EFFECT OF WORKING CAPITAL MANAGEMENT ON FINANCIAL PERFORMANCE OF NONFINANCIAL FIRMS LISTED IN THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

This project report is my original work and has not been presented in this or any other university for an award of a certificate, diploma or degree.

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This project report has been written under my supervision and submitted for examination with my approval as the university supervisor.

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DEDICATION

This is dedicated to my family, Lawrence and Leo.

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ABSTRACT

This study sought to investigate the effect of working capital management on financial performance of nonfinancial firms. Causal research design was employed since variables existed for investigating causation. The population comprised all thirty-nine nonfinancial firms listed at the NSE from 2005 up to 2010 and thirty-six firms reclassified into seven sectors by the NSE were finally utilized. Secondary data was then obtained from financial statements filled at the CMA and NSE libraries as well online company websites. SPSS 16 data analysis tool was employed. Linear regression data analysis technique was used to investigate the effect of efficient working capital management measures that is inventory conversion policy, receivables collection policy, creditors payment policy as well as overall cash conversion cycle (CCC) together with firm specific characteristics that is firm size, leverage and ratio of financial assets to total assets on profitability financial performance measure that is gross operating profit (GOP).

Results for whole set of firms shows that both receivables collections policy and cash conversion cycle had a highly significant negative relationship with gross operating profit while firm size, leverage, ratio of financial assets to total assets and inventory conversion policy all had a highly significant positive relationship with gross operating profit. This implies that avoiding stock out would result in increased gross operating profit. Also decrease in number of days it takes to collect cash from customers, hence the cash conversion cycle would lead to an increase in gross operating profit. In order to improve financial performance, firms need to maintain high inventory levels with strict receivables collection policy leading to a shortening of the cash conversion cycle.

Results using data in each economic sector indicate that: firm size had a positive relationship with gross operating profit in all sectors except for telecommunication and construction sectors which had a negative relationship between firm size and gross operating profit. Leverage had a positive relationship with gross operating profit in all sectors except for telecommunication sector which had a negative relationship between leverage and gross operating profit. Ratio of financial assets to total assets had a positive relationship with gross operating profit in all sectors except for agriculture, automobile, and energy sectors which had a negative relationship between ratio of financial assets to total assets and gross operating profit. Inventory conversion policy had a positive relationship with gross operating profit in all sectors except where it was excluded. Receivables collections policy had a negative relationship with gross operating profit in all sectors except in the agriculture sector which had a positive relationship between receivables collections policy and gross operating profit. This positive relationship suggests that less profitable firms in the sector will pursue a decrease of their receivable collection days in an attempt to reduce their cash gap in the cash conversion cycle. Payment policy had a negative relationship with gross operating profit in the agriculture and a positive relationship with gross operating profit in Automobile and Construction sectors. This could lead to the conclusion that a less profitable firm in agriculture will wait longer to pay bills, taking advantage of credit period granted by their suppliers. Also, each economic sector had a significantly positive relationship between cash conversion cycle and gross operating profit except for telecommunication and manufacturing sectors which had a negative relationship between cash conversion cycle and gross operating profit. The study recommends that managers of firms operating in different sectors manage their working capital differently so as to maximize firms' profitability financial performance.

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ABREVIATIONS

CMA	Capital Markets Authority
NSE	Nairobi Securities Exchange
The Exchange	Magazine for the East African Stock Exchanges
WC	Working capital
WCM	Working Capital Management
AS	Agricultural sector
AAS	Automobile and Accessories sector
CSS	Commercial and Services sector
CAS	Construction and Allied sector
EP	Energy and Petroleum sector
MS	Manufacturing sector
TTS	Telecommunication and Technology sector

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Brigham (2004) noted that the term working capital originated with the old Yankee peddler, who would load up his wagon with goods and then go off on his route to peddle his wares. The merchandise was called working capital because it was what he actually sold, or "turned over", to produce his profits. The wagon and horse were his fixed assets. He generally owned the horse and wagon, so they were financed with "equity" capital, but he borrowed the funds to buy merchandise. These borrowings were called working capital loans, and they had to be repaid after each trip to demonstrate to the bank that the credit was sound. If the peddler was able to repay the loan, then the bank would make another loan. Therefore, the old Yankee peddler would borrow to buy inventory, sell the inventory to pay off the bank loan, and then repeat the cycle. This concept when applied to complex businesses helps to analyze the effectiveness of a firm's working capital management. Firms typically follow a cycle in which they purchase inventory, sell the goods on credit and then collect accounts receivable. This is known as the cash conversion cycle.

Since the whole of current assets help to earn profits, working capital should be considered as current assets only because both fixed and current assets help an enterprise make profits. While fixed assets are means to produce, current assets are means to operate these fixed assets and thus generate profits. Also, the management is generally concerned with the total amount of funds available in terms of current assets for meeting the operational requirements. The sources of funds for such current assets are treated as a different aspect (Baker and Mallot, 1946). In fact, Smith (1973) opines that the goods of a merchant yield no revenue/profit till he sales them for money and the money yield him little till it is again exchanged for goods. His capital is continuously going from him in one shape and returning to him in another, and it is only by means of such circulation or successive exchanges, that yield him any profit. Such capital, therefore, may very appropriately be called circulating capital (current assets).

Eljelly (2004) found that cash conversion cycle was of more importance as a measure of liquidity than current ratio as it affects profitability; that there is a negative relationship between profitability and liquidity indicators such as current ratio and cash gap; and that there was a great variation among industries with respect to the significant measure of

liquidity. Filbeck and Krueger (2005) showed that differences do exist among industries in respect of WC measures i.e. day's working capital, inventory turnover days, day's payables and days sales outstanding. However, these changes were consistent across industries to pressure industry ordering across time.

1.1.1 Working Capital

There are two concepts of working capital; gross and net working capital. Gross working capital refers to the firm's investment in current assets. Current Assets are the assets, which can be converted into cash within an accounting year or operating cycle. It includes cash, short-term securities, debtors (account receivables or book debts), bills receivables and stock (inventory).

Horne and Wachowicz (2005) argued that the working capital concept as used in finance refers to current assets, which is basically gross working capital. Current assets include cash and marketable securities, receivables, and inventory. Gross working capital therefore refers to the firm's investment in current assets. On the other hand net working capital refers to the difference between current assets and current liabilities. Current liabilities are those claims of outsiders, which are expected to mature for payment within an accounting year. It includes creditors or accounts payables, bills payables and outstanding expenses. Net Working capital can be positive or negative. A positive net working capital will arise when current assets exceed current liabilities and vice versa. Net working capital is the dollar difference between current assets and current liabilities as used by accounting professionals. It represents a measure of extend to which the firm is protected from liquidity problems (Horne & Wachowicz, 2005).

1.1.2 Working Capital Management and its Measures

Working capital management decisions are three dimensional in nature i.e. these decisions are usually related to these three sphere or fields: profitability, risk and liquidity; composition and level of current assets; and composition and level of current liabilities (Kuhlemeyer, 2004). Working capital management is the administration of current assets in the name of cash, marketable securities, receivables, and inventories. Working capital management is the regulation, adjustment, and control of the balance of current assets and current liabilities of a firm such that maturing obligations are met, and the fixed assets are

properly serviced. Working capital management concerns the administration of current assets and the financing of current liabilities needed to support current assets (Horne & Wachowicz, 2005). Efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of the inability to meet due to short term obligations and avoids excessive investment in these assets (Eljelly, 2004).

Efficiency of working capital management is based on the principle of speeding up cash collections as quickly as possible and slowing down cash disbursements as slowly as possible. This has led to use of cash conversion cycle as a measure of efficient working capital management since it is based on operations of a firm (Richards & Loughlin, 1980). Various studies have used cash conversion cycle and its components to estimate WCM efficiency of a firm (Shin & Soenen, 1998; Deloof, 2003 and Nobanee,2011). The components of cash conversion cycle are: number of day's inventories which means how many days it takes to turn over the value of entire inventory (DINV), number of day's accounts receivable (DREC) and payable (DPAY) which tell how long on average it takes to get payment and pay invoices respectively. The cash conversion cycle has been criticized for it focuses only on the length of time of financial flows engaged in the cycle and does not consider the amount of fund committed to a product as it moves through the cash conversion cycle (Nobanee, 2011). On top of that, many other variations have been used hence could be confusing. For instance Bodie and Merton (2000) used the term cash cycle time. They define it as the number of days between the date the firm must start to pay cash to its suppliers and the date it begins to receive cash from its customers. Keown, Martin, Petty and Scott (2003) define cash conversion cycle, as the sum of days of sales outstanding (average collection period) and days of sales in inventory less days of payables outstanding. Jordan (2003) uses the concept of cash cycle instead and defines it as the number of days that pass before we collect the cash from sale, measured from when we actually pay for the inventory. Cash gap as used by Eljelly (2004) measures the length of time between actual cash expenditures on productive resources and actual cash receipts from the sale of products or services.

This led Nobanee (2011) to suggest optimal cash conversion cycle by showing that decreasing cash conversion cycle actually reduces firm performance as measured by operating income to sales ratio. However, due to lack of information necessary to calculate the components of the optimal cash conversion cycle (optimal inventory conversion

period, optimal receivable collection period and optimal payables deferral period) by external parties to a firm implies that, however defective, the cash conversion cycle continues to be a preferred measure even in this study .

1.1.3 Financial Performance

To evaluate business performance, i.e. to determine liquidity, debt, coverage, asset management, profitability and overall financial health – financial performance measures are needed. The study of a business' performance measures can reveal which decisions need to be made to sustain long-term prosperity. A financial performance measure is a ratio that compares one account with another. There are three types of comparisons: Balance sheet performance measures, which compare two balance sheet accounts; Income statement performance measures, which compare two accounts on an income statement and combined performance measures, which compare components of a balance sheet to components of an income statement. To analyze specific components of financial performance, the measures are divided into five categories: Liquidity financial performance measures that gauge a firm's ability to meet its cash obligations; Debt/coverage financial performance measures that evaluate a firm's capital structure – the amount a business borrows to purchase assets and its ability to service debt; Asset-management financial performance measures that evaluate how efficiently a business uses its assets; Profitability performance measures that compare profit level to sales revenue, assets, and equity to determine the operating efficiency of a business and Growth and financial health performance measures that analyze the overall health of a business – the wealth it creates and the maximum rate that its sales revenue can increase without depleting resources.

1.1.4 The Nairobi Securities Exchange

The NSE was officially constituted in 1954 as a voluntary association of stock brokers after operating for three decades - dealing in shares and stocks with no formal market, no rules and no regulations to govern stock broking activities- under the societies Act (NSE, 2011). Since then it has experienced continuous growth from an initial single stock broker to twenty-seven (27) licensed member firms to date operating under rules and regulations provided by the capital markets authority (The Exchange, 2011). The NSE is categorized into ten sub-sector classifications with fifty-seven firms.

Its major roles are promoting a culture of saving; assisting in the transfer of savings to investment in productive enterprises; assisting in the rational and efficient allocation of capital; promoting higher standards of accounting, resource management and transparency in the management of business among others.

1.2 Research Problem

Working capital management decisions involve profitability, risk and liquidity tradeoff; composition and levels of current assets; and composition and levels of current liabilities. Nyakundi (2003) in a survey of WCM policies among public companies in Kenya established that companies that follow different working capital policies report significant different profit levels and there were significant differences in return on equity among companies that practice different working capital management policies. In the study no attempt was made to establish effect of efficient working capital management on financial performance of different sectors as regression analysis was not done.

Filbeck and Krueger (2005) analyzed WCM efficiency across industries and suggested that differences do exist among industries in respect of WCM measures. Padachi (2006) found in a study of firms in five industrial sub sectors i.e. food and beverages; leather garments; paper products; prefabricated metal products and wood furniture operating in Pakistan. The results showed that the paper product industry sub sector had the highest score on the various components of working capital which showed a positive impact on its profitability. These studies are not from Kenya.

Uyar (2009) in a study on the relationship between cash conversion cycle with firm size and profitability in Turkey found there is a significant negative correlation between the CCC and firm size and profitability.

Additionally, Zariyawati *et al.*(2009) in a study on working capital management and corporate performance in Malaysia found that all economic sectors had a significantly negative relationship between cash conversion cycle and operating income except for Industrial Product sector for both fixed effects and ordinary least squares regression, while Consumer Product and Plantation for fixed effect regression. Also, that in traditional view of relationship between cash conversion cycle (as measure of working capital management) and profitability is ceteris paribus, the shorter a firm's cash conversion

cycle, the better is its profitability. This shows that less of time a dollar tied up in current asset and less external financing. While, the longer cash conversion cycle will hurt firm's probability. The reason is that firm having low liquidity that would affect firm's risk. However, if a firm has higher level of account receivable due to the generous trade credit policy it would result to a longer cash conversion cycle. In this case, the longer cash conversion cycle will increase profitability. Thus, the traditional view cannot be applied to all circumstances.

Kithii (2008) suggested that different sectors in the economy may have significant differences in the management of working capital and suggested that a study ought to be done to establish the possibility. This study was motivated by the quest to provide research findings from Kenya on the possibility that various sectors need to manage their working capital differently. This study has bridged that gap in academic working capital management literature in Kenya, as it sought to investigate the effect of working capital management on profitability of firms in operating in different sectors. The study answered the following question: what is the effect of working capital management on gross operating profit for nonfinancial firms and what is the effect of working capital management for nonfinancial firms in different sectors?

1.3 Objectives of the study

i. To investigate the effect of working capital management on gross operating profit for nonfinancial firms listed at the Nairobi Securities Exchange.
ii. To investigate the effect working capital management on gross operating profit for nonfinancial firms in different economic sectors of the Nairobi Securities Exchange.

1.4 Value of the Study

Finance managers will be able to use the results to remain competitive in their sector knowing the effect WCM on financial performance of firms in the sector.

Government, quasi-government and non-government entities will be able to know which specific incentives to provide a sector to enhance their competitive edge. For example the agricultural sector or the energy and petroleum sector which are key to our economy. The

incentives could include marketing activities to increase sales volumes or putting up tariffs to reduce imports of goods made from a given sector.

Investors will be able to choose their portfolios well on the basis of efficiency of working capital management of firms operating in the same sector since this has an impact on operational efficiency, share price and shareholders wealth. Given a firms WCM strategies an investor can be able to gauge whether future performance can be promise and so be able to make buy, sale or hold decisions on a given share.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter has various theories on WCM as well as a review empirical literature on this area. At the end, a summary is made.

2.2 Theories of Working Capital Management

2.2.1 The Operating Cycle theory

Operating cycle method as suggested by Cohen and Robbins (1968) assesses working capital by way of operating cycle through which the flow of cash invested is identified throughout, from the stage of procurement of raw material to finished goods and flows of cash back to the business through cash sales or collections from debtors. The operating cycle of a firm is the length of time between the acquisition of raw materials and the collections of receivables associated with the sales of finished goods. According to Pandey (2009) operating cycle is the time duration required to convert sales, after the conversion of resources into inventories, into cash. The operating cycle of a manufacturing company involves the acquisition of resources such as raw material, labor, power and fuel; manufacture of the product which includes conversion into work-in-progress into finished goods and Sale of the product either for cash or on credit. These phases affect cash flows because sometimes sale is done on credit and it takes some time to realize (Pandey, 2009). Although the operating cycle considers the financial flows coming from receivables and inventory, it ignores the financial flows from account payables.

2.2.2 The Cash Conversion Cycle theory

Richards and Loughlin (1980) developed the cash conversion cycle model since it considers all relevant cash flows from operations. The cash conversion cycle can be defined as the length of time between cash payments for purchase of raw materials and the collection of receivable associated with the sale of finished goods. However, the cash conversion cycle focuses only on the length of time financial flows engaged in the cycle and does not consider the amount of fund committed to a product as it moves through the cash conversion cycle. Therefore, Gentry, Vaidyanathan, and Wai (1990) suggest a weighted cash conversion cycle that takes into consideration both the timing of financial

flows and the amount of fund committed to each stage of the cycle. The weighted cash conversion cycle can be defined as the weighted number of days funds are committed in receivables, inventories and payables, less the weighted number of days financial flows are deferred to suppliers.

The weighted cash conversion cycle is a complex measure of working capital management efficiency while the break-up of inventory into three components of raw materials, work in process, and finished goods is not available for outside investigators. Due to these limitations Shin and Soenen (1998) suggest the net trade cycle as an alternative measure for working capital management. They argue that the cash conversion cycle is an additive concept where the denominators for the inventory conversion period, the receivable collection period, and the payable deferral periods are all different, making the addition of the cash conversion cycle components not really useful. They suggest equalizing the denominators of the inventory conversion period, the receivable collection period, and the payable deferral periods. The net trade cycle 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 the weighted cash conversion cycle (Shin & Soenen, 1998). Shin and Soenen (1998) also argue 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 function of the expected sales growth.

2.2.3 The Process-oriented View

Reilly and Reilly (2002) present a process-oriented view to working capital management. They argue that operating roots of the financial results must be recognized if working capital management performance measures are to be improved. That is, inventory management is a part of supply chain management, receivables management is a part of revenue management and payables management is part of purchasing management. Also cash management is taken into account so the viewpoint is net working capital. They created several value and process paths and combined those with the revenue management

process which enables performance measurement and management for the working capital management process in that the revenue management process creates value to both customers and investors. For example speed of credit evaluation affects speed of orders and having orders in time creates value to customers. Other three processes require similar analyses to create complete investigation of working capital management. The resulting tool is useful for understanding, communicating, and managing the firms' working capital position.

2.3 Empirical Review

Zariyawati *et al.* (2009) found differences in levels WCM variables and in the effect of WCM variables on operating income. In particular the study showed that 1) Trade/Service (TS) sector had the highest profit of 7.8% while the Property (PR) sector had the lowest profit of 3.1%, 2) Plantation Sector (PL) had the lowest cash conversion cycle of 67 days and 344 days standard deviation,3) all economic sectors had a significantly negative relationship between cash conversion cycle and operating income except for Industrial Product sector, Consumer Product and Plantation sectors which had a positive relationship between cash conversion cycle and gross operating income. The relationship for industrial product sector was not significant due to nature of business.

Falope and Ajilore (2009) using a sample of fifty Nigerian quoted non-financial firms found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle. Furthermore, they found no significant variations in the effects of working capital management between large and small firms.

Raheman *et al.* (2010) investigated the traditional relationship between working capital management policies and a firm's profitability for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005.The study found significant differences among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could increase value if they adopt a conservative approach towards working capital investment and working capital financing policies.

Padachi (2006) examined trends in working capital management and its impact on firms' performance in order to identify the causes of any significant differences between industries for a sample of 58 small manufacturing firms in Mauritius. The study examined firms in five industrial sub sectors i.e. food and beverages; leather garments; paper products; prefabricated metal products and wood furniture. The paper product industry sub sector had the highest score on the various components of working capital which showed a positive impact on its profitability. The study also showed that a high investment in inventories and account receivables is associated with lower profitability.

Garcia-Teruel and Martinez-Solano (2007) using CCC and its components as independent variable and return on assets as dependent variable, found a strong relationship between return on assets and CCC plus its components i.e. day's accounts receivable, days inventory and days accounts payable using correlation analysis. Additionally, multivariate regression analysis confirmed this negative relationship that by shortening the CCC, firms can generate more profits for shareholders. The regression results were found significant for negative relation between return on assets and inventory turnover as well as days accounts receivables. However, impact of delaying payment to suppliers on return on assets remained inconclusive as it was not significant at 5% level of confidence.

Filbeck and Krueger (2005) analyzed WC efficiency across industries as well as stability of WC measures across time. The differences in WC efficiency across industries were evaluated by using ANOVA test. The results of ANOVA suggested that differences do exist among industries in respect of WC measures i.e. days WC, inventory turnover, day's payables and days sales outstanding. However, these changes were consistent across industries to pressure industry ordering across time.

Eljelly (2004) found that cash conversion cycle was of more importance as a measure of liquidity than current ratio as it affects profitability; that there is a negative relationship between profitability and liquidity indicators such as current ratio and cash gap; and that there was a great variation among industries with respect to the significant measure of liquidity.

Deloof (2003) found a significant relationship between gross operating income and the number of days account receivable, inventories and account payables of Belgium firms. This suggested that managers could create value by reducing the number of day's accounts

receivable and inventories to a reasonable minimum. The negative relationship between account payable and profitability was consistent with the view that less profitable firms wait longer to pay their bills.

Moyer, Mcguigan, and Kretlow (2003) found that a significant industry effect subsists on a firm's investment in working capital and it could due to reason that no single policy is necessary optimal to all firm.

Shin and Soenen (1998) examined the relationship between the length of Net Trading Cycle (NTC), corporate profitability and risk adjusted stock return, by industry and capital intensity. They found a strong negative relationship between the lengths of the firms' NTC and its profitability. While shorter NTC were associated with higher risk adjusted stock returns.

In Kenya, Mathuva (2009) examined the influence of working capital management components on corporate profitability. The study showered that there exists: a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability, a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Kithii (2008) carried out a similar study using sample data from the Nairobi Stock Exchange (NSE). She found that there is a significant negative relationship between gross operating profit and working capital management proxies of account payable days, inventory turnover, and cash conversion cycle.

Nyakundi (2003) conducted a survey of working capital management policies among public companies in Kenya. He established that public companies that follow different working capital policies report significant different profit levels; that the commonly practiced policy among Kenyan public companies is the aggressive policy and there were significant differences in return on equity among companies that practice different working capital management policies.

2.4 Summary of Literature Review

The cash conversion cycle concept of working capital management has gained a lot of currency in WCM literature due to its utilization of the gross working capital definition of working capital. It is based on operational efficiency of the firm.

The effect of efficient working capital management on profitability has been shown in studies in developed world as well as some emerging economies. The findings indicate a negative relationship between number of days inventory, number of days receivables as well as cash conversion cycle and various measures of financial performance. On the other hand a positive relationship is expected between number of days payables and profitability.

However, the effect of efficient WCM on financial performance may be different between sectors as studies outside Kenya have indicated. Those results cannot be generalized to all emerging capital markets especially Kenya. Hence, the present study seeks to bridge the gap of WCM research in Kenya by investigating the effect of WCM variables on financial performance of firms in different sectors.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The chapter details the research design, source of population data, methods used to collect data as well as how the data was analyzed including the variables and models used for the study.

3.2 Research Design

Causal research design was employed. This method was used as it focuses on how one variable produces change in another variable. That is, attempts to reveal the relationship between variables, in other words causation (Saunders, Lewis, and Thornhill, 2007). The method was very useful in this study as variables existed for investigating effect of working capital management efficiency on financial performance of a sector.

3.3 Population of the Study

The population of the study comprised all thirty-nine nonfinancial firms listed on the Nairobi Securities Exchange between 2005 and 2010 (Appendix 1). Firms listed on the NSE have greater incentive to present profits in their financial statement when they occur to make their shares more attractive (Lazaridis and Tryfonidis, 2006; Mathuva, 2009). Hence provided a good source of data used in the study. Given the small population, a census was used. The NSE had reclassified firms on their counters into sectors. Seven industrial sectors have nonfinancial firms. That is agricultural sector -7 firms, commercial and services sector-8 firms, telecommunication and technology sector- 2 firms, automobiles and accessories sector-4 firms, manufacturing sector-9 firms, construction and allied sector-5 firms and energy and petroleum sector with 4 firms.

3.4 Data Collection Technique

Secondary data for the study was obtained from financial statements filled at the CMA and NSE libraries as well online on company websites.

3.6 Data Analysis Technique

Data Analysis was done using Statistical Package for Social Sciences (SPSS) version 17. Linear regression analysis was used to gauge the effect of efficient working capital management and firm specific characteristics such as firm size and leverage on financial performance of firms. The model was applied on each sector and effect of independent variables on dependent variable noted. The use of regression analysis is justified since the significance of each coefficient of intercept α will be seen and its sign, whether negative or positive, noted. This will tell if a decrease or increase in working capital management measure affects gross operating profit and how significantly so (Raheman and Nasr, 2007).

3.6.1 Variables and Model Specification

3.6.1.1 Independent Variables

These are basically working capital management measurement variables. Four variables DINV, DREC, DPAY and CCC are used. There calculation as in Shin and Soenen (1998) is explained below.

DINV stands for number of days inventories. It is the time taken to convert inventory held in the firm into sales. It is an independent variable and proxy for the inventory conversion policy. This is consistent with studies by Deloof (2003), Garcia-Teruel and Martinez-Solano (2007) Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), and Mathuva (2009).

$$\text{DINV} = \frac{\text{Inventories} \times 365}{\text{Cost of Goods Sold}}$$

DREC represents number of day's accounts receivable. It is the time taken to collect cash from customers and an independent variable used as a proxy for the collection policy (Deloof, 2003; García-Teruel and Martinez-Solano, 2007; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007 and Mathuva, 2009).

$$\text{DREC} = \frac{\text{Accounts Receivables} \times 365}{\text{Sales}}$$

DPAY is the number of days accounts payable which refers to the time taken to pay the firm's suppliers. It is an independent variable used as proxy for the payment policy (Deloof, 2003; García-Teruel and Martinez-Solano, 2007; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007 and Mathuva, 2009).

$$\text{DINV} = \frac{\text{Accounts Payable} \times 365}{\text{Cost of Goods Sold}}$$

CCC is the cash conversion cycle and is used as a comprehensive measure of working capital management (Deloof, 2003; García-Teruel and Martinez-Solano, 2007; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007 and Mathuva, 2009).

$$\text{CCC} = \text{DINV} + \text{DREC} - \text{DPAY}$$

It shows the time lag between expenditure for purchase of raw materials and the collection of sales of finished goods. The longer the cycle the larger the funds blocked in working capital. The cash conversion cycle was used as it is also based on operational perspective of liquidity management.

3.6.1.2 Control Variables

Factors affecting working capital management policies such as firm size, leverage and ratio of financial assets to total assets are used as control variables (Shin and Soenen, 1998; Deloof, 2003; Raheman and Nasr, 2007; Mathuva, 2009).

NATLS means natural logarithm of sale. NATLS is used as a proxy for firm size.

FDR that is Short-term loans plus long-term loans divided by the total assets is a proxy for leverage or levels of debt.

RFT-Fixed financial assets divided by the total assets. The fixed financial assets to total assets ratio is used to check the ratio of fixed financial assets to the total assets of firms. Fixed financial assets are mainly shares in affiliated firms, intended to contribute to the activities of the firm that holds them, by establishing a lasting and specific relation and loans that were granted with the same purpose.

3.6.1.3 Dependent Variable

Financial performance was based on a profitability performance measure. Consistent with Lazaridis and Tryfonidis (2006) and Gill et al (2010) gross operating profitability (**GOP**) was used as dependent variable.

GOP- Gross operating profit is sales minus cost of goods sold (COGAS), and divided by total assets minus financial assets (TA-FA).

$$GOP = \frac{(Sales - COGS)}{(TA - FA)}.$$

Financial assets (FA) are chiefly shares in affiliated firms and are a significant part of total assets. When they are the main part of total assets of a firm, its operating activities will contribute little to overall financial performance. Hence they are excluded from total assets (TA) (Deloof, 2003).

3.6.1.4 The Model for the Study

To investigate the effect of working capital management on financial performance of a firm, the gross operating profit is expressed as a function of efficient working capital management variables (DINV, DREC, DPAY and CCC) together with control variables. This is consistent with previous studies by Padachi (2006), Raheman and Nasr (2007), Zariyawati *et al.* (2009) and Gill *et al.* (2010).The resulting regression model is

$$GOP_{it} = \alpha_0 + \alpha_1 NATLS_{it} + \alpha_2 FDR_{it} + \alpha_3 RFT_{it} + \alpha_4 DINV_{it} + \alpha_5 DREC_{it} + \alpha_6 DPAY_{it} + \alpha_7 CCC_{it} + \varepsilon_{it}$$

(Model 1)

Where:

GOP	Gross Operating Profit is a measure of profitability
CCC	Cash Conversion Cycle proxy for efficient Working Capital Management
DINV	Number of Days Inventories proxy for inventory conversion policy
DPAY	Number of day's accounts payable proxy for payment policy
DREV	Number of Days Accounts Receivable proxy for receivables collection policy
FDR	Financial Debt Ratio proxy for leverage or debt levels
NATLS	Natural logarithm of sales (turnover) proxy for firm size
RFT	Fixed Financial Assets to Total Assets Ratio.
α	Constant of variation, it is the coefficient of each independent variable.
ε	Error term. $\sum\varepsilon=0$

CHAPTER FOUR: FINDINGS AND INTERPRETATION

4.1 Introduction

This chapter has some general information on distribution of firms in each sector, a presentation of results of regression analysis and their interpretation of the data.

4.2 General Information

Out of the initial thirty-nine firms, only thirty-six were useful for the study. Three i.e. Kenya Orchids, Hutchins Bremer and Uchumi Supermarkets were dropped due to unavailability of data for the whole period of study leaving the thirty-six firms.

Table 4.2: Number of Firms in the Study per Sector

ECONOMIC SECTOR	ABBREVIATION	NO.OF FIRMS
Agricultural sector	AS	7
Automobile and Accessories sector	AAS	4
Commercial and Services sector	CSS	6
Construction and Allied sector	CAS	5
Energy and Petroleum sector	EP	4
Manufacturing sector	MS	8
Telecommunication and Technology sector	TTS	2

Source : Research data

4.3 Effect of Working Capital Management on Gross Operating Profit of Firms.

A linear regression model was developed to determine the effect of firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy, and cash conversion cycle on gross operating profit. The linear regression model used was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DINV + \alpha_5 DREC + \alpha_6 CCC + \varepsilon$$

The variables are as defined in section 3.6.1.4 above.

Table 4.3.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.396[a]	.157	.133	26.86059

a. Predictors: (Constant), CCC, RFT, DREC, FDR, NATLS, DINV.
b. Dependent Variable: GOP
Source: Research Data

Adjusted R square is called coefficient of determination and tells us how the financial performance of firms is varied with variation in firm size, leverage, ratio of financial

assets, inventory conversion policy, receivables collections policy, and cash conversion cycle. From table 4.3.1 above, the value of adjusted R square is 0.133. This implies that 13.3% of gross operating profit varied with variations in firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy, and cash conversion cycle at a confidence interval of 95%.

Table 4.3.2: Results of Analysis of ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28026.694	6	4671.116	6.474	.000[a]
	Residual	150791.632	209	721.491		
	Total	178818.326	215			

a. Predictors: (Constant), CCC, RFT, DREC, FDR, NATLS, DINV
b. Dependent Variable: GOP
Source: Research Data

Data in table 4.3.2 shows that F statistic is 6.474 with p-value 0.0000. This implies the model is fit and its coefficients are highly significant at 95% confidence interval.

Table 4.3.3: Regression Coefficients [a] result

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	-32.886	18.800		-1.749	.082
	NATLS	4.133	1.161	.274	3.559	.000
	FDR	.204	.098	.137	2.087	.038
	RFT	.516	.418	.080	1.235	.218
	DINV	.023	.016	.121	1.439	.152
	DREC	-.049	.028	-.159	-1.738	.084
	CCC	-.025	.013	-.143	-1.847	.066

a. Dependent Variable: GOP
Source: Research Data

From the data in the table 4.3.3, there is a negative relationship between gross operating profit and receivables collections policy as well as cash conversion cycle. Firm size, leverage, ratio of financial assets and inventory conversion policy show a positive relationship with gross operating profit. Hence, the established regression equation was:

GOP=-32.886+4.133NATLS+0.204FDR+0.516RFT+0.023DINV-0.049DREC-0.025CCC

From the above regression model it was found that, gross operating loss would be 32.886 holding the other variables to a constant zero. Also, a unit increase in firm size would lead

to an increase in gross operating profit by a factor of 4.133, also a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.204, a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.516, also a unit increase in inventory conversion policy would result in an increase in gross operating profit by a factor of 0.023. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.049 and also a unit increase in cash conversion cycle would lead to a decrease in gross operating profit by a factor of 0.025. Hence, converting less stock into sales or holding stock for long would result in increased gross operating profit. Receivables collection policy and CCC both had a negative relationship with GOP. This suggests that a decrease in number of days it takes to collect cash from customers and also the cash conversion cycle would lead to an increase in profitability.

4.4 Effect of Working Capital Management on Gross Operating Profit of Firms in Sectors.

To investigate the effect of firm size, leverage, ratio of financial assets to total assets, inventory conversion policy, receivables collections policy, payment policy and duration of CCC on gross operating profit if different in various sectors, the regression analyses were applied to each economic sector in the study. The results and interpretation was:

4.4.1 Agricultural sector

A linear regression model was used to determine the effect of firm size, leverage, ratio of financial assets to total assets, receivables collections policy, payment policy and overall duration of CCC on GOP in the AS. The linear regression model used was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DREC + \alpha_5 DPAY + \alpha_6 CCC + \varepsilon$$

From data in table 4.4.1.1, adjusted R square is 0.064.

Table 4.4.1.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.448[a]	.201	.064	14.71810

a. Predictors: (Constant), CCC, RFT, DREC, FDR, NATLS, DINV.
b. Dependent Variable: GOP

Source: Research Data

This implies that only 6.4% of variations in gross operating profit of firms in the agricultural sector varied with variations in firm size, leverage, ratio of financial assets, inventory conversion policy, payment policy days and cash conversion cycle at a confidence interval of 95%.

Table 4.4.1.2: Results of ANOVA [b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1908.883	6	318.147	1.469	.217[a]
	Residual	7581.786	35	216.622		
	Total	9490.670	41			

a. Predictors: (Constant), CCC, DPAY, FDR, DREC, RFT, NATLS
b. Dependent Variable: GOP
Source: Research Data

The results from table 4.4.1.2 indicate that the F statistic is 1.469 with p-value of 0.217. Hence the model is fit and moderately significant at a confidence interval of 95%.

Table 4.4.1.3: Regression Coefficients [a] Result

		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	T	Sig.
1	(Constant)	-78.351	52.729		-1.486	.146
	NATLS	6.467	4.123	.620	1.569	.126
	FDR	.220	.283	.131	.778	.442
	RFT	-1.838	.985	-.338	-1.866	.070
	DREC	.076	.058	.307	1.317	.196
	DPAY	-.044	.090	-.113	-.488	.629
	CCC	.010	.017	.159	.589	.560

a. Dependent Variable: GOP
Source: Research Data

From data from table 4.4.1.3, firm size, leverage, receivables collections policy, and duration of CCC both had a positive relationship with GOP. Also, ratio of financial assets and payment policy period both had a negative relationship with GOP. The resulting regression equation is:

$$GOP = -78.351 + 6.467NATLS + 0.220FDR - 1.838RFT + 0.076DREC - 0.044DPAY + 0.01CCC$$

From the above regression equation it was found that the gross operating loss in the sector would be 78.351 holding firm size, leverage, ratio of financial assets, receivables collection policy, payment policy and duration of cash conversion cycle at constant zero. Also, a unit increase in firm size, leverage, receivables collections policy, and cash

conversion cycle would lead to an increase in gross operating profit for firms in the AS by a factor of 6.467, 0.220, 0.076, and 0.01 respectively. Also, a unit decrease in payment policy would lead to an increase in gross operating profit by a factor of 0.044. That is, the shorter the period it takes to pay creditors the higher the expected profitability of a firm in the sector and vice versa. Also, a unit increase in ratio of financial assets would lead to decrease in gross operating profit by a factor of 1.838. That is, as less fixed financial assets are utilized the more the expected profitability of a firm in AS.

4.4.2 Commercial and Services Sector

A linear regression model was also applied to determine the effect of firm size, leverage, ratio of financial assets to total assets, inventory conversion policy holding period, receivables collections policy and overall duration of cash conversion cycle on gross operating profit in the CSS. The regression model used was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DINV + \alpha_5 DREC + \alpha_6 CCC + \varepsilon$$

Table 4.4.2.1: Model Summary [b]

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.740[a]	.547	.454	24.35851

a. Predictors: (Constant), CCC, NATLS, DREC, RFT, FDR, DINV
b. Dependent Variable: GOP
Source: Research Data

From the table 4.4.2.1, adjusted R square is 0.454 which implies that 45.4% of gross operating profit of firms in CSS varied with variations in firm size, leverage levels, ratio of financial assets, inventory conversion policy, receivables collections policy and duration of cash conversion cycle at a confidence interval of 95%.

Table 4.4.2.2: Results of ANOVA [b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20797.667	6	3466.278	5.842	.000[a]
	Residual	17206.780	29	593.337		
	Total	38004.447	35			

a. Predictors: (Constant), CCC, NATLS, DREC, RFT, FDR, DINV
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.2.2 above, the F-statistic is 5.842 with p-value of 0.000. It shows that the model is fit highly significant at 95% confidence interval.

Table 4.4.2.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-85.099	72.523		-1.173	.250
	NATLS	10.694	4.148	.542	2.578	.015
	FDR	.049	.422	.024	.116	.909
	RFT	1.299	1.794	.120	.724	.475
	DINV	.203	.103	.473	1.982	.057
	DREC	-.194	.090	-.310	-2.161	.039
	CCC	.071	.049	.341	1.447	.159

a. Dependent Variable: GOP
Source: Research Data

From the table above, firm size, leverage, ratio of financial assets, inventory conversion policy and overall CCC had a positive relationship with GOP for a firm in CS. Also, receivables collections policy had a negative relationship with gross operating profit. The established regression equation was:

$$GOP = -85.099 + 10.694NATLS + 0.049FDR + 1.299RFT + 0.203DINV - 0.194DREC + 0.071CCC$$

From the above regression equation, it implies that gross operating loss would be 85.099 holding firm size, leverage, ratio of financial assets to total assets, inventory conversion policy, receivables collections policy and overall duration of cash conversion cycle at a constant zero. Also, a unit increase in firm size, leverage, ratio of financial assets, inventory conversion policy and overall CCC would lead to an increase in gross operating profit by a factor of 10.694, 0.049, 1.299, and 0.071 respectively. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.194. Hence a short debtor's collection period will result in high gross operating profit.

4.4.3 Telecommunication and Technology Sector

A linear regression model was also applied as in section 4.4.2 to TTS. From data in the table 4.4.3.1, the adjusted R square was 0.439.

Table 4.4.3.1: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Est.
1	.863[a]	.745	.439	8.30537

a. Predictors: (Constant), CCC, DINV, RFT, NATLS, FDR, DREC
b. Dependent Variable: GOP
Source: Research Data

This implies that 43.9% of gross operating profit of firms in TTS varied with variations in firm size, leverage levels, ratio of financial assets, inventory conversion policy, receivables collections policy and cash conversion cycle at a confidence interval of 95%.

Table 4.4.3.2: Results of ANOVA [b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1007.789	6	167.965	2.435	.174[a]
	Residual	344.896	5	68.979		
	Total	1352.685	11			

a. Predictors: (Constant), CCC, DINV, RFT, NATLS, FDR, DREC
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.3.2 below, F statistic is 2.435 with p-value of 0.174. This implies that the model is fit and moderately significant at confidence interval of 95%.

Table 4.4.3.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	147.408	98.433		1.498	.195
	NATLS	-5.206	5.117	-.935	-1.017	.356
	FDR	-.228	.419	-.291	-.543	.610
	RFT	.694	.343	.636	2.021	.099
	DINV	.044	.246	.212	.180	.864
	DREC	-.291	.292	-1.694	-.997	.365
	CCC	-.042	.062	-.378	-.686	.523

a. Dependent variable, GOP
Source: Research Data

Data from table 4.4.3.3 shows that firm size had a negative relationship with gross operating profit and so does leverage, receivables collections policy and duration of cash conversion cycle; also ratio of financial assets and inventory conversion policy both had positive relationship with gross operating profit. The established linear regression equation was:

$$GOP = 147.408 - 5.206NATLS - 0.228FDR + 0.694RFT + 0.044DINV - 0.291DREC - 0.042CCC$$

From the regression equation above, it was found that gross operating profit would be 147.408 holding firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy and duration of cash conversion cycle at constant zero. Also a unit decrease in firm size, leverage levels, receivables collections policy, and duration of

cash conversion cycle would lead to increases in gross operating profit by a factor of 5.206, 0.228, 0.291, and 0.042 respectively. Also, a unit increase in inventory conversion policy would result in an increase in gross operating profit by a factor of 0.044. Also a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.694.

4.4.4 Automobile and Accessories Sector

A linear regression model was also used to determine the effect of firm size, leverage, ratio of financial assets to total assets, receivables collections policy, payment policy and overall duration of cash conversion cycle on gross operating profit in the AAS. The regression model for this sector was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DREC + \alpha_5 DPAY + \alpha_6 CCC + \varepsilon$$

Table 4.4.4.1: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.872[a]	.760	.675	7.81717

a. Predictors: (Constant), CCC, DPAY, RFT, FDR, NATLS, DREC
b. Dependent Variable: GOP
Source: Research Data

Data from table 4.4.4.1 shows that adjusted R squared was 0.675. This implies that 67.5% of gross operating varies with variations in firm size, leverage used, ratio of financial assets, receivables collections policy, payment policy and duration of cash conversion.

Table 4.4.4.2: Results of ANOVA [b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3282.563	6	547.094	8.953	.000[a]
	Residual	1038.838	17	61.108		
	Total	4321.401	23			

a. Predictors: (Constant), CCC, DPAY, RFT, FDR, NATLS, DREC
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.4.2, F- statistics is 8.953 with p-value 0.000. This implied that the model is fit and highly significant at 95% confidence interval.

Table 4.44.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-73.981	49.557		-1.493	.154
	NATLS	4.111	3.055	.278	1.345	.196
	FDR	.452	.073	.815	6.238	.000
	RFT	-.244	.458	-.108	-.533	.601
	DREC	-.400	.128	-1.127	-3.123	.006
	DPAY	.077	.049	.369	1.560	.137
	CCC	.271	.062	1.242	4.370	.000

a. Dependent Variable: GOP

Source: Research Data

From data in table 4.4.4.3, ratio of financial assets and receivables collection policy both had negative relationship with gross operating profit. Also; firm size, leverage, payment policy and cash conversion period had a positive relationship with gross operating profit for firms operating in the AAS.

From data in the table 4.4.43, the established regression equation was:

$$GOP = -73.981 + 4.111NATLS + 0.452FDR - 0.244RFT - 0.400DREC + 0.077DPAY + 0.271CCC$$

From the regression equation above, it was found that gross operating loss would be 73.981 holding firm size, leverage, receivables collection policy, suppliers' payment policy, cash conversion cycle, and ratio of financial assets at constant zero. Also, a unit increase in firm size, leverage; payment policy and overall cash conversion period would lead to increase in gross operating profit. Also, a unit increase in ratio of financial assets would lead to a decrease in gross operating profit by a factor of 4.111 and also, a decrease in receivables collections policy would lead to an increase in gross operating profit by a factor of 0.400. When receivables policy is generous, gross operating profit is more likely to increase.

4.4.5 Manufacturing Sector

A linear regression model was also applied to determine the effect of firm size, leverage, ratio of financial assets to total assets, inventory conversion policy holding period, receivables collections policy, and cash conversion period on gross operating profit. The linear regression model used in this sector was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DINV + \alpha_5 DREC + \alpha_6 CCC + \varepsilon$$

Table 4.4.5.1: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.690[a]	.476	.399	19.81003

a. Predictors: (Constant), CCC, FDR, NATLS, RFT, DREC, DINV
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.5.1, adjusted R square is 0.399. This shows that 39.9 percent of the variance in the dependent variable GOP is explained uniquely or jointly by the independent variables firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collection policy and cash conversion cycle of firms in the sector.

Table 4.4.5.2: Results of ANOVA [b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14590.772	6	2431.795	6.197	.000[a]
	Residual	16089.926	41	392.437		
	Total	30680.698	47			

a. Predictors: (Constant), CCC, FDR, NATLS, RFT, DREC, DINV
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.5.2, the F- statistics is 6.197 with a p-value 0.000. It shows that the model is fit and highly significant at 95% confidence interval.

Table 4.4.5.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-37.991	44.456		-.855	.398
	NATLS	4.780	2.490	.399	1.920	.062
	FDR	.233	.278	.185	.838	.407
	RFT	.492	1.238	.069	.397	.693
	DINV	.101	.058	.720	1.744	.089
	DREC	-.167	.057	-1.119	-2.946	.005
	CCC	-.057	.039	-.321	-1.465	.151

a. Dependent Variable: GOP
Source: Research Data

From the data in table 4.4.5.3, firm size, leverage, ratio of financial assets, and inventory conversion policy both had a positive relationship with gross operating profit in firms operating in the MS. Also, receivables collections policy and cash conversion period both

had a negative relationship with gross operating profit. The established regression equation was:

$$GOP = -37.991 + 4.78NATLS + 0.233FDR + 0.492RFT + 0.101DINV - 0.167DREC - 0.057CCC$$

From the above regression equation, it was found that the gross operating loss would be 37.991 holding firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy and cash conversion period at a constant zero. Also, a unit increase in firm size would lead to an increase in gross operating profit by a factor of 4.78, a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.233; a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.492 and a unit increase in inventory conversion policy would lead to an increase gross operating profit by a factor of 0.101. Also, an increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.167 and a unit decrease in overall duration of cash conversion cycle would lead to an increase in gross operating profit by a factor of 0.057.

4.4.6 Construction and Allied Sector

A linear regression model was also applied to determine the effect of firm size, leverage, ratio of financial assets to total assets, receivables collections policy, payment policy and cash conversion period on gross operating profit in the CAS.

The linear regression model used in this sector was:

$$GOP = \alpha_0 + \alpha_1 NATLS + \alpha_2 FDR + \alpha_3 RFT + \alpha_4 DREC + \alpha_5 DPAY + \alpha_6 CCC + \varepsilon$$

Where the variables are as explained in section 3.6.1.3.

Table 4.4.6.1: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.753[a]	.567	.454	10.79553	1.181

a. Predictors: (Constant), CCC, DPAY, FDR, RFT, NATLS, DREC.
b. Dependent Variable: GOP
Source: Research Data

From data in the table 4.4.6.1, adjusted R square is 0.454. This indicates that 45.4% of variations in GOP are explained uniquely or jointly by variations in firm size, leverage, ratio of financial assets, receivables collections policy, payment policy and cash conversion cycle.

From data in table 4.4.6.2, the F- statistics is 5.022 with p-value 0.002. This shows that the model is fit and highly significant at 95% confidence interval. So concludes that at least one of CCC, DREC, NATLS, FDR, DINV and RFT is related to GOP.

Table 4.4.6.2: Results of ANOVA [b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3511.469	6	585.245	5.022	.002[a]
	Residual	2680.502	23	116.544		
	Total	6191.971	29			

a. Predictors: (Constant), CCC, DPAY, FDR, RFT, NATLS, DREC
b. Dependent Variable: GOP
Source: Research Data

From the data in the table 4.4.6.3 below, firm size, and receivables collections policy both had a negative relationship with gross operating profit. Also, leverage, ratio of financial assets, payment policy and cash conversion cycle both had positive relationships with gross operating profit.

Table 4.4.6.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	67.237	66.481		1.011	.322
	NATLS	-3.384	3.778	-.212	-.896	.380
	FDR	.131	.193	.140	.677	.505
	RFT	2.330	.587	.819	3.966	.001
	DREC	-.206	.138	-.519	-1.495	.149
	DPAY	.104	.104	.199	1.000	.328
	CCC	.143	.072	.643	1.974	.061

a. Dependent Variable: GOP
Source: Research Data

The established regression equation was:

$$GOP = 67.237 - 3.384NATLS + 0.131FDR + 2.33RFT - 0.206DREC + 0.104DPAY + 0.143CCC$$

From the above regression equation, it was found that gross operating profit would be 67.237 holding firm size, leverage, ratio of financial assets, receivables collections policy, payment policy and cash conversion cycle at constant zero. Also, a unit increase in firm size would lead to a decrease in gross operating profit by a factor of 3.384, and a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.206. Also, a unit increase in leverage will lead to an increase in gross

operating profit by a factor of 0.131, also a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 2.33. Also an increase in period it takes to pay suppliers would lead to an increase in the gross operating profit by a factor of 0.104; also a unit increase in cash conversion cycle would lead to an increase in gross operating profit by a factor of 0.143.

4.4.7 Energy and Petroleum Sector

A linear regression model was also applied to determine the effect of firm size, leverage, ratio of financial assets to total assets, receivables collections policy, inventory conversion policy and cash conversion cycle on gross operating profit in the EP sector. The linear regression model used in this sector was as in the other previous sectors.

Table 4.4.7.1: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791[a]	.625	.493	32.36478

a. Predictors: (Constant), CCC, DINV, NATLS, RFT, DREC, FDR
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.7.1, adjusted R square is 0.493. This implies that 49.3% of the variance in the dependent variable (GOP) is explained uniquely or jointly by the variables firm size, leverage, ratio of financial assets to total assets, receivables collections policy, inventory conversion policy and cash conversion cycle.

Table 4.4.7.2: Results of ANOVA [b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29717.719	6	4952.953	4.728	.005[a]
	Residual	17807.145	17	1047.479		
	Total	47524.863	23			

a. Predictors: (Constant), CCC, DINV, NATLS, RFT, DREC, FDR
b. Dependent Variable: GOP
Source: Research Data

From data in table 4.4.7.2, F- statistics is 4.728 with a p-value of 0.005. This indicates that the model is fit and highly significant at 95% confidence interval.

From data in table 4.4.7.3, ratio of financial assets and receivables collections policy both had a negative relationship with gross operating profit. Also, firm size, leverage, inventory

conversion policy and cash conversion cycle both had a positive relationship with gross operating cycle.

Table 4.4.7.3: Regression Coefficients [a] Result

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-59.310	224.612		-.264	.795
	NATLS	3.906	14.309	.069	.273	.788
	FDR	.367	.884	.119	.415	.684
	RFT	-.574	4.472	-.025	-.128	.899
	DINV	.444	.112	.790	3.968	.001
	DREC	-.459	.200	-.505	-2.297	.035
	CCC	.061	.150	.082	.408	.688

a. Dependent Variable: GOP

Source: Research Data

The established regression equation was:

$$GOP = -59.310 + 3.906NATLS + 0.367FDR - 0.574RFT + 0.444DINV - 0.459DREC + 0.061CCC$$

From the regression equation above, gross operating loss would be 59.310 holding firm size, leverage, ratio of financial assets to total assets, receivables collections policy, inventory conversion policy and cash conversion cycle at a constant zero. Also, a unit increase in firm size would lead to an increase in gross operating profit by a factor of 3.906, and a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.367. Also, a unit increase in ratio of financial assets would lead to a decrease in gross operating profit by a factor of 0.574, and a unit increase in inventory conversion policy would lead to an increase in gross operating profit by a factor of 0.444. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.459 and also, a unit increase in the duration of the overall cash conversion cycle would lead to an increase in the gross operating profit by a factor of 0.061.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter provides a summary of the study, conclusions and recommendations. It ends with limitations of the study and suggestion on areas of further research.

5.2 Summary of Findings

5.2.1 Effect of Working Capital Management on Gross Operating Profit of Firms

Data from table 4.3.1 shows that the value of adjusted R square was 0.133. This implies that 13.3% of gross operating profit varied with variations in firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy, and cash conversion cycle at a confidence interval of 95%. Also, data from table 4.3.2 shows that F statistic is 6.474 with p-value 0.000. This implies the model is fit and its coefficients are highly significant at 95% confidence interval. From the data in the table 4.3.3, there was a negative relationship between gross operating profit and receivables collections policy as well as cash conversion cycle. Firm size, leverage, ratio of financial assets and inventory conversion policy show a positive relationship with gross operating profit. From the established regression equation it was found that, gross operating loss would be 32.886 holding the other variables to a constant zero. Also, a unit increase in firm size would lead to an increase in gross operating profit by a factor of 4.133, also a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.204, a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.516, also a unit increase in inventory conversion policy would result in an increase in gross operating profit by a factor of 0.023. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.049 and also a unit increase in cash conversion cycle would lead to a decrease in gross operating profit by a factor of 0.025. Hence, avoiding stock out would result in increased gross operating profit. Receivables collection policy and cash conversion cycle both had a negative relationship with gross operating profit. This suggests that, decrease in number of days it takes to collect cash from customers and also the cash conversion cycle would lead to an increase in gross operating profit. In order to improve financial performance, firms listed

on the Nairobi Securities exchange need to manage their working capital such that their inventory levels are generally high, but have a strict receivables collection policy and hence a short cash conversion cycle.

5.2.2 Effect of Working Capital Management on Gross Operating Profit of Firms in each Sector

For the Agricultural Sector, data in table 4.4.1.1 showed that adjusted R square is 0.064. This implies that only 6.4% of variations in gross operating profit of firms in the agricultural sector varied with variations in firm size, leverage, ratio of financial assets, inventory conversion policy, payment policy days and cash conversion cycle at a confidence interval of 95%. The results in table 4.4.1.2 indicated that the F statistic is 1.469 with p-value of 0.217. Hence the model is fit and moderately significant at a confidence interval of 95%. From data in table 4.4.1.3, firm size, leverage, receivables collections policy, and duration of cash conversion cycle all had a positive relationship with GOP. Also, ratio of financial assets and payment policy period both had a negative relationship with GOP. From the resulting regression equation it was found that the gross operating loss in the sector would be 78.351 holding firm size, leverage, ratio of financial assets, receivables collection policy, payment policy and duration of cash conversion cycle at constant zero. Also, a unit increase in firm size, leverage, receivables collections policy, and cash conversion cycle would lead to an increase in gross operating profit for firms in the AS by a factor of 6.467, 0.220, 0.076, and 0.01 respectively. Also, a unit decrease in payment policy would lead to an increase in gross operating profit by a factor of 0.044. That is, the shorter the period it takes to pay creditors the higher the expected profitability of a firm in the sector and vice versa. Also, a unit increase in ratio of financial assets would lead to decrease in gross operating profit by a factor of 1.838. That is, as less fixed financial assets are utilized the more the expected profitability of a firm in AS.

For Commercial and Services sector: data in table 4.4.2.1 showed that the adjusted R square is 0.454 which implies that 45.4% of gross operating profit of firms in CSS varied with variations in firm size, leverage levels, ratio of financial assets, inventory conversion policy, receivables collections policy and duration of cash conversion cycle at a confidence interval of 95%. Data in table 4.4.2.2 showed that F-statistic of 5.842 with p-value of 0.000. It shows that the model is fit highly significant at 95% confidence interval.

From the table 4.4.2.3, firm size, leverage, ratio of financial assets, inventory conversion policy and overall CCC had a positive relationship with GOP for a firm in CS. Also, receivables collections policy had a negative relationship with gross operating profit. The established regression equation implies that gross operating loss would be 85.099 holding firm size, leverage, ratio of financial assets to total assets, inventory conversion policy, receivables collections policy and overall duration of cash conversion cycle at a constant zero. Also, a unit increase in firm size, leverage, ratio of financial assets, inventory conversion policy and overall CCC would lead to an increase in gross operating profit by a factor of 10.694, 0.049, 1.299, and 0.071 respectively. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.194. Hence a short debtor's collection period will result in high gross operating profit.

For the Telecommunication and Technology Sector, data in the table 4.4.3.1 showed the adjusted R square was 0.439. This implies that 43.9% of gross operating profit of firms in TTS varied with variations in firm size, leverage levels, ratio of financial assets, inventory conversion policy, receivables collections policy and cash conversion cycle at a confidence interval of 95%. From data in table 4.4.3.2, F statistic was 2.435 with p-value of 0.174. This implies that the model is fit and moderately significant at confidence interval of 95%. From data in the table 4.4.3.3, firm size had a negative relationship with gross operating profit and so does leverage, receivables collections policy and duration of cash conversion cycle; also ratio of financial assets and inventory conversion policy both had positive relationship with gross operating profit. The established linear regression equation shows that gross operating profit would be 147.408 holding firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy and duration of cash conversion cycle at constant zero. Also a unit decrease in firm size, leverage levels, receivables collections policy, and duration of cash conversion cycle would lead to increases in gross operating profit by a factor of 5.206, 0.228, 0.291, and 0.042 respectively. Also, a unit increase in inventory conversion policy would result in an increase in gross operating profit by a factor of 0.044. Also a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.694.

For Automobile and Accessories Sector, data from table 4.4.4.1 showed that adjusted R squared was 0.675 which implies that 67.5% of gross operating varies with variations in firm size, leverage used, ratio of financial assets, receivables collections policy, payment

policy and duration of cash conversion. From data in table 4.4.4.2, F- statistics is 8.953 with p-value 0.000. This implied that the model is fit and highly significant at 95% confidence interval. From data in table 4.4.4.3, ratio of financial assets and receivables collection policy both had negative relationship with gross operating profit. Also; firm size, leverage, payment policy and cash conversion period had a positive relationship with gross operating profit for firms operating in the AAS. From the established regression equation it was found that gross operating loss would be 73.981 holding firm size, leverage, receivables collection policy, suppliers' payment policy, cash conversion cycle, and ratio of financial assets at constant zero. Also, a unit increase in firm size, leverage; payment policy and overall cash conversion period would lead to increase in gross operating profit. Also, a unit increase in ratio of financial assets would lead to a decrease in gross operating profit by a factor of 4.111, and also, a decrease in receivables collections policy would lead to an increase in gross operating profit by a factor of 0.400. When receivables policy is generous, gross operating profit is more likely to increase.

For the Manufacturing Sector, data in table 4.4.5.1 showed that the adjusted R square was 0.399. This shows that 39.9 percent of the variance in the dependent variable GOP is explained uniquely or jointly by the independent variables firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collection policy and cash conversion cycle of firms in the sector. From data in table 4.4.5.2, the F- statistics was 6.197 with a p-value 0.000. This showed that the model is fit and highly significant at 95% confidence interval. From the data in table 4.4.5.3, firm size, leverage, ratio of financial assets, and inventory conversion policy both had a positive relationship with gross operating profit in firms operating in the MS. Also, receivables collections policy and cash conversion period both had a negative relationship with gross operating profit. The established regression equation shows that the gross operating loss would be 37.991 holding firm size, leverage, ratio of financial assets, inventory conversion policy, receivables collections policy and cash conversion period at a constant zero. Also, a unit increase in firm size would lead to an increase in gross operating profit by a factor of 4.78, a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.233; a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 0.492. Also, an increase in inventory conversion policy would lead to an increase gross operating profit by a factor of 0.101; an increase in receivables collections policy would lead to a decrease in gross operating profit by a factor

of 0.167, also a decrease in overall duration of cash conversion cycle would lead to an increase in gross operating profit by a factor of 0.057.

For the Construction and Allied Sector, data in the table 4.4.6.1 showed an adjusted R square of 0.454. This indicates that 45.4% of variations in GOP are explained uniquely or jointly by variations in firm size, leverage, ratio of financial assets, receivables collections policy, payment policy and cash conversion cycle. From data in table 4.4.6.2, the F-statistics was 5.022 with p-value 0.002. This shows that the model is fit and highly significant at 95% confidence interval. So concludes that at least one of CCC, DREC, NATLS, FDR, DINV and RFT is related to GOP. From the data in the table 4.4.6.3, firm size, and receivables collections policy both had a negative relationship with gross operating profit. Also, leverage, ratio of financial assets, payment policy and cash conversion cycle both had positive relationships with gross operating profit. From the established regression equation, it was found that gross operating profit would be 67.237 holding firm size, leverage, ratio of financial assets, receivables collections policy, payment policy and cash conversion cycle at constant zero. Also, a unit increase in firm size would lead to a decrease in gross operating profit by a factor of 3.384, and a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.206. Also, a unit increase in leverage will lead to an increase in gross operating profit by a factor of 0.131, also a unit increase in ratio of financial assets would lead to an increase in gross operating profit by a factor of 2.33, and also an increase in period it takes to pay suppliers would lead to an increase in the gross operating profit by a factor of 0.104, also a unit increase in cash conversion cycle would lead to an increase in gross operating profit by a factor of 0.143.

For the Energy and Petroleum Sector, data in table 4.4.7.1 showed adjusted R square of 0.493. This implies that 49.3% of the variance in the dependent variable (GOP) is explained uniquely or jointly by the variables firm size, leverage, ratio of financial assets to total assets, receivables collections policy, inventory conversion policy and cash conversion cycle. That is at least one of the variables CCC, DREC, NATLS, FDR, DINV and RFT is related to GOP. From data in table 4.4.7.2 the F- statistics was 4.728 with a p-value of 0.005. This indicates that the model is fit and highly significant at 95% confidence interval. From data in table 4.4.7.3, ratio of financial assets and receivables collections policy both had a negative relationship with gross operating profit. Also, firm

size, leverage, inventory conversion policy and cash conversion cycle both had a positive relationship with gross operating cycle. From the established regression equation it was found that gross operating loss would be 59.310 holding firm size, leverage, ratio of financial assets to total assets, receivables collections policy, inventory conversion policy and cash conversion cycle at a constant zero. Also, a unit increase in firm size would lead to an increase in gross operating profit by a factor of 3.906, and a unit increase in leverage would lead to an increase in gross operating profit by a factor of 0.367. Also, a unit increase in ratio of financial assets would lead to a decrease in gross operating profit by a factor of 0.574, and a unit increase in inventory conversion policy would lead to an increase in gross operating profit by a factor of 0.444. Also, a unit increase in receivables collections policy would lead to a decrease in gross operating profit by a factor of 0.459 and also, a unit increase in the duration of the overall cash conversion cycle would lead to an increase in the gross operating profit by a factor of 0.061.

5.3 Conclusion

Based on results of regression of data of whole set of firms, in order to improve financial performance, firms listed on the NSE need to manage their working capital such that their inventory levels are generally high, but have a strict receivables collection policy and hence a shorter cash conversion cycle. This is possible for large firms, which are highly levered and also with a lot of financial assets at its disposal to enhance liquidity. The study concluded that keeping the cash conversion cycle as short as possible would lead to increase in gross operating profit for all firms since there is a negative relationship between cash conversion cycle and gross operating profit for all firms regression analysis (Table 4.3.3).

However, from results of data analysis of firms in each economic sector the study concludes that the effect of working capital management on gross operating profit varies with the sector. In particular, firm size had a positive relationship with gross operating profit in all sectors except for Telecommunication and Technology sectors and Construction and allied sectors which had a negative relationship with gross operating profit. Also, leverage had a positive relationship with gross operating profit in all sectors except for Telecommunication and Technology sector which had a negative relationship between leverage and gross operating profit. Also, ratio of financial assets to total assets

had a positive relationship with gross operating profit in all sectors except for Agricultural, Automobile and Accessories, and Energy and Petroleum Sectors which had a negative relationship between ratio of financial assets to total assets and gross operating profit. Also, inventory conversion policy had a positive relationship with gross operating profit in all sectors except where it was excluded from the regression model. Receivables collections policy had a negative relationship with gross operating profit in all sectors except in the Agricultural Sector which had a positive relationship between receivables collections policy and gross operating profit. The positive relationship between receivables collection policy and GOP suggests that less profitable firm in AS will pursue a decrease of their receivable collection days in an attempt to reduce their cash gap in the cash conversion cycle. Also, payment policy had a negative relationship with gross operating profit in the Agricultural sector and a positive relationship with gross operating profit in Automobile and Accessories and Construction and Allied sectors. In the other sectors, it was excluded from the regression equation. This could lead to the conclusion that a less profitable firm in AS will wait longer to pay bills, taking advantage of credit period granted by their suppliers. Also, all economic sectors had a significantly positive relationship between cash conversion cycle and gross operating profit except for Telecommunication and Technology Sector and Manufacturing Sectors which had a negative relationship between cash conversion cycle and gross operating profit. Hence the effect of working capital management on gross operating profit is different for firms operating in different sectors.

5.4 Recommendations

Regression analysis for each economic sector has shown that the effect of working capital management on gross operating profit vary for different sectors. For instance, each economic sector had a significantly positive relationship between cash conversion cycle and gross operating profit except for Telecommunication and Technology Sector and Manufacturing Sectors which had a negative relationship between cash conversion cycle and gross operating profit. Hence, managers would better increase the shareholder's value by managing WCM measures based on the sector in which a firm operates. General deductions that firms need to accelerate their cash collections and slowdown their payments in order to keep the cash conversion cycle as low as possible may not be applicable for firms in different sectors. Also, that some professional advice and

supervision is necessary to achieve optimal measure of working capital necessary for increased gross operating profit of a firm given the sector.

5.5 Limitations of the Study

General deductions that firms need to accelerate their cash collections and slowdown their payments in order to keep the cash conversion cycle as low as possible may not be applicable for firms in different sectors. The study is based on six-year data from 2005–2010, hence a detailed analysis covering a longer period is recommended.

The study is based on secondary data collected from the NSE library, CMA library and company websites, therefore the quality of the study depends purely upon the accuracy, reliability and quality of the secondary data source. Approximation, and relative measures with respect to the data source might impact the results.

The study is based on non uniform number of companies in different sectors in Kenya that are also drawn from the companies listed in NSE. Therefore, the accuracy of results is purely based on the data of sample units. If one takes more sample units from, say, MIDSIZE 100 companies also recommended.

5.6 Suggestion for Further Studies

This study may be replicated incorporating data for an extended period of more than six years, also by inclusion of more variables like current ratio, Quick ratio and analyzing the inter-relationship between the working capital management and gross operating profit, also by categorizing the firms into heterogeneous groups like Small, Medium, and Large firms based on measures like assets, capital, long term borrowings, and Net Worth. Also by taking an in-depth analysis of a specific sector utilizing data from wide spectrum of companies as well as by using market based financial performance measures such as Tobin-Q instead of Book value measures.

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APPENDICES

Appendix 1: List of Non-financial Firms per Sector

1. AGRICULTURAL SECTOR
Eaagads Ltd
Kakuzi Ord.
Kapchorua Tea Co. Ltd
Limuru Tea Co. Ltd
Rea Vipingo Plantations Ltd
Sasini Ltd
Williamson Tea Kenya Ltd
2. COMMERCIAL AND SERVICES SECTOR
Express Ltd
Hutchings Biemer Ltd
Kenya Airways Ltd
Nation Media Group
Scangroup Ltd
Standard Group Ltd
TPS Eastern Africa (Serena) Ltd
Uchumi Supermarket Ltd
3. TELECOMMUNICATION & TECHNOLOGY SECTOR
AccessKenya Group Ltd
Safaricom Ltd
4. AUTOMOBILES & ACCESSORIES SECTOR
Car & General (K) Ltd
CMC Holdings Ltd
Marshalls (E.A.) Ltd
Sameer Africa Ltd
5. MANUFACTURING & ALLIED SECTOR
A.Baumann & Co Ltd exclude
B.O.C Kenya Ltd exclude
British American Tobacco Kenya Ltd
Carbacid Investments Ltd excluded
East African Breweries Ltd
Eveready East Africa Ltd
Kenya Orchards Ltd
Mumias Sugar Co. Ltd
Unga Group Ltd
6. CONSTRUCTION & ALLIED SECTOR
Athi River Mining
Bamburi Cement Ltd
Crown Berger Ltd
E.A.Cables Ltd
E.A.Portland Cement Ltd

7. ENERGY& PETROLEUM SECTOR
KenGen Ltd
KenolKobil Ltd
Kenya Power & Lighting Co Ltd
Total Kenya Ltd

Appendix 2: Data Collection Form

COMPANY NAME…….								
YEAR	NATLS	FDR	RFT	DINV	DREC	DPAY	CCC	GOP
2005								
2006								
2007								
2008								
2009								
2010								