THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

This research project is my original work and has never been presented in any other university or college for an award of degree, diploma or certificate.

Signed……**Date**……

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

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DEDICATION

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ABSTRACT

Management of working capital which aims at maintaining an optimal balance between each of the working capital components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses (Deloof, 2003). The main objective of the study was to establish the relationship between working capital management and financial performance of manufacturing firms listed in NSE.

The research used both descriptive and quantitative research design. The population of interest in this study constituted all manufacturing companies quoted at the NSE for the period of five years from 2007 to 2011.The quantitative research approach was employed to arrive at the findings of the study.

From the regression models, the study found out that inventory turnover in days has negative relationship with Return on Equity which means that companies' financial performance can be increased by reducing inventory in days. Cash Conversion period and Net payment period shows significant negative relation with Return on Equities showing that firms' financial performance can be increased with short size of both of them. The study recommends that there should be proper inventory management system in manufacturing firms to avoid over stocking of inventory resulting to efficient outcome of investment. Management of manufacturing firms should also make sure certain standards and levels which will stop piling up of inventory. The study further recommends that companies should engage in relationship with those suppliers who allow for long credit period and those customers who accepts short payment period.

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ABBREVIATIONS

AIP	-	Aggressive Inventory Policy
CCC	-	Cash Conversion Cycle
CMA	-	Capital Markets Authority
CSE	-	Colombo Stock Exchange
EAC	-	East Africa Community
EOQ	-	Economic Order Quantity
GDP	-	Gross Domestic Product
JIT	-	Just in Time
KAM	-	Kenya Association of Manufacturers
KSE	-	Karachi Stock Exchange
NLB	-	Net Liquidity Balance
NPV	-	Net Present Value
NSE	-	Nairobi Securities Exchange
NTC	-	Net Trade Cycle
ROA	-	Return on Assets
ROE	-	Return on Equity
TCE	-	Transaction Cost Economics
WCM	-	Working Capital Management
WCR	-	Working Capital Requirement

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Management of working capital which aims at maintaining an optimal balance between each of the working capital components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses (Deloof, 2003). In practice, it has become one of the most important issues in organizations with many financial executives struggling to identify the basic working capital drivers and the appropriate level of working capital to hold so as to minimize risk, effectively prepare for uncertainty and improve the overall performance of their businesses (Lamberson, 1995).

Working capital management is a very important component of corporate finance 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. For a distribution company, they account for even more. 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).

Many surveys have indicated that managers spend considerable time on day -to-day problems that involve working capital decisions. One 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).

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 (Eljelly, 2004).

A fine calculated and employed management of day to day expenses is anticipated to add positively to the formation of a firm's worth (Padachi, 2006). Holding of the excess amount of working capital, cause for decline in profitability of a business. Harris (2005) recommended that for improving overall performance, minimize risk and well prepare for uncertainty at this time it is a prerequisite for firm to know about the Determinants of working capital and the appropriate intensity.

WCM is therefore necessary for financial management (Reddy, 1991). The fundamental idea of financial management is to optimize owner of the company (shareholders) wealth. The company can only achieve their objective when business get enough revenue. The amount of earnings mainly relies on the degree of sales but it does not transfer into cash immediately because there is a time interval among the good sold and the cash received.

1.1.1 Working Capital Management

Working capital management involves managing the firm's inventory, receivables and payables in order to achieve a balance between risk and returns and thereby contribute positively to the creation of a firm value. Excessive investment in inventory and receivables reduces the profit, whereas too little investment increases the risk of not being able to meet commitments as and when they become due. The working capital includes all the items shown on a company's balance sheet as short term or current assets, while net working capital excludes current liabilities. These measures are considered useful tools in accessing the availability of funds to meet current operations of companies. Therefore, the importance of maintaining an appropriate level of working capital and its contribution to business survival is a concept that should be understood by every company (Harris, 2005).

Working capital is considered as the life-blood of any business and its performance has significant impact on the overall performance of the concerned firms. Hampton (1989) stated that working capital policy is a function of two decisions: the appropriate level of investment in currents assets and the chosen methods of financing the investment. He explained further that the level of company's current assets and working capital, in respect of the company's total corporate structure and flow of funds is a tradeoff between profitability and risk. Thus, if there were little risk, an aggressive working capital would be used whereby the company should maintain a minimum level of cash, securities, debtors and stocks. However, if there is little stability, a more conservative policy will be called for, requiring high cash balances and high stock reserves.

In many organizations today, liquidity position is thus a major issue that must be put into consideration by financial managers. This liquidity state can be identified by their risk-return

characteristics (Weinraub and Visscher, 1998). Therefore, risk and return tradeoffs are inherent in alternative working capital policies. High risk, high return working capital investment and financing strategies are referred to as aggressive; lower risk and return strategies are called moderate or matching; still lower risk and return is called conservative (Moyer, 2005; Pinches 1991; Brigham and Gapenski, 1987). A firm may choose an aggressive working capital management policy with a low level of current assets as percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as percentage of total liabilities (Afza and Nazir, 2007). Keeping an optimal balance among each of the working capital components is the main objective of working capital management. Business success heavily depends on the ability of the financial managers to effectively manage receivables, inventory, and payables (Filbeck and Krueger, 2005).

1.1.2 Financial Performance

Finance always being disregarded in financial decision making since it involves investment and financing in short-term period. Further, also act as a restrain in financial performance, since it does not contribute to return on equity (Rafuse, 1996). A well designed and implemented financial management is expected to contribute positively to the creation of a firm's value (Padachi, 2006). Dilemma in financial management is to achieve desired trade- off between liquidity, solvency and profitability (Lazaridis, 2006).The subject of financial performance has received significant attention from scholars in the various areas of business and strategic management. It has also been the primary concern of business practitioners in all types of organizations since financial performance has implications to organization's health and ultimately its survival. High performance reflects management effectiveness and efficiency in

making use of company's resources and this in turn contributes to the country's economy at large. (Naser and Mokhtar, 2004).

There have been various measures of financial performance. For example return on sales reveals how much a company earns in relation to its sales, return on assets determines an organization's ability to make use of its assets and return on equity reveals what return investors take for their investments. The advantages of financial measures are the easiness of calculation and that definitions are agreed worldwide. Traditionally, the success of manufacturing system or company has been evaluated by the use of financial measures (Tangen, 2003).

Liquidity measures the ability of the business to meet financial obligations as they come due, without disrupting the normal, ongoing operations of the business. Liquidity can be analyzed both structurally and operationally. Structural liquidity refers to balance sheet measures of the relationships between assets and liabilities and operational liquidity refers to cash flow measures. Solvency measures the amount of borrowed capital used by the business relative the amount of owner's equity capital invested in the business. In other words, solvency measures provide an indication of the business' ability to repay all indebtedness if all of the assets were sold. Solvency measures also provide an indication of the business' ability to withstand risks by providing information about the operation's ability to continue operating after a major financial adversity (Harrington and Wilson, 1989).

Profitability measures the extent to which a business generates a profit from the factors of production: labor, management and capital. Profitability analysis focuses on the relationship between revenues and expenses and on the level of profits relative to the size of investment in

the business. Four useful measures of profitability are the rate of return on assets (ROA), the rate of return on equity (ROE), operating profit margin and net income (Hansen and Mowen, 2005). Repayment capacity measures the ability to repay debt from both operation and non operation income. It evaluates the capacity of the business to service additional debt or to invest in additional capital after meeting all other cash commitments. Measures of repayment capacity are developed around an accrual net income figure. The short-term ability to generate a positive cash flow margin does not guarantee long-term survivability (Jelic and Briston, 2001).

Financial efficiency measures the degree of efficiency in using labor, management and capital. Efficiency analysis deals with the relationships between inputs and outputs. Because inputs can be measured in both physical and financial terms, a large number of efficiency measures in addition to financial measures are usually possible (Tangen, 2003).

1.1.3 Relationship Between Working Capital and Financial Performance

In this context, an efficient working capital management plays a significant role in overall corporate strategy in order to increase shareholder value (Dong and Su, 2010) by determining the composition and level of investments on current assets, the level, sources and mix of short term debts (Nwankwo and Osho, 2010). Especially an efficient working capital management can enable a firm to react quickly and genuinely to unexpected changes in economic environment and gain competitive advantages over its rivals (Alshubiri, 2011).To put it briefly, an efficient working capital management primarily aims to ensure an optimum balance between profitability and risk (Ricci and Di Vito, 2000). This objective can be achieved by continuous monitoring of working capital components such as accounts receivable, inventory and accounts payable. The

success of a firm heavily depends on the effective skills of financial managers (Filbeck and Krueger, 2005; Afza and Nazir, 2007).

The relationship between the short-term liabilities (current liabilities) and current assets determines the liquidity position of firms (Dong and Su, 2010). However, Van Horne and Wachowicz (2004) point out that excessive levels of current assets may have a negative effect on the firm's profitability whereas a low level of current assets may lead to lower level of liquidity and stock outs resulting in difficulties in maintaining smooth operations. This definition doesn't provide an accurate concept of corporate liquidity because the components of working capital have different levels of liquidity, as some of components (for example cash investment in marketable securities and treasury bills) have financial essence with a high liquidity. Other components have non - financial essence with a low liquidity (for example receivable, payable accounts and inventory). Shulman and Cox (1985) defined financial items as net liquidity balance (NLB) and non financial items as working capital requirement (WCR). However, the liquidity of NLB is different from liquidity of WCR but they are related to each other. For example, with decreasing the period of receiving the receivable accounts, will decrease WCR and NLB as cash in value will increase A company can perform short term warranties on time if it has the high amount of working capital; this subject redound to increase capacity of receivable loan in company and to decrease in the risk of non-payment of the debts, so efficiency in working capital management affects on short term financial performance(profitability) as well as long term performance(maximum firm value).

The profitability liquidity tradeoff is important because if working capital management is not given due considerations then the firms are likely to fail and face bankruptcy (Kargar and

Bluementhal, 1994). The significance of working capital management efficiency is irrefutable (Filbeck and Krueger, 2005).In many organizations today, liquidity position is thus a major issue that must be put into consideration by financial managers. This liquidity state can be identified by their risk-return characteristics (Weinraub and Visscher, 1998).

1.1.4 Manufacturing Sector in Kenya

Kenya manufacturing sector is the fourth biggest sector after agriculture, transport and communications and whole sale and retail trade. It contributes about 18 per cent of Kenya's GDP serving both the local market and exports to the East and Central Africa region. The sector employs about 2.3 Million in both Formal and informal sectors. Although initially developed under the import substitution policy, Kenya's manufacturing sector is now export based in line with the country's policy of emerging as a mid-sized economy in the year 2030. The sector is loosely classified into twelve (12) sub-categories based on the raw materials the companies import and or the products they manufacturer. The individual firm members are organized under the membership of Kenya Association of Manufacturers (KAM) to give them a platform for negotiating common position with the relevant government authorities (*Business Intelligence,* 2011).

The Kenyan manufacturing sector is considered as one of the key segments of the economy. In addition, the Kenyan vision 2030 blue print, one of the key pillars of the attainment of the objectives of the strategy is the need for the manufacturing sector to grow at the rate of 8 per cent over a period of 20 years. This can only be achieved if there is growth in the profits of the sector and this will depend upon identifying all the variables that can influence profit of a firm including the management of working capital. The inability of a firm to meet its obligations will

lead to the disruption of its manufacturing process by actions such as labor strikes and blacklisting by suppliers (*Kenya's Economic Outlook*, 2011).

Key challenges' facing the sector includes high cost of production which is ever increasing due to poor infrastructure, regulation, tax administration and burden of government. There is also shrinking demands for locally manufactured goods due to rising poverty levels and reduced exports from general economic slump after the recent global recession. Other challenges includes security issues with recent cases of terror attacks, arbitrary charges levied by regulatory and local authorities, inadequate government support for local produce esp. procurement of local supplies, weak linkages with local supplies for example in agriculture, inadequate/weak negotiation skills in regional trade agreement and high costs of securing financial facilities with commercial banks. However opportunity for growth exists with the roll out of common tariff under the newly integrated EAC customs union as a result of Kenya's manufacturing sector being the largest in the region (*Kenya's Economic Outlook*, 2011).Currently we have a total of eighteen (18) manufacturing firms listed in the Nairobi Securities Exchange with the price movement of 5 of them being used to determine the daily average NSE index.

1.2 Research Problem

The management of a firm's liquidity is necessary for all businesses, small, medium or large. When a business does not manage its liquidity well, it will have cash shortages and as a result experience problems paying its obligations when they fall due. Indeed, working capital starvation has generally been credited as a major cause, if not the main cause of small business failure in many developed and developing countries (Rafuse, 1996). Working capital management is

important because of its effect on the firm's profitability and risk, and consequently its value (Smith, 1980). Investments in current assets represent a very significant position of total assets. Working capital management is critical to all firms but particularly to small ones because they do not have access to long term financing yet they must finance the current assets. Additionally, there is risk-return trade off; in that the optimal level calls for a balance between profitability and solvency by minimizing the total costs of liquidity and cost of illiquidity, the working capital management's objectives being enhancing profitability and liquidity (Pandey, 1997).

Globally, many researchers have studied financial ratios as part of working capital management; however few of them have discussed the working capital specific. Some earlier work by Gupta (1969) and Gupta and huefner (1972) examined the differences in financial ratios and averages between industries. Johnson (1970) extended his work by finding cross-sectional stability of ratio groupings for both retailers and primary manufacturers. In practice, working capital management has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital drivers and an appropriate level of working capital (Lamberson, 1995).The strategic importance of working capital management has ignited various researchers to focus on evaluating the working capital management and profitability relationships. The studies include those done by Uyar (2009); Samiloglu and Demirgunes (2008) and Vishmani and Bupesh (2007). Most previous studies focus on developed market (Peel and Wilson, 1996; Shin and Soenon, 1998; Deloof, 2003); thus investigating this issue could provide additional insights and perhaps different evidence on working capital management in emerging capital markets like Kenya.

Local studies in Kenya have also studied working capital management and financial performance, Ngaba (1990) carried out a study on working capital management practices in Kenyan secondary schools, a case of kikuyu division, Kiambu County. Nyakundi (2003) did a survey of working capital management policies among public companies in Kenya. From a simple linear regression, he concluded that there was no relationship between working capital management and profitability. Kithii (2008) studied the relationship between working capital management and profitability of listed companies in the NSE. From a Pearson's moment correlation of co-efficient, she found a significantly negative relationship between cash conversion cycle and profitability. Mutungi (2010) studied the relationship between working capital management and financial performance of oil marketing firms in Kenya. From the correlation analysis, the study concluded an existence of aggressive working capital policy in the oil sector. Mathuva (2010) found contradicting evidence with the management of inventories in Kenya. He argued that companies increase their inventory levels to reduce the cost of possible production stoppages and the possibility of no access to raw materials and other products. He further stated that higher inventory levels reduces the cost of supplying products and also protects against price fluctuations caused by changing macroeconomic factors. Waweru (2011) also conducted a study on the relationship between working capital management and the value of the companies listed at the NSE. The study concluded that there is a statistical relationship between efficient working capital management and the value of firms quoted at the NSE.

Specific research studies extensively on the relationship between working capital management and the financial performance of firms are scanty, Kenyan manufacturing sector on which limited research work has been done, is not comparable to those firms in the developed world or

middle income countries where the empirical studies have been conducted and as a result, the researcher believes there might be differences on the relationship between working capital and firms performance. Manufacturing firms invest heavily in the various working capital components and it would be interesting to study how this impacts on their performance. Keeping this in view and the wider recognition of the potential contribution of the quoted manufacturing companies to the economies of developing countries, this study is a modest attempt to investigate the potential relationship between working capital management and the financial performance of manufacturing firms listed on the NSE for the period 2007 – 2011.The finding of this study are expected to contribute to the existing literature of the working capital management. Thus, as the working capital can be used by the managers to maximize the firm's financial performance, hence; is there any significant relationship between efficient working capital management and the financial performance of a manufacturing firm? That is, can efficient working capital management affect the firm's financial performance of manufacturing companies listed at the NSE?

1.3 Research Objectives

The objectives of this study were:

i. To establish the working capital management practices of manufacturing firms listed in NSE.
ii. To establish the relationship between working capital management and financial performance of manufacturing firms listed in NSE.

1.4 Value of the Study

The study findings will benefit management and staff of manufacturing companies under study, by gaining insight into how their companies can effectively manage their working capital to enhance their financial performance. Management can gain the best policies for applications. This will improve on the existing theory and knowledge on the changes that manufacturing companies are going through in relation to working capital management.

Regulatory bodies like the Kenya association of manufacturers can use this study to improve on the framework for regulation of manufacturing companies in Kenya. The results of this study will also assist policy makers and regulators to implement new set of policies and regulations regarding working capital management in the manufacturing firms like Capital Markets Authority. This study will be of use to security analysts, financial analysts, stock brokers and other parties whose knowledge of the relationship between working capital management and the financial performance is important input into investment analysis and portfolio construction.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature relating to working capital management and financial performance. The sections will be organized to cover the theoretical and empirical literature on working capital management and its effect on financial performance.

2.2 Review of Theories

Working capital management techniques utilized by business managers aids them in effectively managing working capital. Techniques such as intersection of carrying costs and shortage cost, working capital financing policy, cash budgeting, EOQ and JIT are applied to manage different components of working capital like cash, inventories, debtors and account payables. High performing companies understand the company and industry specific drivers behind each component of operative working capital and focus on optimizing the most promising ones. During this process, they consider the entire value chain to reveal the root causes of tied up cash and take into account all interdependencies between the respective components. They apply a holistic approach in which they do not randomly reduce costs but consider all trade-offs with costs and capital employed to optimize the company value. By applying the appropriate levers of each component, obstacles that slow cash flow can be removed and overall company process can be improved (Buchman and Udo, 2011).

A company can be endowed with assets and be profitable but short of liquidity if its assets can not readily be converted into cash. Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term

debt and upcoming operational expenses. The management of working capital involves managing inventories, accounts receivable, payable and cash. An increase in working capital indicates that the business has either increased current assets (it has increased its receivables, or other current assets) or has decreased current liabilities (has paid off some short-term creditors). Pioneer studies of (Baumol,1952) about an inventory management model and (Miller, 1966) about a cash management model could be considered as the best-known studies in this field, with the assumptions of these models informing managers about problem related with working capital management practices.

2.2.1 Operating Cycle Theory

The flow concept of liquidity can be developed by extending the static balance sheet analysis of potential liquidation value coverage to include income statement measures of a firm's operating activity. In particular, incorporating accounts receivable and inventory turnover measures into an operating cycle concept provides a more appropriate view of liquidity management than does reliance on the current and acid-test ratio indicators of solvency. These additional liquidity measures explicitly recognize that the life expectancies of some working capital components depend" upon the extent to which three basic activities- production, distribution (sales), and collection - are non instantaneous and un-synchronized (Weston and Eugene, 1979).

Accounts receivable turnover is an indicator of the frequency with which a firm's average receivables investment is converted into cash. Changes in credit and collection policy have a direct impact on the average outstanding accounts receivable balance maintained relative to a firm's annual sales. Granting more liberal terms to a firm's customers creates a larger, and potentially less liquid, current investment in receivables. Unless sales increase at least

proportionately to the increase in receivables, this potential deterioration in liquidity will be reflected in a lower receivables turnover and a more extended receivables collection period. Decisions that commit a firm to maintaining larger average receivables investments over a longer time period will inevitably result in higher current and acid-test ratios (Richards and Laughlin, 1980).

Inventory turnovers depict the frequency with which firms convert their cumulative stock of raw material, work-in-process, and finished goods into product sales. Adopting purchasing, production scheduling, and distribution strategies that require more extensive inventory commitments per dollar of anticipated sales produces a lower turnover ratio. This, in turn, reflects a longer and potentially less liquid inventory holding period. If firms cannot modify either the payment practices established with trade creditors or their access to short-term debt financing provided by non-trade creditors, decisions that create longer or less liquid holding periods will again be accompanied by a higher current ratio indicator of solvency (Weston and Eugene, 1979).

The cumulative days per turnover for accounts receivable and inventory investments approximates the length of a firm's operating cycle. Incorporating these asset turnovers into an operating cycle concept of the current asset conversion period thereby provides a more realistic, although incomplete, indicator of a firm's liquidity position. The operating cycle concept is deficient as a cash flow measure in that it fails to consider the liquidity requirements imposed on a firm by the time dimension of its current liability commitments. Integrating the time pattern of cash outflow requirements imposed by a firm's current liabilities is as important for liquidity analysis as evaluating the associated time pattern of cash inflows generated by the transformation of its current asset investments (Richards and Laughlin, 1980).

2.2.2 Cash Conversion Cycle Theory

The cash conversion cycle, which represents the interaction between the components of working capital and the flow of cash within a company, can be used to determine the amount of cash needed for any sales level. Gitman (1974) developed cash conversion cycle as part of operating cycle which is calculated by adding inventory period to accounts receivables period and then subtracting accounts payables from it. Its focus is on the length of time between the acquisition of raw materials and other inputs and the inflows of cash from the sale of finished goods, and represents the number of days of operation for which financing is needed.

The CCC is a dynamic measure of ongoing liquidity management, since it combines both balance sheet and income statement data to create a measure with a time dimension (Jose and Lancaster, 1996). While the analysis of an individual firm's CCC is helpful, industry benchmarks are crucial for a company to evaluate its CCC performance and assess opportunities for improvements because the length of CCC may differ from industry to industry. Therefore the correct way is to compare a specific firm to the industry in which it operates (Hutchinson, 2007). The cash conversion cycle is used as a comprehensive measure of working capital as it shows the time lag between expenditure for the purchase of raw materials and the collection of sales of finished goods (Padachi, 2006). Day-to-day management of a firm's short term assets and liabilities plays an important role in the success of the firm. Firms with growing long term prospects and healthy bottom lines do not remain solvent without good liquidity management (Jose and Lancaster, 1996).

By approximating these three periods with the financial ratios of inventory days, trade receivables days and trade payables days, the length of the cash conversion cycle (CCC) is given by:

CCC = Inventory days + Trade receivables days − Trade payables days

Richards and Laughlin (1980) argued that traditional ratios such as current ratio, Quick acid test and cash ratios has not been able to provide accurate information about working capital and insisted on using ongoing liquidity measures in working capital management, where ongoing liquidity refers to the inflows and outflows of cash as a product of acquisition, production, sales, payment and collection process done over time. The firm's ongoing liquidity is a function of its cash conversion cycle, hence the appropriateness of evaluation by cash conversion cycle, rather than liquidity measures.

According to Arnold (2008) the shorter the CCC, the fewer are the resources needed by the company. So the longer the cycle the higher will be the investment in the working capital. But also a longer cycle could increase sales, which could lead to higher profitability. But this longer cycle, will also lead to higher investment and could rise faster than the benefits of the higher profitability. Many authors like Shin and Soenen (1998) have argued that it is important for firms to shorten the CCC, as managers can create value for their shareholders by reducing the cycle to a reasonable minimum. They also argued that a longer cash conversion cycle might indicate that a company's sales are rising and that the company can compete by having lax credit policies or high inventories. But on the contrary, a higher CCC can actually hurt a company's profitability by increasing the time that cash is tied to non-interest bearing accounts such as accounts

receivables. By shortening the CCC the company's cash flows will have a higher net present value because cash is received quicker. The number of days accounts receivables; inventories and accounts payables are used as the operationalization of the management of trade credit and inventory (Sharma and Kumar, 2011).

2.2.3 Net Trade Cycle Theory

The net trade cycle theory is basically equal to the cash conversion cycle where the three components of the cash conversion cycle (receivables, inventory and payables) are articulated as a percentage of sales, this makes the net trade cycle easier to calculate and less complex comparing with the cash conversion cycle and weighted cash conversion cycle. Soenen (1993) investigated the relationship between the net trade cycle as a measure of working capital and return on investments in the US firms. The results of chi-square test indicated a negative relationship between the length of net trade cycle and return on assets. Furthermore, this inverse relationship was found different across industries depending on the type of the industry. A significant relationship about for about half of the industries studied indicated that results might vary from industry to industry.

2.2.4 Transaction Cost Economics Theory

The optimum level of inventory should be determined on the basis of a trade-off between costs and benefits associated with the levels of inventory. Costs of holding inventory include ordering and carrying costs. Ordering costs is associated with acquisition of inventory which includes costs of preparing a purchase order or requisition form, receiving, inspecting, and recording the

goods received. However, carrying costs are involved in maintaining or carrying inventory and will arise due to the storing of inventory and opportunity costs. There are several motives for lower or higher levels of inventories and highly depends on what business a company is in. The most widely and simple motive of managing inventories is the cost motive, which is often based on the Transaction Cost Economics (TCE) theory (Emery and Marques, 2011). To be competitive, companies have to decrease their costs and this can be accomplished by keeping the costs of stocking inventory to a reasonable minimum. This practice is also highly valued by stock market analysts (Sack, 2000).

2.3 Empirical Literature

The literature on working capital management practices identifies efficiency of cash management, efficiency of receivables management and efficiency of inventory management as determinants of financial performance model. Financial performance could therefore be improved if efficiency levels of cash, receivables and inventory management practices are increased. The more aggressive approach, where the working capital is minimized, is associated with lower risk and return. The relaxed approach, with high cash reserves and high inventory, is associated with higher risk and return (Weinraub and Visscher, 1998).

A further study by shin and soenen (1998) argued that the net trade cycle is a better working capital efficiency measure comparing with the cash conversion cycle and the weighted cash conversion cycle because it indicates the number of “day sales” the company has to finance its working capital and the working capital manager can easily estimate the financing needs of

working capital expressed as the fraction of the expected sales growth. The reason for using NTC is because it can be an easy device to estimate for additional financing needs with regard to working capital expressed as a function of the projected sales growth. This relationship can be examined using correlation and regression analysis, by industry and working capital intensity. using a comp stat sample of 58,985 firm years covering the period 1975 – 1994, in all cases they found a strong negative correlation between the length of the firm's net-trade cycle and its profitability. In addition, shorter net-trade cycles are associated with higher risk-adjusted stock returns. In other words, Shin and Soenen (1998) suggested that one of the possible ways firm's can create shareholder's value was by reducing firm's net –trade cycle.

Many researchers have studied working capital management from different views in different economies. Some of which are found to be very interesting and useful for my present study. Deloof (2003) investigated the relationship between working capital management and firm profitability of Belgian firms, where he studied 1009 large Belgian non-financial firms for the period of 1992 to 1996.Using correlation and regression tests he found a significant negative relationship between gross operating income and the number of days accounts receivables, inventories and accounts payable of Belgian firms. On the basis of these results he suggested that managers could create value for their shareholders by reducing the number of day's accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Velnampy (2006) examined the financial position of the companies and the relationship between financial position and profitability with the sample of 25 public quoted companies in Sri Lanka by using the Altman Original Bankruptcy Forecasting Model. His findings suggest that, out of 25 companies only 4 companies are in the condition of going to bankrupt in the near future. He also found that, earning/total assets ratio, market value of total equity/book value of debt ratio and sales/total assets in times are the most significant ratios in determining the financial position of the quoted companies.

Lazaridis and Tryfonidis (2006) investigated the relationship that is statistically significant between corporate profitability, the cash conversion cycle and its components. They used a sample of 131 companies listed in the Athens Stock Exchange for the period of 2001-2004. The independent variables used were fixed financial assets, the natural logarithm of sales, financial debt ratio, cash conversion cycle and its components – day's inventory, days receivable and day's payable. The dependent variable is profitability measured by gross operating profit. The research findings showed negative relationship between cash conversion cycle, financial debt and profitability, while fixed financial assets have a positive coefficient. When the authors replaced cash conversion cycle with accounts receivable and inventory, they found negative relationship with these two variables; the opposite occurred with accounts payable. The authors conclude that companies can create more profit by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

Padachi (2006) examined the trends in working capital management and its impact on firm's performance. The results proved that a high investment in inventories and receivables is

associated with lower profitability. Further, he showed that inventory days and cash conversion cycle had positive relation with profitability. On the other hand, account receivables days and accounts payable days correlated negatively with profitability. A study on value added, productivity and performance of few selected companies in Sri Lanka with the sample of 15 financial companies listed under the Colombo Stock Exchange (CSE) reveals that, profit before tax per employee and value added per rupee of fixed asset is positively correlated and labor cost to sales and gross profit is also positively correlated. Further the labor cost to value added is correlated with gross profit and value added per rupee of fixed asset and no relationship was found between the rest of the productivity and performance measures (Velnampy, 2011).

Afza and Nazir (2007) studied 208 public limited companies listed at Karachi Stock Exchange (KSE) for a period of 1998 to 2005.Through cross-sectional regression models on working capital policies, profitability and risk of the firms; they found a negative relationship between the profitability measures of firms and degree of aggressiveness on working capital investment and financing policies. Their result indicates that, the firms yield negative returns if they follow an aggressive working capital policy by investigating the relative relationship between the aggressive or conservative working capital policies for.

Ganesan (2007) analyzed the working capital management efficiency of firms from telecommunication equipment industry. This study found evidence that even though "day's working capital" is negatively related to the profitability, it is not significantly impacting the profitability of firms in telecommunication equipment industry. However, this was contrary to

the results of Chowdhury and Amin (2007) who had found positive correlations between WCM with financial performance of the Pharmaceutical industry in Bangladesh.

Samiloglu and Demirgunes (2008) analyzed the effect of working capital management on firm profitability in Turkey for a period of 1998-2007. Empirical results showed that, accounts receivables period, inventory turnover period and leverage significantly and negatively affect profitability. They also proved that cash conversion cycle, size and fixed financial assets had no statistically significant effect on profitability.

Lieberman and Helper (2009) studied the determinants of inventory policies of automotive companies in the United States. They found that both technological and managerial factors have a significant influence on the determining of the levels of inventories. Technological factors, like longer setup and processing times increases the level of inventories. While the average price per piece of inventory decreases the inventory levels. They also found that managerial factors, like more employee training and problem solving training have a reducing effect on the inventory levels.

Velnampy and Niresh (2012) investigated the association between capital structure and profitability of listed SriLankan banks over the period of 8 years from 2002 to 2009. Results of their analysis show that, there is a negative association between capital structure and profitability except the association between debt to equity and return on equity.

In Kenya, Ouma (2001) studied cash management approaches employed by companies quoted at the NSE. From a sample of 27 companies, her findings indicated that quoted companies apply

specific policies in the management of their cash balances and plan for their cash balances. They have more than one planning period and the weekly planning period is the most popular.

Nyakundi (2003) studied working capital management policies among the public companies in Kenya. From a sample of 30 companies quoted at the NSE covering the period from 1998 – 2002, he concluded that most companies practiced the aggressive WCM policy. No significant differences were noted between the WCM policies across the five sectors. Further there were no significant differences in return on equity among companies that practice different WCM policies. From a simple regression analysis he found no relationship between the WCM policies and return on equity.

Ochieng (2006) carried out a study on firms quoted on the NSE over the last twenty (20) years on the relationship between working capital and the economic activities in Kenya. The objective of the study was to examine how the changes in economic activities affect changes in working capital by firms listed on the NSE. The findings revealed that the liquidity of the small firms as measured by the current and quick ratios increased slightly during economic slowdown. The study also shows that the liquidity positions reacted differently to various economic indicators such as inflation and lending rates. With lending rates, the study found that lending rates indeed did affect the amount of working capital for the firms and this further showed that during times of economic contraction, working capital positions of the firs improved.

Kithii (2008) carried out a study on the relationship between working capital management and profitability of listed companies in Nairobi's securities exchange. Her objectives were to establish how efficient the firms are managing their working capital. She also aimed at establishing the relationship between profitability, the cash conversion cycle and its components for the listed companies in the Nairobi securities exchange for the period 2001 – 2006. The results showed that there is a statistical significant negative relationship between variables of working capital management and the profitability of firm except for the average payment period which showed a positive relationship.

Mutungi (2010) carried out a study on the relationship between working capital management and financial performance of oil marketing companies in Kenya. The study was inspired by the fact that working capital in any firm is extremely critical and requires conscious balance between the components on the working capital namely cash, receivables, payables and inventory. The objectives of the study was to establish the working capital management policies among oil marketing firms in Kenya and to examine the relationship between working capital management and profitability in oil marketing firms in Kenya. From the correlation analysis, the study concluded an existence of aggressive working capital policy in the oil sector.

Waweru (2011) carried out a study on the relationship between working capital management and the value of companies quoted at the NSE. The study used secondary data obtained from annual reports and audited financial statements of companies listed on the NSE. A sample of 22 companies listed on the NSE for a period of seven years from 2003 to 2009 was studied. The

average stock price was used to measure the value of the firm. The regression models indicated that there was some relationship between working capital management and the firm's value while the result of the Pearson correlation indicated a negative relationship between average cash collection period, inventory turnover in days, cash conversion cycle and the value of the firm.

2.4 Conclusion

Working capital management is a very important component of corporate finance because it directly affects the liquidity and profitability of the company. Working capital refers to a company's current asset and liabilities. An optimal working capital management is expected to contribute positively to the creation of a firm's value. To arrive at an optimal working capital management, firm managers should control the tradeoff between liquidity (ability to meet its dues by making adequate sales and paying off its bills as they fall due) and profitability (size of earning after tax).

A review of prior literature reveals that there exists a significant relationship between financial performance and working capital management by using different variable selection for analysis. In addition it has been found out that different sector companies have different levels of working capital and they will always strife to maintain the level of working capital in the short term. The risk behavior preference of the firm's management was also found to have an effect in the level of current assets and current liabilities that is held by a firm. For risk-averse managers, it was found out that such firms will hold a high proportion of current assets compared to the current liabilities and vice versa for risk seeking managers. In effect therefore, the level of risk

preference characteristics of firm's managers will affect the level of performance and profitability of the organization.

However, it is evident from the literature that none of the studies has been able enough to develop a model that will assist managers to establish an optimum working capital under different operating environments or even industries. Instead the literature and studies suggest the existence of an optimum level without necessarily suggesting the same level or how to be establishing it. A few studies have been conducted in the Kenyan context touching on working capital management; from these empirical studies it's clear that much has not been done to determine the relationship between working capital and financial performance. Therefore there is need to establish whether there exists any relationship between working capital management and financial performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methods that the researcher will adapt to facilitate execution of the study to satisfy study objectives. These steps include; research design, population of interest, sample and sampling techniques, data collection instruments, procedures and data analysis.

3.2 Research Design

Research design is the plan and structure of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research (Robson, 2002). The main purpose of this research was to determine the relationship between working capital management and financial performance of manufacturing firms in Kenya. Therefore a descriptive research was used to study whether this relationship exists between working capital management and financial performance of manufacturing firms listed in the NSE.

The research used both descriptive and quantitative research design. The major purpose of descriptive research was to provide information on characteristics of a population or phenomenon. Descriptive research will be used as a pre-cursor to quantitative research designs as it provides the general overview giving some valuable pointers as to what variables are worth testing quantitatively.

3.3 Population

A population is an entire group of individuals, events or objects having common characteristics that conform to a given specification (Mugenda & Mugenda, 2003).The population of interest in this study constitutes all manufacturing companies quoted at the NSE for the period of five years from 2007 to 2011. The study was limited to listed companies due to lack of readily available data from private companies not listed in NSE. Currently we have a total of eighteen (18) manufacturing firms listed in NSE.

3.4 Sample Design

The study was based on financial statements of the manufacturing firms listed on the Nairobi securities Exchange. Observations of firms with anomalies such as negative values in their total assets and current assets were eliminated. In addition, only firms that had continuously traded over the period 2007 to 2011 were considered in the study. Further observations of items from the statement of financial position and statement of comprehensive income showing signs contrary to reasonable expectations were removed.

It's intended that the study will be a census survey in which all manufacturing firms listed at the NSE will be studied due to the manageable numbers involved. The firms that have merged and those that have been de-listed from the Nairobi Securities Exchange, due to any reason/restriction imposed by the regulators during the period under review will be ineligible for inclusion in the study. New incumbents in the market that have been newly listed at NSE will also not be included in the sample due to non availability of past historical data.

3.5 Data Collection

Data collection is gathering empirical evidence in order to gain insights about a situation and answer questions that prompt undertaking of the research (Flick, 1998). Primary and secondary data are the types of data collection. Primary data is defined as first hand information received from a respondent while data that has been already collected and passed through the statistical process is secondary data (Chandran, 2004).

The study used secondary data collection methods which will be obtained from financial statements which include latest published annual reports, profit after tax, current assets, current liabilities, fixed assets and long term debt and equity to be surveyed. Company's financial statements will be obtained from NSE library and the CMA library and website.

3.6 Data Analysis

The whole process which starts immediately after data collection and ends at the point of interpretation and processing data is data analysis (Cooper and Schindler, 2003). Chadran (2004) defines statistics as a discipline that provides the tools of analysis in research and one which refers to facts, information or data and to a system of data collection and analysis.

The quantitative research approach was employed to arrive at the findings of the study. Correlation and regression analysis was used in the study to identify the nature and extent of relationship and to find out the impact of working capital management variables on financial performance measures.

3.7 Research Model

Descriptive statistics and inferential statistical techniques were used to analyze the data. Multivariate regression Model based on Cross sectional pooled data from the annual reports and other financial statements to assess the impact of working capital management on the industry's financial performance criteria.

In order to test our preposition, the multivariate regression model was as follows:

$$ROEit = \beta 0 + \beta 1 ACPit + \beta 2 ITIDit + \beta 3 APPit + \beta 4 CCCit + \beta 5 CRit + \beta 6 DRit + \beta 7 LOSit + \beta 8 FATAit + \varepsilon$$

Where:

ROE : Return of equity (ROE) to measure corporate financial performance

ROEit : Return on Equity of firm i at time t (i = 1, 2, …,18 firms,).

$\beta 0$, 1….8 : Constants representing the direction and extent to which each variable influences performance of a firm

ACP : The average collection period demands

ITID : Inventory turnover period

APP : The average payment period

CCC : Cash conversion period

CR : Current ratio

DR : Debt ratio

LOS : Natural logarithm of sales

FATA : Financial assets to total assets

ε : The error term that is a surrogate for all other variables influencing performance

Xit : The different independent variables of firm ‘i’ at time‘t’.

t : Time = 1, 2, ……., 5 years

To complement regression analysis, correlation analysis was carried out to analyze the relationship between working capital management and firm’s financial performance. Test of significance was carried out for all variables using t-test at a 95% level of significance. To examine the relationship among these variables, Pearson correlation coefficients were calculated.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the study provided two types of data analysis; namely descriptive analysis and inferential analysis. The descriptive analysis helps the study to describe the relevant aspects of the phenomena under consideration and provide detailed information about each relevant variable. For the inferential analysis, the study used the Pearson correlation, the panel data regression analysis and the t-test statistics. While the Pearson correlation measures the degree of association between variables under consideration, the regression estimates the relationship between working capital management and firms' financial performance. Furthermore, in examining if the working capital management is significantly different from that of firms financial performance, the Chi-Square Test statistics was used.

4.2 Data Analysis and Findings

Secondary data on 18 manufacturing companies was considered in the analysis. The study provided two types of data analysis; namely descriptive analysis and inferential analysis. In descriptive statistics mean, standard deviation, minimum and maximum of the sample characteristic variables were determined. The study also carried out inferential statistics to determine in depth relationship between the variables i.e. correlation, regression and tested the hypothesis using Pearson correlation coefficient.

4.2.1 Descriptive statistics

The study first found it necessary to evaluate the performance of the firm's financial performance variables under consideration i.e. Inventory Turnover period (in Days), Average Payment Period (in Days), Cash Conversion period, Debt Ratio, Average collection period, Current Ratio, Financial assets to total assets and Return on equities. Their mean, standard deviation, minimum and maximum values were determined as indicated in Table 4.1.

Table 4.1: Summary Statistics of Financial Performance Variables

Variables	Mean	Std deviation	Minimum	Maximum
Inventory Turnover period (in Days)	29.16	28.003	0.001	112.83
Average Payment Period (in Days)	107.30	97.230	8.055	595.292
Cash Conversion period	28.78	76.945	390.561	190.209
Debt Ratio	0.539	0.588	0.091	6.623
Average collection period	39.7	0.399	0.042	4.847
Current Ratio	1.696	1.450	0.142	12.063
Natural log of sales	0.563	0.452	0.323	0.2430
Financial assets to total assets	0.112	0.105	-0.353	0.437
Return on Equities	0.246	0.293	-1.429	2.157

Source: *Computed by the researcher from annual reports of listed firms (2011)*

The above table 4.1 shows the results of summary statistics of all the taken variables in the analysis. It provides the information about number of observation included and mean its dispersion and variability in the data. From the findings inventory turnover period and average payment period is averagely 29.16 days and 107.30 days respectively, cash conversion period

had a mean of 28.78, debt ratio (0.54), average collection period (39.7) current ratio (1.696) financial assets to total assets (0.112) and the overall return on equity recorded a mean of 0.246. Furthermore the maximum inventory turnover period is 112.9 with average payment period of 595.3 recording the highest.

4.2.2 Correlation Analysis

In this section, the study measured the degree of association between the working capital management and the firms' financial performance (Inventory Turnover period (in Days), Average Payment Period (in Days), Cash Conversion period, Debt Ratio, Average collection period, Current Ratio, Financial assets to total assets and Return on equities) will increase financial performance of listed firms. From the a priori stated in the previous chapter, a positive relationship is expected between the working capital management and firm's financial performance. Table 4.2 presents the correlation coefficients for all the variables considered in this study.

Table 4.2: Correlation Analysis

Variables		**Return on Equity**
Inventory Turnover period (in Days)	Correlation	-0.288**
	p- Value	(0.00)
Average Payment Period (in Days)	Correlation	-0.205**
	p- Value	(0.00)
Cash Conversion period	Correlation	-0.281**
	p- Value	(0.00)
Debt Ratio	Correlation	-0.172*
	p- Value	(0.00)
Average collection period	Correlation	(0.001)
	p- Value	(0.00)

Current Ratio	Correlation p- Value	0.577 (0.00)
Natural log of sales	Correlation p- Value	0.042 (0.00)
Financial assets to total assets	Correlation p- Value	0.161 (0.00)

Source: *Computed by the researcher from annual reports of listed firms (2011)*

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

Table 4.2 displays the correlation analysis among the Firms' financial performance variables. The result shows that firms' financial performance variable Return on Equity has significantly affected on Current Ratio with positive correlation of 0.577 and Inventory Turnover with negative correlation of 0.288.Net collection period is also negative correlated by Return on Equity. Firms' Return on Equity is also found to be negatively associated by significant correlation with two most important dimensions working capital management, i-e, Cash Conversion period and average payment period in Days with the value of 0.281 and 0.205 respectively.

4.2.3 Regression Analysis

The researcher conducted a multivariate linear regression analysis so as to determine whether there exists a relationship between the working capital management and financial performance of manufacturing firms listed at the NSE. The regression equation will therefore be:

$$\boldsymbol{ROEit} = 11.132+\boldsymbol{\beta 1}0.231 +\boldsymbol{\beta 2}0.321 +\boldsymbol{\beta 3}0.553 +\boldsymbol{\beta 4}0.734+\boldsymbol{\beta 5}0.633 +\boldsymbol{\beta 6}0.612 +\boldsymbol{\beta 7}0.543 +\boldsymbol{\beta 8}0.613 +\boldsymbol{\varepsilon}$$

Table 4.3: Regression Coefficients

	Unstandardized Coefficients		**Standardized Coefficients**		
	Beta	Std. Error	Beta	T	Sig.
(Constant)	11.132	0.332		2.311	0.023
Inventory Turnover period (in Days)	0.231	0. 65	0.002	1.532	0.081
Average Payment Period (in Days)	0.321	0.332	0.076	1.256	0.022
Cash Conversion period	0.553	0.273	0.063	1.599	0.053
Debt Ratio	0.734	0.281	0.025	2.145	0.013
Average collection period	0.633	0.263	0.033	1.412	0.033
Current Ratio	0.612	0.271	0.022	1.223	0.022
Natural log of sales	0.543	0.239	0.024	0.302	0.042
Financial assets to total assets	0.613	0.224	0.032	0.412	0.061

Source: *Computed by the researcher from annual reports of listed firms (2011)*

According to the regression equation established, taking all factors into account (Inventory Turnover period (in Days), Average Payment Period (in Days), Cash Conversion period, Debt Ratio, Average collection period, Current Ratio, Financial assets to total assets and Return on equities financial performance measured by ROE will be 11.132. The Standardized Beta Coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable. The t and Sig (p) values give a rough indication of the impact of each predictor variable – a big

absolute t value and small p value suggests that a predictor variable is having a large impact on the criterion variable. At 5% level of significance and 95% level of confidence, interest rate spread had a 0.082 level of significance, regulated saving had a 0.023 level of significance, operating efficiency had a 0.054 level of significance and liquidity risk had a 0.014 level of significance.

Further the study carried out the hypothesis testing between working capital management and firms' financial performance. The study findings are as shown below.

Table 4.4: Working Capital Management Vs Firms Financial Performance

	Firms financial performance
Working capital management Pearson Correlation	0.782
Sig. (2-tailed)	0.000
N	18

Source: *Computed by the researcher from annual reports of listed firms (2011)*

A Pearson coefficient of 0.782 and p-value of 0.000 shows a strong, significant, positive relationship between working capital management and firms' financial performance of companies listed on NSE in Kenya. Therefore basing on these findings the study rejects the null hypothesis that there is no relationship between working capital management and firm's financial performance of companies listed on NSE in Kenya and accepts the alternative hypothesis that there exists a relationship between working capital management and firm's financial performance of companies listed on NSE in Kenya.

4.3 Summary of Findings and Interpretations

The study provided two types of data analysis; namely descriptive analysis and inferential analysis. The descriptive analysis helps the study to describe the relevant aspects of the phenomena under consideration and provide detailed information about each relevant variable. For the inferential analysis, the study used the Pearson correlation, the panel data regression analysis and the Chi-square statistics. The study first evaluated the performance of the financial performance variables under consideration i.e. Inventory Turnover period (in Days), Average Payment Period (in Days), Cash Conversion period, Debt Ratio, Average collection period, Current Ratio, Financial assets to total assets and Return on equities. Their mean, standard deviation, minimum and maximum values were determined.

The findings showed that inventory turnover period and average payment period is averagely 29.16 days and 107.30 days respectively, cash conversion period had a mean of 28.78, debt ratio (0.54), average collection period (39.7) current ratio (1.696) financial assets to total assets (0.112) and the overall return on equity recorded a mean of 0.246. Furthermore the maximum inventory turnover period is 112.9 with average payment period of 595.3 recording the highest.

The study further measured the degree of association between the working capital management and the firms' financial performance (Inventory Turnover period (in Days), Average Payment Period (in Days), Cash Conversion period, Debt Ratio, Average collection period, Current Ratio, Financial assets to total assets and Return on equities) will increase financial performance of listed firms.

The result showed that firms' financial performance variable Return on Equity has significantly affected on Current Ratio with positive correlation of 0.577 and Inventory Turnover with negative correlation of 0.288. Net collection period is also negative correlated by Return on Equity. Firms' Return on Equity is also found to be negatively associated by significant correlation with two most important dimensions working capital management, i.e. Cash Conversion period and average payment period in Days with the value of 0.281 and 0.205 respectively.

From the Chi-square results, the better financial performing companies recorded a mean of 0.07217while the poor financial performing companies recorded a mean of 0.033454. However, the variance for the better financial performing companies and poor financial performing companies are 0.0042 and 1.52485E-08 respectively. Furthermore, at two- tailed, the t-calculated of 3.162 is seen to be greater than the t-tabulated of 2.770.

From testing if working capital management have a relationship with firm's financial performance, a Pearson coefficient of 0.782 and p-value of 0.000 shows a strong, significant, positive relationship between working capital management and firms' financial performance of companies listed on NSE in Kenya. Therefore basing on these findings the study rejected the null hypothesis that there is no relationship between working capital management and firms' financial performance of companies listed on NSE in Kenya and accepted the alternative hypothesis that there exists a relationship between working capital management and firms' financial performance of companies listed on NSE in Kenya.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the study and makes conclusion based on the results. The implications from the findings and areas for further research are also presented. This section presents the findings from the study in comparison to what other scholars have said as noted under literature review.

5.2 Conclusions

The study has investigated the relationship between working capital management firms' financial performance for manufacturing firms listed in Nairobi Securities Exchange. Data have been analyzed by applying both descriptive and inferential statistics for the time period of 2007 to 2011. It was found that inventory turnover in days has negative relationship with Return on Equity which means that companies financial performance can be increased by reducing inventory in days. APP is found to be significant positive association with Return on Equities, indicating that if time period of supplier's payment is increased then overall firm's financial performance also improves. Cash Conversion period and Net payment period shows significant negative relation with Return on Equities showing that firms' financial performance can be increased with short size of both of them. Lastly liquidity (Current Ratio) is positively associated with ROE.

5.3 Recommendations

The study recommends that there should be proper inventory management system in manufacturing firms to avoid over stock of inventory resulting efficient outcome of investment. Management of manufacturing firms should also make sure certain standards and levels which will stop piling up of inventory. The study further recommends that companies should engage in relationship with those suppliers who allow long credit time period and those customers who allow short payment period. There is also still need in the future to identify the sector wise relationship between working capital management and firms' financial performance among manufacturing firms in Kenya.

5.4 Limitations of the Study

Since the main purpose of this study was to determine the effect of working capital management and financial performance of manufacturing companies listed on Nairobi Securities Exchange, NSE considered some information sensitive and confidential and thus the researcher had to convince them that the purpose of information is for academic research only and may not be used for any other intentions.

The findings of this study may not also be generalized to all manufacturing companies but can be used as a reference to manufacturing companies in developing countries since they face almost the same challenges due to the same prevailing economic situations as opposed to manufacturing companies in developed countries.

Working capital keeps on changing from period to period depending on prevailing economic situations and product market demand. The findings therefore may not reflect the true effect of working capital on financial performance of manufacturing companies for a period considered.

5.5 Suggestions for Further Research

There is need for further studies to carry out similar study for a longer time period. A similar study should also be carried out on the working capital management and financial performance of manufacturing companies in Kenya incorporating more financial and accounting variables and also taking into account the prevailing macroeconomic situation in the country as opposed to the current study which took into consideration only seven working capital management variables.

REFERENCES

Abuzar, M.A., & Eljelly (2004). Liquidity - profitability tradeoff: An empirical investigation In an Emerging Market. *International Journal of Commerce and Management,* 14(21), 48 - 61.

Afza, T., & Nasir, M.S. (2007).Is it better to be aggressive or conservative in Managing Working Capital? *Journal of Quality and Technology Management,* 3(2), 11-21.

Aggarwal, J.D. (1988). A goal programming model for working capital management. *Finance Journal India*, 2(1), 16-25.

Alshubiri, F.N. (2011). The Effect of Working Capital Practices on Risk Management: Evidence from Jordan. *Global Journal of Business Research,* 5(1), 39-54.

Amarjit, G. (2010). The relationship between working capital management and Profitability: Evidence from the United States. *Business and Economics Journal,* 1(2010), 1-10.

Amarjit, G., Nahum, B., & Neil, M. (2010).The relationship between Working Capital Management and Profitability: Evidence from the United States. *Business economic Journal*, 2(2010), 1-10.

Appuhami, B.A.R. (2008).The impact of firms' capital expenditure on working capital Management: An empirical study across industries in Thailand. *International Management Review,* 1(1), 8-21.

Arnold, G. (2008). *Corporate Financial Management* (4th Ed.). Essex: Prentice Hall.

Atrill, P. (2006). *Financial management for decision makers* (4th Ed.). New Jersey: Prentice

Hall.

Baumol, W.J. (1952). The Transaction Demand for Cash: An inventory theoretic approach. *The Quarterly journal of Economics*, 6(4), 25-30.

Bhandari, A.K., & Maiti, P. (2007).Efficiency of Indian Manufacturing Firms: Textile Industry As a case study. *International Journal of Business Economics,* 6(1), 71-88.

Bolten, S.E. (1976). *Managerial finance*. Boston: Hughton Mifflin co, Business Credit.

Bowen, M., Morara, M., & Mureithi, S. (2009).Management of business challenges among Small And Micro enterprises in Nairobi-Kenya. [Web log post]. Retrieved from http://www.kcajournals.com.

Brigham, E.F., & Ehrhardt, M.C. (2004).*Financial Management: Theory and Practice* (11th Ed.). New York, NY: South-Western College Publishing.

Brigham, E., & Gapenski, L. (1997).*Financial Management Theory and Practice* (8th Ed.). Fort Worth TX: The Dryden Press.

Buchman, P., & Udo, J. (2011).Best-practice working capital management techniques for Optimizing inventories, receivables and payables. [Web log post].Retrieved from http//www.qfinance.com/.

Campsey, B. J., & Brigham, E. F. (1994).*Introduction to Financial Management* (2nd Ed.), Australia: Harcourt Brace & Company Inc.

Cooper, R., & Schindler, P. (2003).*Business Research Methods*. Tata McGraw Hill.

Cote, E.L. (1999). A Cash Conversion Cycle Approach to Liquidity Analysis. *Financial Management Journal*, 9(1), 32-38.

Chadran, C. (2004). *Research Methods with Illustrations from Christian Ministries*. Star bright Services Ltd.

Chowdhury, A., & Amin, M. (2007).Working Capital Management practiced in Pharmaceutical Companies in Dhaka Stock Exchange. *BRAC University Journal*, 4(2), 75-86.

Dash, M., & Ravipati, R. (2009). A Liquidity-Profitability Trade-Off Model for Working Capital Management. [Web log post].Retrieved from: http://www.qfinance.com.

Deloof, M. (2003). Does Working Capital Management Affect Profitability of Belgian Firms? *Journal of Business Finance and Accounting,* 30(3), 573-587.

Dong, H. P., & Su, J. T. (2010). The Relationship between Working Capital Management and Profitability: A Vietnam Case. *International Research Journal of Finance and Economics*, 49(1), 59-67.

Eljelly, A.M.A. (2004). Liquidity-profitability Tradeoff: An empirical investigation in an Emerging Market. *International Journal of Commerce & Management,* 14(1), 48-61.

Emery, G. W., & Marques, M. A. (2011). The Effects of Transaction Costs, Payment Terms And Power on the Level of Raw Materials Inventories. *Journal of Operations Management,* 29(1), 236-249.

Filbeck, G., & Kruegar, T.M. (2005).An Analysis of Working Capital Management results Across Industries. *International Journal of Business,* 20(2), 11-18.

Firth, M. (1979). The Analysis of Working-Capital Positions by Outsiders. In M.J. Barron.D.W. Pearce (Eds.), *Management of Working Capital* (pp. 121-133). London and Basingstoke,

UK: The MacMillan Press LTD.

Flick, U. (1998). *An Introduction to Qualitative Research*. London: Sage Publication Inc.

Ganesan, V. (2007). An analysis of working capital management efficiency in Telecommunication equipment Industry. *Rivier Academic Journal,* 3(2), 116-125.

Gardner, M. J. (1986). Working Capital Policy and Operating Risk: An Empirical Analysis, *Financial Review Journal*, 21(3), 31 - 35.

Gitman, L. J. (1974). Estimating corporate liquidity requirement: A simplified approach. *Finance Revision Journal*, 9(1), 26-35.

Gitman, L.A. (2005). *Principles of Managerial Finance* (11th Ed.), New York, NY: Addison Wesley Inc.

Gupta, M.C. (1969). The effects of size, growth and industry on the financial structure of Manufacturing companies. *Journal of Finance*, 24(3), 517-529.

Gupta, M.C. & Huefner, R.J. (1972). A Cluster Analysis study of financial ratios and Industry Characteristics. *Journal of Accounting Research*, 10(1), 77-95.

Hampton, J. J., & Wagner, C. L. (1989). *Working Capital Management.* New York, NY: John Wiley and Sons.

Hansen, R., & Mowen, M. (2005). *Management Accounting* (7 Ed.). Singapore: South-Western.

Harrington, R., & Wilson, D. (1989). *Corporate Financial Analysis*. (3rd Ed.). Boston: Irwin Inc.

Harris, A. (2005). Working Capital Management: Difficult but Rewarding. *Financial Executive Journal,* 21(4), 52-53.

Horne, J., & Wachowicz, J. (2000).*Fundamentals of Financial Management* (11th Ed.). USA: Prentice Hall International Inc.

Hutchinson, P.D., Farris II, M.T., & Andres, S.B. (2007). Cash –to- Cash analysis and Management. *The CPA Journal*, 77 (8), 42-47.

Irene, T.W.K., & Lee, S.F. (2007). An empirical exploration into optimal working capital Management On public listed companies in Malaysia. *Proceedings of the 3rd UNITEN International Business Conference (UIBMC),* 16-18 December, Malaysia.

Jelic, M., Briston, R., & Aussenegg, W. (2001). The Financial Performance of Privatized Firms: evidence from Three Transition Economies. *Journal of Business Finance & Accounting,* 7(4), 9-25.

Johnson, C.G. (1970). Ratio Analysis and the Prediction of Firm Failure: Comment. *Journal Of Finance*, 25(5), 1166-1168.

Jose, M.L., Lancaster, C., & Stevens, J.L. (1996). Corporate returns and cash conversion Cycles. *Journal of Economics and Finance*, 9(20), 11- 45.

Jordan, R.W. (2003). *Fundamentals of Corporate Finance* (6th Ed.). Boston: McGraw-Hill Companies.

KAM (2010, January 4). Business Intelligence: Things look up for Manufacturing Sector. Retrieved from http://www.kam.co.ke/?itemld=17&newsld=454.

KAM (2011, February 7). Kenya's Economic Outlook, 2011. Retrieved from http://www.kam.co.ke/?itemld=17&newsld=459.

Kargar, J., & Blumenthal, R.A. (1994). Leverage Impact of Working Capital in Small Businesses. *TMA Journal,* 14(6), 46-53.

Kithii, J.N. (2008). The relationship between working capital Management and profitability of Companies listed at the NSE. *Unpublished MBA Research project,* University of Nairobi.

Lamberson, M. (1995). Changes in working capital of small firms in relation to changes in Economic activity. *Mid-American Journal of Business,* 10(2), 45-50.

Lazaridis, J., & Tryfonidis, D. (2006).Relationship between working capital management and Profitability of listed companies in the Athens Stock Exchange. *Journal of Financial Management and Analysis,* 19(1), 26-35.

Lieberman, M., Helper, S., & Demeester, L. (2009). The Empirical Determinants of Inventory Levels in High-Volume Manufacturing. *Journal of Production Management,* 8(1), 44-55.

Mathuva, D.M. (2010). The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms. *Research Journal of Business Management,* 4(1), 1 – 11.

Milgrom, P., & Roberts, J. (1988). Communication and Inventory as Substitutes in Organizing Production. *Scandinavian Journal of Economics,* 90(3), 275-289.

Miller, M.H., & Orr, D. (1966). A model for demand of money by firms. *Quarterly journal of Economics,* 80(1), 413-435.

Moyer, R.C.,McGuigan, J.R., & Kretlow, W.J. (2005). *Contemporary Financial Management*

(10th Ed.).New York: South-Western College Publishing.

Mugenda, M.O., and Mugenda, G.A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Laba Graphics Services.

Mukhopadhyay, D. (2004). Working Capital Management in Heavy Engineering Firms—A Case Study. [Web log post].Retrieved from*: http:// myicwai.com/knowledgebank/fm48.*

Mutungi, M. (2010). The relationship between working capital Management policies and Financial performance of oil marketing firms in Kenya. *Unpublished MBA research project,* University of Nairobi.

Naser, K., & Mokhtar, M. (2004). Determinants of Corporate Performance of Malaysian Companies, *Fourth Asia Pacific Interdisciplinary Research in Accounting Conference, Singapore*, 1(1), *16-25*.

Ngaba, D.K. (1990). Working capital management practices used in the Kenya secondary Schools. *Unpublished MBA Research project,* University of Nairobi.

Nwankwo, O., & Osho, G.S. (2010). An empirical analysis of corporate survival and growth: Evidence from efficient Working capital management. *International Journal of Scholarly Academic Intellectual Diversity,* 12(1), 1-13.

Nyakundi, M. (2003).A survey of working capital management policies among public Companies in Kenya. *Unpublished MBA Research project,* University of Nairobi.

Ochieng, A.J. (2006). Relationship Between working capital of firms listed in NSE and the Economic activities in Kenya. *Unpublished MBA Research project,* University of Nairobi.

Ouma, P. (2001). Cash management approaches employed by companies quoted at the NSE.

Unpublished MBA Research project, University of Nairobi.

Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research papers*, 2(2), 45-58.

Padey, I.M. (2004). *Financial management* (6th Ed.)New York, USA: Prentice Hall.

Pandey, I.M., & Parera, K.L.W. (1997). Determinants of Effective Working Capital Management- A Discriminant Analysis Approach. *IIMA Working Paper # 1349, Research and Publication Department, Indian Institute of Management*, 1(1), 10-20.

Peel, M.J., & Wilson, N. (1996). Working Capital and Financial Management Practices in the Small firm sector. *International Small Business Journal*, 14(2), 52-68.

Pinches, G.E. (1992). *Essentials of Financial Management* (4th Ed.). New York, NY: Harper Collins Publishers.

Rafuse, M.E. (1996). Working Capital Management: An Urgent need to refocus. *Journal of Management Decisions,* 34(2), 59-63.

Raheman, A., & Nasr, M. (2007).Working Capital Management and Profitability – Case of Pakistani Firms. *International Review of Business Research Papers*, 3(1), 279-300.

Rao, R. (1989). *Fundamentals of Financial Management* (3rd Ed.) USA: Macmillan publishers.

Reddy, M. (1991). Management of Working Capital. *Vikalpa Financial Journal*, 16(1), 30–35.

Ricci, C., & Di Vito, N. (2000).International Working Capital Practices in the UK. *European Financial Management*, 6(1), 69-84.

Richards, V., & Laughlin, E. (1980). A Cash Conversion Cycle Approach to Liquidity Analysis. *Financial Management,* 9(1), 32 – 38.

Robson, C. (2002). *Real World Research* (2nd Ed.). Oxford: Blackwell.

Ross, S.A., Westerfield, R.W., & Jordan, B.D. (2003). *Fundamentals of Corporate Finance* (6th Ed.). New York, NY: McGraw-Hill Irwin Publications.

Sack, K. (2000). Retailing: General Industry Survey. *Standard and Poor's, New York.*

Samiloglu, F., & Demirgunes, K. (2008).The Effects of Working Capital Management on Firm Profitability: Evidence from Turkey. *The International Journal of Applied Economics & Finance,* 2(1), 44-50.

Sharma, A.K., & Kumar, S. (2011). Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India. *Global Business Review,* 12(1), 159 – 173.

Shin, H., & Soenen, L. (1998).Efficiency of Working Capital and Corporate Profitability. *Financial Practice and Education,* 8(2), 37-45.

Shulman, J. M., & Cox, R. A. K. (1985). An Integrative approach to working capital Management. *Journal of Cash Management*, 5(6), 64-68.

Singh, J. P. & Pandey, S. (2008). Impact of working Capital Management in the Profitability Of Hindalco Industries Limited. *Icfai University Journal of Financial Economics*, 6(4), 62-72.

Smith (1980). *Profitability versus liquidity tradeoffs in working capital management: Readings On the management of working capital.* New York, St. Paul: West Publishing Company.

Smith, M., Beaumont, E., & Begemann, G. (1997).Measuring Association between Working Capital and return on Investment. *South African Journal of Business Management*, 28(1), 44-60.

Soenen, L.A. (1993). Cash Conversion Cycle and Corporate Profitability. *Journal of Cash Management*, 13(41), 53-58.

Tangen, S. (2003). An overview of frequently used performance measures. *International Journal of Productivity and Performance Management*, 52(7), 347-354.

Uyar, A. (2009). The relationship of cash conversion cycle with firm size and profitability: An Empirical investigation in Turkey. *International Research Journal of Finance and Economics,* 24(2009), 186-193.

Van Horne, J. C., & Wachowicz, J.M. (2000). *Fundamentals of Financial Management* (11th Ed.). Prentice Hall Inc.

Van Horne, J. C., & Wachowicz, J. M. (2004). *Fundamentals of Financial Management* (14th Ed.). New York, NY: Prentice Hall.

Velnampy, T. (2006). An Empirical Study on Application of Altman Original Bankruptcy Forecasting Model in Sri Lankan Companies. *Journal of Management*, 1(1), 20-45.

Velnampy, T. (2011). A Study on Investment Appraisal and Profitability. *Journal of Business Studies,* 2(1), 15-45.

Velnampy, T., & Niresh, J.A. (2012).The Relationship between Capital Structure and Profitability. *Global Journal of Management and Business Research,* 12(13), 40-75.

Vishnani, S., & Bhupesh, K.S. (2007).Impact of Working Capital Management Policies on

Corporate Performance: An Empirical Study. *Global Business Review Journal,* 8(1), 267-270.

Waweru, C.G. (2011). The relationship between working capital Management and Value of Companies quoted at the NSE. *Unpublished MBA Research project,* University of Nairobi.

Weinraub, H.J., & Visscher, S. (1998). Industry Practice relating to Aggressive Conservative Working Capital Policies. *Journal of Financial and Strategic Decision,* 11(12), 11-18.

Weston, J. F., & Eugene F. B. (1979). *Essentials of Managerial Finance* (5th Ed.). Hinsdale: The Dryden Press.

APPENDIX I: MANUFACTURING COMPANIES LISTED ON THE NSE

1. B.O.C Kenya Ltd
2. British American Tobacco Kenya Ltd
3. Carbacid Investments Ltd
4. East African Breweries Ltd
5. Mumias Sugar Co. Ltd
6. Unga Group Ltd
7. Eveready East Africa Ltd
8. Kenya Orchards Ltd
9. A.Baumann CO Ltd
10. Athi River Mining
11. Bamburi Cement Ltd
12. Crown Berger Ltd
13. E.A.Cables Ltd
14. E.A.Portland Cement Ltd
15. KenGen Ltd
16. CMC Holdings Ltd
17. Sameer Africa Ltd
18. Marshalls (E.A.) Ltd

APPENDIX II: RAW DATA ANALYSIS

Company/variables	2007	2008	2009	2010	2011	2012
B.O.C Kenya Ltd						
The average collection period demands	40	30	30	28	28	35
Inventory turnover period	30	28	30	28	30	30
The average payment period	590	620	612	620	590	586
Cash conversion period	28	30	30	28	28	30
Current ratio	1.5	1.4	1.5	1.6	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.73	0.75	0.53
Natural logarithm of sales	0.56	0.57	0.53	0.39	0.63	0.54
Financial assets to total assets	0.33	0.34	0.35	0.42	0.45	0.33
British American Tobacco Kenya Ltd						
The average collection period demands	35	28	35	40	30	30
Inventory turnover period	30	30	30	30	28	30
The average payment period	640	612	586	590	620	612
Cash conversion period	28	28	30	28	30	30
Current ratio	1.6	1.8	1.6	1.5	1.4	1.5
Debt ratio	0.73	0.75	0.53	0.53	0.61	0.54
Natural logarithm of sales	0.39	0.63	0.54	0.56	0.57	0.53
Financial assets to total assets	0.42	0.45	0.33	0.33	0.34	0.35

Carbacid Investments Ltd						
The average collection period demands	30	30	28	29	29	36
Inventory turnover period	28	30	28	30	31	28
The average payment period	620	612	620	580	595	586
Cash conversion period	30	30	28	31	29	30
Current ratio	1.4	1.5	1.6	1.5	1.6	1.6
Debt ratio	0.61	0.54	0.73	0.62	0.75	0.53
Natural logarithm of sales	0.57	0.53	0.39	0.40	0.63	0.54
Financial assets to total assets	0.34	0.35	0.42	0.52	0.45	0.33
East African Breweries Ltd						
The average collection period demands	35	29	32	28	28	35
Inventory turnover period	30	33	29	28	30	30
The average payment period	360	320	594	620	590	586
Cash conversion period	28	29	30	28	28	30
Current ratio	1.4	1.5	1.7	1.8	1.8	1.6
Debt ratio	0.43	0.52	0.42	0.65	0.75	0.53
Natural logarithm of sales	0.40	0.74	0.34	0.33	0.63	0.54
Financial assets to total assets	0.52	0.43	0.34	0.45	0.45	0.33
Mumias Sugar Co. Ltd						
The average collection period demands	40	30	35	29	32	28
Inventory turnover period	30	28	30	33	29	28

The average payment period	590	620	360	320	594	620
Cash conversion period	28	30	28	29	30	28
Current ratio	1.5	1.4	1.4	1.5	1.7	1.8
Debt ratio	0.53	0.61	0.43	0.52	0.42	0.65
Natural logarithm of sales	0.56	0.57	0.40	0.74	0.34	0.33
Financial assets to total assets	0.33	0.34	0.52	0.43	0.34	0.45
Unga Group Ltd						
The average collection period demands	45	35	35	26	24	37
Inventory turnover period	25	24	29	29	30	30
The average payment period	590	620	612	625	590	586
Cash conversion period	28	30	30	29	28	30
Current ratio	1.5	1.4	1.5	1.3	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.64	0.75	0.53
Natural logarithm of sales	0.56	0.67	0.53	0.41	0.63	0.54
Financial assets to total assets	0.43	0.24	0.45	0.51	0.45	0.33
Eveready East Africa Ltd						
The average collection period demands	40	30	45	35	35	26
Inventory turnover period	30	28	25	24	29	29
The average payment period	590	620	590	620	612	625
Cash conversion period	28	30	28	30	30	29
Current ratio	1.5	1.4	1.5	1.4	1.5	1.3
Debt ratio	0.53	0.61	0.53	0.61	0.54	0.64

Natural logarithm of sales	0.56	0.57	0.56	0.67	0.53	0.41
Financial assets to total assets	0.33	0.34	0.43	0.24	0.45	0.51
Kenya Orchards Ltd						
The average collection period demands	35	26	35	26	28	35
Inventory turnover period	29	29	29	29	30	30
The average payment period	612	625	612	625	590	586
Cash conversion period	30	29	30	29	28	30
Current ratio	1.5	1.3	1.5	1.3	1.8	1.6
Debt ratio	0.54	0.64	0.54	0.64	0.75	0.53
Natural logarithm of sales	0.53	0.41	0.53	0.41	0.63	0.54
Financial assets to total assets	0.45	0.51	0.45	0.51	0.45	0.33
Baumann CO Ltd						
The average collection period demands	26	35	26	26	28	28
Inventory turnover period	29	29	29	29	30	30
The average payment period	625	612	625	625	590	586
Cash conversion period	29	30	29	29	28	30
Current ratio	1.3	1.5	1.3	1.3	1.8	1.6
Debt ratio	0.64	0.54	0.64	0.64	0.75	0.53
Natural logarithm of sales	0.41	0.53	0.41	0.41	0.63	0.54
Financial assets to total assets	0.51	0.45	0.51	0.51	0.45	0.33

Athi River Mining						
The average collection period demands	40	30	30	28	28	28
Inventory turnover period	30	28	30	28	30	30
The average payment period	590	620	612	620	590	586
Cash conversion period	28	30	30	28	28	30
Current ratio	1.5	1.4	1.5	1.6	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.73	0.75	0.53
Natural logarithm of sales	0.56	0.57	0.53	0.39	0.63	0.54
Financial assets to total assets	0.33	0.34	0.35	0.42	0.45	0.33
Bamburi Cement Ltd						
The average collection period demands	30	30	28	40	30	30
Inventory turnover period	27	26	28	30	28	30
The average payment period	630	614	620	590	620	612
Cash conversion period	28	31	28	28	30	30
Current ratio	1.3	1.4	1.6	1.5	1.4	1.5
Debt ratio	0.52	0.44	0.73	0.53	0.61	0.54
Natural logarithm of sales	0.41	0.43	0.39	0.56	0.57	0.53
Financial assets to total assets	0.25	0.35	0.42	0.33	0.34	0.35
Crown Berger Ltd						
The average collection period demands	40	30	30	28	28	29
Inventory turnover period	30	28	30	28	30	30
The average payment	590	620	612	620	590	586

period						
Cash conversion period	28	30	30	28	28	30
Current ratio	1.5	1.4	1.5	1.6	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.73	0.75	0.53
Natural logarithm of sales	0.56	0.57	0.53	0.39	0.63	0.54
Financial assets to total assets	0.33	0.34	0.35	0.42	0.45	0.33
E.A. Cables Ltd						
The average collection period demands	26	35	35	26	35	26
Inventory turnover period	29	29	29	29	29	29
The average payment period	625	612	612	625	612	625
Cash conversion period	29	30	30	29	30	29
Current ratio	1.3	1.5	1.5	1.3	1.5	1.3
Debt ratio	0.64	0.54	0.54	0.64	0.54	0.64
Natural logarithm of sales	0.41	0.53	0.53	0.41	0.53	0.41
Financial assets to total assets	0.51	0.45	0.45	0.51	0.45	0.51
E.A. Portland Cement Ltd						
The average collection period demands	40	30	30	28	28	35
Inventory turnover period	30	28	30	28	30	30
The average payment period	590	620	612	620	590	586
Cash conversion period	28	30	30	28	28	30
Current ratio	1.5	1.4	1.5	1.6	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.73	0.75	0.53
Natural logarithm of sales	0.56	0.57	0.53	0.39	0.63	0.54

Financial assets to total assets	0.33	0.34	0.35	0.42	0.45	0.33
Ken Gen Ltd						
The average collection period demands	40	30	30	28	28	30
Inventory turnover period	30	28	30	28	30	26
The average payment period	590	620	612	620	590	366
Cash conversion period	28	30	30	28	28	30
Current ratio	1.5	1.4	1.5	1.6	1.8	1.6
Debt ratio	0.53	0.61	0.54	0.73	0.75	0.53
Natural logarithm of sales	0.56	0.57	0.53	0.39	0.63	0.54
Financial assets to total assets	0.33	0.34	0.35	0.42	0.45	0.33
CMC Holdings Ltd						
The average collection period demands	40	30	30	28	28	30
The average collection period demands	30	28	30	28	30	36
Inventory turnover period	590	620	612	620	590	586
The average payment period	28	30	30	28	28	30
Cash conversion period	1.5	1.4	1.5	1.6	1.8	1.6
Current ratio	0.53	0.61	0.54	0.73	0.75	0.53
Debt ratio	0.56	0.57	0.53	0.39	0.63	0.54
Natural logarithm of sales	0.33	0.34	0.35	0.42	0.45	0.33
Financial assets to total assets	0.40	0.30	0.30	0.28	0.28	0.35

Sameer Africa Ltd						
The average collection period demands	35	26	35	26	35	26
Inventory turnover period	29	29	29	29	29	29
The average payment period	612	625	612	625	612	625
Cash conversion period	30	29	30	29	30	29
Current ratio	1.5	1.3	1.5	1.3	1.5	1.3
Debt ratio	0.54	0.64	0.54	0.64	0.54	0.64
Natural logarithm of sales	0.53	0.41	0.53	0.41	0.53	0.41
Financial assets to total assets	0.45	0.51	0.45	0.51	0.45	0.51
Marshalls (E.A.) Ltd						
The average collection period demands	28	28	35	28	30	30
Inventory turnover period	28	30	30	28	590	586
The average payment period	620	590	586	620	28	30
Cash conversion period	28	28	30	28	1.8	1.6
Current ratio	1.6	1.8	1.6	1.6	0.75	0.53
Debt ratio	0.73	0.75	0.53	0.73	0.63	0.54
Natural logarithm of sales	0.39	0.63	0.54	0.39	0.45	0.33
Financial assets to total assets	0.42	0.45	0.33	0.42	28	35