.047	.495	.139	1.000	
	AP	.465	.325	-.045	.172	.269	1.000
	INV	.215	.476	-.042	.299	.098	.248
							1.000

*. Correlation is significant at the 0.05 level (2-tailed).

The findings shows positive correlation between return on assets and accounts payable with a correlation coefficient of 0.465. This implies that if firm's can delay making payments to their suppliers without affecting its reputation then this can improve performance.

The findings shows a positive correlation between return on assets and CCC with a correlation of 0.368. This implies that if firms can increase time difference between the acquisition of raw materials and other inputs, and the receiving of cash from the sale of the finished goods then this can improve performance.

The study shows a positive correlation between return on assets and inventories with correlation of 0.215. This implies that increasing the period of ordering raw materials can significantly increase firm's performance.

The result also shows a positive correlation between the current ratio with the return on asset with a correlation coefficient of 0.121. The current ratio is used to measure firm's liquidity and is therefore advised that firms maintain the ratio high in order to result to higher performance.

There is a negative correlation between debt ratio and return on asset with a correlation coefficient of -0.048. The debt ratio is used to measure firm's leverage and this implies that the lower the leverage the more profitable a firm is likely to be. The result also shows negative correlations between return on assets and accounts receivable with correlation coefficient of -0.263. This implies that collecting payments from customers within the shortest time possible can significantly improve firm's performance.

The findings illustrates the results obtained from the correlation analysis for the sampled firms for the period of study at 0.05 significance level.

4.4 Regression Analysis

A multivariate regression model was used to determine the relationship between working capital management and return on assets. This involved the use ordinary least squares (OLS). The resultant regression model was as follows;

$$ROA_{it} = \alpha + \beta_1 CCC_{it} + \beta_2 ICR_{it} + \beta_3 DER_{it} + \beta_4 AR_{it} + \beta_5 AP_{it} + \beta_6 INV_{it} + \epsilon_{it} \quad (2)$$

To conduct regression analysis using ordinary least squares, the researcher ran a model in which all the variables under study were included. Table 4.4 presents the model summary.

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811 ^a	.658	.501	.17068

a. Predictors: (Constant), INV, ICR, AP, DER, AR, CCC

Analysis in table 4.4 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R^2 equals 0.658 that is, Cash Conversion Cycle (CCC), Interest Coverage Ratio (ICR), Debt-Equity Ratio (DER), Accounts Receivables (AR), Accounts Payables (AP) and Inventories (INV) explains 65.8% only of firms performance leaving 34.2 percent unexplained. The P- value of 0.000 (Less than 0.05) implies that the model is significant at the 5 percent significance.

Table 4.5: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.730	6	.122	4.176	.000 ^b
	Residual	.379	13	.029		
	Total	1.109	19			

a. Dependent Variable: ROA

b. Predictors: (Constant), INV, ICR, AP, DER, AR, CCC

ANOVA findings (P- value of 0.00) in table 4.8 show that there is a strong significant relationship between the predictor's variables (Cash Conversion Cycle, Interest Coverage Ratio, Debt-Equity Ratio, Accounts Receivables, Accounts Payables and Inventories) and response variable (Return on Assets). An F ratio is calculated which represents the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term. A significant F test indicates that we can reject the null hypothesis which states that the population means are equal. The P value is 0.000 which is less than 0.005 significance level.

Table 4.6: Distribution of Coefficients

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.127	.161		-.786	.446
CCC	.001	.001	.360	1.631	.127
ICR	.227	.076	.711	2.971	.011
DER	.375	.245	.366	1.527	.151
AR	-.004	.001	-.824	-3.745	.002
AP	.001	.000	.562	3.062	.009
INV	.018	.001	-.094	-.442	.666

a. Dependent Variable: ROA

These are the values for the regression equation for predicting the dependent variable from the independent variable. From the regression model:

$$ROA_{it} = \alpha + \beta_1 CCC_{it} + \beta_2 ICR_{it} + \beta_3 DER_{it} + \beta_4 AR_{it} + \beta_5 AP_{it} + \beta_6 INV_{it} + \varepsilon_{it}$$

The regression equation is presented below.

$$ROA = 0.127 + 0.001CCC + 0.227ICR + 0.375DER - 0.004AR + 0.001AP_{it} + 0.018INV$$

Constant of 0.127, shows that if Cash Conversion Cycle, Interest Coverage Ratio, Debt-Equity Ratio, Accounts Receivables, Accounts Payables and Inventories all rated as zero, Return on Assets would be 0.127.

The regression coefficient for cash conversion cycle is 0.001. This means that the relationship between the cash conversion cycle and return on assets is positive. This implies that an increase in cash conversion cycle results to an increase in firm's performance and vice versa.

The regression coefficient for Interest Coverage Ratio is 0.227. This means that the relationship between the Interest Coverage Ratio and Return on Assets is positive. This implies that an increase in Interest Coverage Ratio results to an increase in firm's performance and vice versa.

The regression coefficient for Debt-Equity Ratio is 0.375. This means that the relationship between the Debt-Equity Ratio and Return on Assets is positive. This implies that an increase in Debt-Equity Ratio results to an increase in firm's performance and vice versa.

The regression coefficient for Accounts Receivables is -0.001. This means that the relationship between the Accounts Receivables and Return on Assets is negative. This implies that an increase in Accounts Receivables results to a decrease in return on assets and vice versa.

The regression coefficient for Accounts Payable is 0.004 which means that the relationship between return on assets and average payables period is positive. This implies that an increase in accounts payables period results an increase in firm's performance.

The regression coefficient for Inventory turnover period for the sampled firms' has a coefficient of 0.018 which means that there exist a positive relationship between inventory turnover period and return on assets.

4.5 Discussion of Findings

there is a strong significant relationship between the predictor's variables (Cash Conversion Cycle, Interest Coverage Ratio, Debt-Equity Ratio, Accounts Receivables, Accounts Payables and Inventories) and response variable (Return on Assets). This findings were not consisted with Afza and Nasir (2007) who looked at the relationship between working capital management policy and financial performance. They measured aggressive working capital investment policy in terms of low level of investment in current assets as percentage of total assets and found no significant relationship between working capital management policy and financial performance.

Similarly, Wajahat and Syed (2010) studied the relationship between profitability and working capital policy of Swedish companies. They used 37 listed companies in the OMX Stockholm Stock Exchange and found no significant relationship between profitability and working capital management policy when grouped as aggressive, defensive or conservative based on cash conversion cycle. The study of Falope and Ajilore (2009) also found no significant variations in

the effects of working capital management between large and small firms in Nigeria using a sample of 50 quoted companies.

The study found that the relationship between Debt-Equity Ratio and Return on Assets is positive. This implies that an increase in Debt-Equity Ratio results to an increase in firm's performance and vice versa. Aquino, R. (2010) studied the capital structure of listed and unlisted Philippine firms. Results indicated that higher debt is associated with high growth rates and profitability in unlisted firms. His study showed that high debt ratio is positively associated with the firm's growth rate and profitability, although he observed the opposite among the listed firms, which he attributed to the cautiousness of large listed firms on the effect of reliance on debt financing on their share prices.

The study found that the relationship between the Accounts Receivables and Return on Assets is negative. This implied that an increase in Accounts Receivables results to a decrease in return on assets and vice versa. Atrill (2006) attributes low receivable collection potential among the SMES to lack of proper debt collection procedures such as prompt invoicing and sending out regular statements. This causes the increase risk of late payment and defaulting debtors. Deloof (2003) also found that firms can increase their profitability by reducing the debtors' collection period.

The study found that the relationship between return on assets and average payables period is positive. This implied that an increase in accounts payables period results an increase in firm's performance. Christopher (2009) asserts that the longer the accounts payables period the more advantageous for the firm as such fund can be put to other uses. However, longer account holding period can erode a firm's credit worthiness.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings presented in chapter four according to the study objective. The objective of the study was to investigate the relationship between working capital management and financial performance in manufacturing firms in Nairobi County. It presents the conclusions and the recommendations to the study.

5.2 Summary of Findings

The study sought to investigate the relationship between working capital management and financial performance in manufacturing firms in Nairobi County. Twenty manufacturing firms in Nairobi County were sampled and the period of study was five years between 2009 and 2013. All the data required was obtained from the firm's audited financial statements.

The study found that there exist a negative relationship between average collection period and firm's performance among the manufacturing firms in Kenya County. This implies that a decrease in accounts receivables period results to improved performance and vice versa. The study found that low receivable collection potential among the SMES to lack of proper debt collection procedures such as prompt invoicing and sending out regular statements. This causes the increase risk of late payment and defaulting debtors. Firms can increase their profitability by reducing the debtors' collection period.

However, the study found a positive relationship between average payment period and return on assets. This implies that an increase in accounts payables period results an increase in firm's performance.

The also exists a positive relationship between inventory turnover period and return on assets. This in turn implies that a decrease in inventory turnover period results to increased profitability and vice versa or that an increase in accounts payables period results an increase in firm's performance. The longer the accounts payables period the more advantageous for the firm as such fund can be put to other uses. However, longer accounts holding period can erode a firm's credit worthiness.

The study found the relationship between Debt-Equity Ratio and Return on Assets to be positive. An increase in Debt-Equity Ratio results to an increase in firm's performance and vice versa. The study found that higher debt is associated with high growth rates and profitability in unlisted firms.

5.3 Conclusions

Working capital management is a very important component of financial performance because it directly affects the liquidity and profitability of the company. Management performance would be improved by managing working capital efficiently. Ordinary Least Square (OLS) regression found that cash conversion cycle is positively associated to the Return on Assets (ROA). The results show that managers can improve their performance by managing working capital efficiently. Accounts payables period and inventory turnover period components of cash conversion cycle have positive relationship with return on assets. Accounts receivable period has a negative relationship with firm's return on assets. The findings indicate that manufacturing

firm's performance is increased by decreasing accounts receivables period and inventory turnover period. Although finance managers fear managing accounts payables period might stem from the fact that more controlling the accounts payables period would damage firm's reputation, and consequently decrease performance.

Manufacturing firm's invest more in working capital raising the investment too high in proportion to the total assets employed and so it is vital that these funds are used in efficient and effective way. A firm can be very profitable but if this is not translated into cash from operations within the same operating cycle, the firm may have to borrow to support its continued working capital needs. Thus the two objectives of profitability and liquidity must be traded off. Managers spend considerable time on day-to-day problems that involve working capital decisions. Theoretically, the reason for this is that current assets are short-lived investments that are continually being converted into other asset types. With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. Liquidity for the ongoing firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets.

The study therefore concludes that working capital management is a very sensitive area in the field of financial management. It involves the decision of the amount and composition of current assets and the financing of these assets. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinary within a year and such temporary investment as may be readily converted into cash upon need.

5.4 Limitations of the Study

The study was limited to manufacturing firms within Nairobi County excluding those from other Counties within the country.

The study was also limited to manufacturing firms only excluding banking, insurance and investment companies. A sample of twenty companies is also too small to generalize the results.

The study was limited to five years. The period of study was too short to observe changes in variables overtime. Some of changes could not be observed then.

Time provided for the study was small that could not allow extensive analysis of the relationship between working capital management and financial performance which also resulted to a limitation.

It was difficult for the study to get data from the manufacturing firms since some of the firms regarded the information as confidential. The information provided was exact that made the researcher not determine whether it was distorted hence a limitation.

5.5 Recommendations

5.5.1 Policy Recommendations

From the study findings, efficient working capital management results to improved performance among manufacturing firms in Nairobi County. Based on the findings, following recommendations were made for the components of working capital.

From the findings, there exist a negative relationship between average collection period and firm's performance. The study recommends that firms should be careful so that it does not harm their volume of credit sales which can adversely affect its profitability.

The study recommends that firms should reduce accounts collection period which will in turn reduces bad debts through accelerated collections.

The relationship between inventory turnover period and firm's profitability is positive. This implies that a decrease in inventory turnover period results to increased profitability and vice versa. The study therefore recommends that firms must make a trade-off between speed of production, product quality and cost of innovation. In so doing, firms will experience reduced warehouse space, reduced obsolescence of products, low depreciation and low deadweight costs associated with inventories such as cash tied up in raw materials or work-in-progress which could be profitably used elsewhere.

The relationship between average payables period and return on assets is positive, this implies that an increase in average payables period results to an improved performance. The study therefore recommends that manufacturing firms should increase average payables period so that they can have internal financing to help firms save costs associated with external financing such as loans.

The study faced a limitation of scope where the study was limited to manufacturing firms within Nairobi County excluding those from other Counties within the country. The study therefore recommends that the scope be enlarged to other Counties.

5.5.1 Suggestions for Further Research

The study explains 65.8% only of firms performance leaving 34.2 percent unexplained. The 34.2% represents other variables that explains firms' performance this study did not include. The study therefore suggests that other studies on the same area be done to determine variables that explains the 34.2%.

Since this study was done in Nairobi County only, it is difficult to generalize the findings to other manufacturing firms in Kenya. Studies should be done about working capital management in other counties so as to be able to generalize the findings.

Further research should be done that involves other industries other than the manufacturing industry for example the insurance industry, construction industry, banking industry etc.

Since the research time was short, a longer period of time should be allocated for the research in order to get extensive analysis on the relationship between working capital management and financial performance of manufacturing firms.

Since some firms found it difficult to give out financial information saying that its confidential, there should be a law to regulate firms to make public their financial positions and performance for other future researchers to get access to the financial information.

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APPENDICES

Appendix One: List of Manufacturing Firms

	Name of Manufacturing Company		Name of Manufacturing Company
1	Abu Engineering Ltd	76	Maweni Limestone Ltd
2	Acme Container Ltd	77	Mellech Engineering & Construction Ltd.
3	Adhesive Solutions Africa Ltd	78	Metal Crown Ltd
4	Africa Kaluworks (Aluware) Division K	79	Metsec Ltd.
5	Africa Oil Kenya B.V	80	MGS International (K) Ltd
6	African Art Products (East Africa) Ltd	81	Microsoft East Africa
7	Agni Enterprises Ltd	82	Mjengo Limited
8	Ali Glaziers Ltd	83	Mohajan Trade International
9	Alpha Dairy Products Ltd	84	Ndugu Transport Co Ltd
10	Alpha Fine Foods Ltd	85	New World Stainless Steel Ltd
11	Apex Steel Ltd	86	Njoro Canning Factory Ltd
12	AquaSanTec	87	Octagon Express (kenya) Limited
13	Aquva Agencies Ltd -Nairobi	88	Orbit Chemical Industries Ltd
14	Arrow Rubber Stamp Company Ltd.	89	Orpower 4, Inc
15	Artech Agencies (KSM) Ltd	90	Packaging Industries Ltd
16	Ashut Quality Products	91	Pelican Signs Ltd
17	ASL Ltd – HFD	92	Petmix Feed
18	Atlas Copco Eastern Africa Ltd	93	Platinum Packaging Limited
19	Beta HealthCare	94	Polythene Industries Ltd
20	Bilco Engineering	95	Print Fast Kenya Ltd.
21	biodeal laboratories ltd	96	Protec
22	Blowplast Limited	97	Pudlo Cement Company (PCC)
23	Blue Ring Products Ltd	98	PZ Cussons East Africa Ltd.
24	Bobmil Industries Limited	99	Raghad Enterprises
25	Bogani Industries Ltd	100	Ramco Printing Works Limited
26	Bosky Industries Ltd	101	Redsea Chemist
27	British American Tobacco Kenya Ltd	102	Reliable Concrete Works Ltd
28	C. Dormans Ltd	103	Renscope Scientific Kenya
29	Central Glass Industries {CGI}	104	Rhino Special Products Ltd
30	Chandaria Industries Limited	105	Rock Plant Kenya Ltd.
31	Chemplus Holdings LTD	106	ROM East Africa Limited
32	Chevron Kenya Ltd	107	ROSEWOOD OFFICE SYSTEMS LIMITED
33	Chloride Exide Kenya Limited	108	Rotam Sub-Saharan Africa
34	Climacento Green Tech Ltd	109	Rupa Cotton Mills EPZ Ltd
35	Colgate-Palmolive(East Africa) Ltd	110	Rural Electrification Authority
36	Collis F B	111	Sameer Group

37	Commrcial Motor Spares Ltd	112	Sanpac Africa Ltd
38	Cosmos Limited	113	Shade Systems(E.A)Ltd
39	Creative Fabric World Co Ltd	114	Shadetents And Exquisite Designs
40	Creative Innovations Ltd.	115	Shamas Motor Spares
41	Crown-Berger (K) Ltd.	116	Shankan Enterprises Ltd
42	Cuma Refrigeration EA Limited	117	Sigma Engineering Co. Ltd
43	Doshi Group of Companies	118	Simco Auto Parts Ltd
44	East Africa Glassware Mart Ltd	119	Slumberland Kenya Ltd
45	East African Breweries Limited	120	Solarworks East Africa
46	East African Cables Ltd.	121	South Hill Motor Spares Ltd
47	Eastern Chemical Industries Ltd	122	Stainless Steel Products Ltd
48	Eco Consult LTD	123	Stamet Products (K) Ltd
49	Ecolab East Africa (K) Ltd	124	Statpack Industries Limited
50	Ecotech Ltd	125	Steel Structures Limited
51	Energy Pak (K) Ltd	126	Sudi Chemical Industries Limited
52	Equatorial Tea Ltd	127	Sunrays Solar Ltd
53	Excel Chemical Ltd.	128	SuperfitSteelcon Ltd
54	FairdealUpvc, Aluminium and Glass Ltd	129	Tamoil Africa Holdings Limited
55	Famiar Generating Systems Ltd	130	TARPO Industries Limited
56	Flexoworld Ltd	131	Tenacity Locks Ltd
57	Firestone East Africa Ltd	132	The Kensta Group
58	furmart furnishers	133	Tianjin Haopu Chemical Co. Ltd
59	Gahir Engineering Works Ltd	134	Top Tank
60	goldrock international enterprises	135	Tripac Chemical Industries Ltd
61	Goods Chemistry Practise& Allied Cert. Corp L.T.D	136	Unga Farm Care (EA) Ltd
62	Guan Candle Making Machine Co.,Ltd.	137	Unga Group Ltd.
63	Haco Industries Ltd	138	Warren Concrete Ltd
64	Heluk International Limited	139	Wartsila Eastern Africa Ltd
65	Hills Converters [K] Ltd	140	Welfast Kenya Ltd
66	Hydraulic Hose & Pipe Manufacturers Ltd	141	Welrods Limited
67	Imani Workshops	142	Wigglesworth Exporters Ltd
68	JET Chemicals (Kenya) Ltd	143	Williamson Power Ltd
69	Kapa Oil Refineries Ltd	144	Wines Of The World Limited
70	Kenbro Industries	145	Kiesta Industrial Technical Services Ltd
71	Kenya Electricity Generating Company Limited.	146	Kim-Fay E.A Limited
72	Kenya Grange Vehicle Industries Ltd	147	KingSource Plastic Machinery Co.,Ltd.
73	Kenya Petroleum Refineries Ltd	148	Manzil Glass & Hardware Ltd
74	Kenya Power and Lighting Company Ltd	149	Mather & Platt Kenya Ltd
75	Kenya Solar		

Appendix II: Data Collection Sheet

Company Name _____

Variable	Year				
	2013	2012	2011	2010	2009
Sales					
Gross Operating Profit					
Accounts Receivables					
Inventory					
Cost of Sales					
Accounts Payables					
Total Assets					
Current Assets					
Current Liabilities					
Total Debt					

Appendix Three: Individual Company's Variables

1. Central Glass Industries {CGI}							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.53	132.1	3.41	0.06	52.06	40.71	120.74
2012	0.53	180.7	2.1	0.12	54.34	58.65	185.01
2011	0.32	129.05	1.34	0.17	56.97	59.16	131.24
2010	0.45	120.45	2.24	0.09	45.84	50.08	124.69
2009	0.35	177.88	1.43	0.27	70.1	60.85	168.64
2. Africa Oil Kenya B.V							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.1	47.98	1.9	0.01	53.75	89.84	84.07
2012	0.11	34.71	2.13	0.02	47.55	101.72	88.89
2011	0.1	27.14	2.37	0.06	50.68	97.45	73.92
2010	0.09	29.72	2.57	0.02	44.42	72.99	58.29
2009	0.25	13.33	2.75	0.09	67.75	114.66	60.24
3. Polythene Industries Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.02	12.8	0.92	0.35	34.57	30.96	9.19
2012	0.07	15.14	1.06	0.32	47.45	41.01	8.7
2011	0.03	12.17	0.87	0.37	46.71	42.71	8.17
2010	0.21	16.2	0.9	0.43	45.72	40.78	11.26
2009	0.18	2.81	1.57	0.36	41.23	50.25	11.83
4. Ashut Quality Products							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.91	217.81	2.25	0.01	67.19	424.31	139.31
2012	0.95	124.7	2.31	0.02	62.6	319.25	131.95
2011	0.96	147.34	2.65	0	66.83	353.8	139.63
2010	0.93	125.11	2.13	0.01	70.89	304.79	108.79
2009	0.98	184.16	1.85	0.02	79.47	465.14	201.51

5. Redsea Chemist							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.09	20.99	1.01	0.24	98.61	109.87	32.25
2012	0.1	42.87	1.5	0.16	109.26	99.05	32.66
2011	0.09	4.05	1.41	0.14	80.72	112.83	28.06
2010	0.12	45.31	1.54	0.22	80.83	63.04	27.53
2009	0.11	28.87	1.23	0.2	98.38	101.08	31.57
6. C. Dormans Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.49	123.31	6.03	0.04	158.32	39.52	4.51
2012	0.42	118.17	8.29	0.01	153.63	41.45	6
2011	0.29	10.18	1.68	0.03	154.9	167.58	2.5
2010	0.41	26.26	2.07	0.01	151.71	128.16	2.71
2009	0.38	26.38	2.13	0.01	149.14	127.15	4.39
7. Rupa Cotton Mills EPZ Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.43	159.55	0.56	0.16	27.94	205.38	17.89
2012	0.43	172.53	0.64	0.13	36.34	231.5	22.63
2011	0.46	195.95	0.67	0.16	38.53	247.03	12.55
2010	0.41	263.48	0.49	0.12	46.66	325.31	15.17
2009	0.39	270.18	0.51	0.1	30.15	313.91	13.59
8. Commercial Motor Spares Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.16	157.06	1.2	0.26	65.46	89.41	181.01
2012	0.19	121.28	1.12	0.3	58.24	103.59	166.64
2011	0.26	140.16	1.31	0.25	65.86	90.44	164.74
2010	0.28	134.96	1.3	0.22	58.92	73.22	149.26
2009	0.27	116.3	1.29	0.16	65.46	128.55	179.39
9. Chandaria Industries Limited							
	ROA	CCC	ICR	DER	AR	AP	INV

2013	0.28	194.48	2.83	0.14	115.73	53.07	131.82
2012	0.26	208.98	3.02	0.15	101.55	31.2	138.63
2011	0.21	189.78	2.71	0.14	119.89	48.74	118.63
2010	0.25	203.6	2.12	0.23	94.09	45.96	155.47
2009	0.24	243.04	2.55	0.18	103.44	38.42	178.02
10. East African Breweries Limited							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.59	40.03	0.8	0.53	53.84	195.22	101.35
2012	1.44	89.36	0.89	1.57	57.45	217.15	70.34
2011	0.94	71.16	1.49	1.14	51.66	188.73	65.91
2010	0.48	0.49	2.01	0.67	44.14	193.08	148.45
2009	0.53	8.98	1.98	0.72	46.2	199.51	144.33
11. East African Cables Ltd.							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.16	66.34	1.25	0.2	107.65	96.62	55.31
2012	0.24	59.87	2.2	0.13	89.28	71.45	42.04
2011	0.27	22.67	2	0.14	77.76	87.72	32.63
2010	0.19	26.71	1.36	0.19	100.9	108.67	34.48
2009	0.3	44.52	1.35	0.07	80.23	87.27	51.57
12. Unga Group Ltd.							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.27	170.12	1.26	0.24	46.92	80.81	204.01
2012	0.26	146.53	1.11	0.3	50	71.43	167.96
2011	0.34	188.92	1.41	0.38	54.4	67.47	201.99
2010	0.46	152.89	1.51	0.36	49.5	49.69	153.08
2009	0.52	97.95	1.66	0.49	38.88	50.18	109.25
13. Haco Industries Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.02	100.89	1.73	0.82	144.46	163.25	119.68
2012	0.03	96.6	1.54	0.8	130.15	207.2	173.65

2011	0.02	72.2	1.29	0.76	167.82	321.86	226.23
2010	0.03	39.56	1.15	0.71	210.68	423.67	252.55
2009	0.02	87.59	1.87	0.81	175.89	313.53	225.23
14. Africa Oil Kenya B.V							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.12	95.68	1.22	0.56	61.77	114.19	148.1
2012	0.13	50.83	0.84	0.52	82.71	125.28	93.39
2011	0.15	77.75	1.75	0.45	71.43	89.53	95.85
2010	0.18	89.35	1.03	0.29	80.93	100.6	109.01
2009	0.26	75.38	1.02	0.42	75.22	97.39	97.56
15. Cosmos Limited							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.23	8.89	2.35	0.02	16.67	81.82	74.04
2012	0.3	18.07	2.62	0.04	14.9	57.45	60.62
2011	0.29	11.54	1.72	0.09	21.92	103.13	69.67
2010	0.34	31.03	2.58	0.01	24.33	75.86	82.56
2009	0.44	59.54	1.84	0.04	37.39	100.24	122.38
16. Crown-Berger (K) Ltd.							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.65	67.22	1.54	0.17	58.14	75.84	84.91
2012	0.6	82.01	1.46	0.24	60.01	78.47	100.46
2011	0.6	75.78	1.49	0.28	65.53	75.86	86.11
2010	0.5	91.92	1.44	0.27	68.55	93.66	117.02
2009	0.43	140.15	1.34	0.32	88.9	93.52	144.77
17. Eastern Chemical Industries Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.09	33.64	1.16	0.25	23.21	72.57	82.99
2012	0.18	30.95	1.51	0.24	34.61	76.22	72.56
2011	0.17	12.59	1.59	0.28	26.07	72.34	58.86
2010	0.21	4.15	2.07	0.27	30.76	78.61	52

2009	0.26	34.74	2.26	0.3	27.28	70.56	78.02
18. Warren Concrete Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.13	24.36	0.97	0.51	24.81	17.67	17.23
2012	0.27	41.63	1.22	0.41	21.07	21.14	41.71
2011	0.24	70.97	1.41	0.43	39.9	18.41	49.48
2010	0.19	23.94	1.3	0.14	30.44	59.54	53.04
2009	0.27	25.34	1.3	0.23	21.29	27.05	31.11
19. Kenbro Industries							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.18	27.67	1.3	0.13	27.59	49.49	49.57
2012	0.13	38.58	1.1	0.41	32.52	43.95	50.01
2011	0.18	34.79	1.18	0.33	36.83	60.87	58.83
2010	0.09	99.09	1.16	0.44	109.2	106.36	96.25
2009	0.2	33.14	1.24	0.35	36.79	39.13	35.49
20. Slumberland Kenya Ltd							
	ROA	CCC	ICR	DER	AR	AP	INV
2013	0.02	65.32	1.49	0.42	151.18	155.38	69.53
2012	0.02	96.42	1.74	0.43	186.7	132.87	42.58
2011	0.02	188.66	4.71	0.41	244.35	117.25	61.56
2010	0.02	43.25	2.17	0.26	139.84	129.91	33.32
2009	0.03	70.7	1.4	0.21	126.35	241.92	44.88

Appendix Three: Average Company's Variables

	COMPANY	AVERAGES						
		ROA	CCC	ICR	DER	AR	AP	INV
1	Central Glass Industries {CGI}	0.436	148.036	2.104	0.142	55.862	53.890	146.064
2	Africa Oil Kenya B.V	0.130	30.576	2.344	0.040	52.830	95.332	73.082
3	Polythene Industries Ltd	0.102	11.824	1.064	0.366	43.136	41.142	9.830
4	Ashut Quality Products	0.946	159.824	2.238	0.012	69.396	373.458	144.238
5	Redsea Chemist	0.102	26.798	1.338	0.192	93.560	97.174	30.414
6	C. Dormans Ltd	0.398	56.788	4.040	0.020	153.540	100.772	4.022
7	Rupa Cotton Mills EPZ Ltd	0.424	212.338	0.574	0.134	35.924	264.626	16.366
8	Commrecial Motor Spares Ltd	0.232	133.952	1.244	0.238	62.788	97.042	168.208
9	Chandaria Industries Limited	0.248	207.976	2.646	0.168	106.940	43.478	144.514
10	East African Breweries Limited	0.796	42.004	1.434	0.926	50.658	198.738	106.076
11	East African Cables Ltd.	0.232	44.022	1.632	0.146	91.164	90.346	43.206
12	Unga Group Ltd.	0.370	151.282	1.390	0.354	47.940	63.916	167.258
13	Haco Industries Ltd	0.024	79.368	1.516	0.780	165.800	285.902	199.468
14	Africa Oil Kenya B.V	0.168	77.798	1.172	0.448	74.412	105.398	108.782
15	Cosmos Limited	0.320	21.198	2.222	0.040	23.042	83.700	81.854
16	Crown-Berger (K) Ltd.	0.556	91.416	1.454	0.256	68.226	83.470	106.654
17	Eastern Chemical Industries Ltd	0.182	23.214	1.718	0.268	28.386	74.060	68.886
18	Warren Concrete Ltd	0.220	37.248	1.240	0.344	27.502	28.762	38.514
19	Kenbro Industries	0.156	46.654	1.196	0.332	48.586	59.960	58.030
20	Slumberland Kenya Ltd	0.022	64.590	2.302	0.346	169.684	155.466	50.374