

**THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND
PROFITABILITY OF PETROLEUM COMPANIES IN KENYA**

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DECLARATION

This Research project is my original work and has not been submitted for a degree award in any other University.

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

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DEDICATION

This work is dedicated to my beloved parents Mr. and Mrs. Nambiro, for giving me this wonderful gift of education, their encouragement, Prayers, financial and moral support.

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LIST OF ABBREVIATIONS

ASE	Athens Stock Exchange
CCC	Cash Conversion Cycle
CMA	Capital Markets Authority
DPO	Days of Payable Outstanding
DSI	Day of Sales in Inventory
DSO	Day of Sales Outstanding
EOQ	Economic Order Quantity
ERC	Energy Regulatory Commission
ISE	Islamabad Stock Exchange
KOT	Kipevu Oil Terminal
KPC	Kenya Pipeline Company
KPRL	Kenya Petroleum Refineries Limited
NOCK	National Oil Company of Kenya
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
SME	Small and Medium Enterprises
SPSS	Statistical Package of Social Science
WCM	Working Capital Management

ABSTRACT

Working capital management (WCM) refers to the management of current assets and current liabilities. Its aim is to ensure that a firm is able to continue its operations and has sufficient ability to satisfy both maturing short-term debt and future operational expenses. This study sought to establish the relationship between working capital management and profitability of Petroleum companies in Kenya. The study was based on the Baumol model, Miller Orr Model and the EOQ model. The research design used was a Cross-Sectional Study. Data for six large petroleum companies was gathered over a seven year period between 2007 and 2013. This period was considered by the researcher to be adequate to establish the existence of any relationship. Secondary data collected from annual audited financial statements of the firms was used for this study. This consisted of data from the income statement and statement of financial position of the companies which was used to compute ROA, DSO, DSI, DPO, CCC and leverage. Data collected was analyzed using descriptive and inferential techniques. Descriptive analysis showed the average, median and standard deviation of different variables of interest in the study. Pearson correlation analysis and regression analysis were performed on the variables. Study results indicated that there was an insignificant moderate relationship between ROA and DSO ($r = 0.305$; $p > 0.05$). DSI had an insignificant weak and negative relationship with ROA ($r = -0.234$; $p > 0.05$). DPO had an insignificant positive relationship with ROA ($r = 0.238$; $p > 0.05$). CCC had an insignificant positive relationship with ROA ($r = 0.20$; $p > 0.05$). Regression results indicate that DSO, DPO and CCC were not significant predictors of ROA. Study results however indicated that DSI had significant influence on ROA. The study recommends that management of companies in the Kenyan market should effectively manage their working capital to ensure maximum returns as other forms of finances have constraints.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Working capital management refers to the management of current assets and current liabilities. It involves the relationship between a firm's short-term assets and its short-term liabilities. The aim of working capital management is to ensure that a firm is able to continue its operations and has sufficient ability to satisfy both maturing short-term debt and future operational expenses. The management of working capital involves managing inventories, accounts receivable, accounts payable, and cash (Pandey, 2011). The focus of working capital management is to ensure there is consistency and efficiency in the employment of current assets and current liabilities during the day to day activities of any firm.

Firms that invest heavily in WC (inventory and account receivables) may realize growth in sales but may suffer reduced profitability as more money is tied into the working capital. As firms make more investment in current assets, the risk is reduced and so is the return. However, a lower investment in current assets has higher solvency risk and also higher returns. It is therefore important for a firm to determine its optimal investment in the working capital. The efficient management of working capital would help it maximize profits which will go a long way in maximizing shareholders wealth. Management of working capital has effect on the returns, profitability and the value of a firm (Deloof, 2003).

Maintaining excessive levels of current assets ensures smooth running of operations in the firm. However, liquidity is reduced which affects the firm's ability to invest in the short term. In addition, more money is held back from potential short term investments which would have helped the business realize higher returns on investment (Mancini, 1991). This is further reinforced by Smith, (1980) who observed that working capital management had an effect on the firm's profitability and risk, and consequently its value. Low investment in current assets on the other hand would expose the firm to solvency challenges as the firm will be unable to meet its short term obligations whenever the fall due.

1.1.1 Working Capital Management

In practice, the drivers of working capital and appropriate level of working capital to be employed is one of the most important issues that many financial executives are grappling with (Lamberson, 1995). High levels of current assets may result in reduced returns while lower levels of current assets may cause liquidity problems resulting in difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2004). The gross working capital concept is financial or going concern concept whereas net working capital is an accounting concept of working capital. Net working capital can be positive or negative.

There are two concepts of working capital management i.e. gross working capital and net working capital (Pandey, 2011). Gross working capital refers to the firms' investment in the current assets. Net working capital management refers to the difference between current assets and current liabilities. The gross working capital concept focuses attention

on how to optimize investment in current assets and how the current assets should be financed. The consideration of the level of investment in current assets should both the excessive and inadequate investments in current assets. Net working capital is a qualitative concept which indicates the liquidity position of the firm and suggests the extent to which working capital needs may be financed by long term capital. A weak liquidity position poses a threat to solvency of the firm. In conclusion, both gross and net working capital concepts are equally important for efficient management of working capital. Permanent working capital is minimum amount which is required to ensure effective utilization of fixed facilities and for maintaining the circulation of current assets. Every firm has to maintain a minimum level of raw material, work-in-process, finished goods and cash balance. As the business grow the requirements of working capital also increases due to increase in current assets. Variable working capital is the amount of working capital which is required to meet the seasonal demands and some special exigencies. It can further be classified as seasonal working capital and special working capital. The capital required to meet the seasonal need of the enterprise is called seasonal working capital. Special working capital is that part of working capital which is required to meet special exigencies such as launching of extensive marketing for conducting research.

It is important for petroleum firms to have adequate working capital as it ensures solvency of the business by providing continuous production and uninterrupted supply of their products. In addition, it also leads to high credit ratings especially where firms want to finance investments using debt. On the other hand, little or excess working capital affects returns. Excess working capital holds up a significant portion of potential

investment funds hence the firm realizes lower returns on investments. A decline in returns has an effect on the firm's value which shall most likely decline as the firm will not be able to pay dividends consistently and thus not able to attract potential investors (Smith, 1980). The level of working capital that a firm will be required to employ depends on its size, level of investment, length of the production cycle, seasonal variations, asset structure and the length of the working capital cycle.

Management and evaluation of working capital is aimed at ensuring firm current assets and current liabilities are employed in an optimal way to achieve the goal of profit maximization. Working Capital Management is concerned with formulation of policies that will enhance the firm's profitability, liquidity and risk. The analysis of Working Capital Management is done using ratios. The important ratios used to measure the working capital cycle include the average collection period, inventory turnover, accounts payable turnover ratio and cash conversion cycle. The efficiency with which assets are employed directly affects the levels of sales, cost of sales and operating profits. An analysis of current ratios and quick ratios give information on liquidity and solvency of a firm but fail to address critical oversights such as high levels of account receivables due to poor credit policies and slow moving goods which may show favourable financial analysis and yet the firm is in trouble (Nganga, 2009).

1.1.2 Profitability

Most firms engage in business with the sole aim of profit maximization. It is through this goal that shareholders' interests are well taken care of. A firm that consistently makes

profit is more likely to survive compared to others that are either inconsistent or loss making. On the other hand, liquidity of the firm is also important as it enables firms to carry out its activities smoothly. High liquidity while it safeguards the firm against challenges such as stock outs or interruptions of production processes, it may become detrimental to profitability as a lot of funds are held in inventory, account receivables and cash at the expense of short term investments (Pandey, 2011).

It is therefore important to strike a tradeoff between liquidity and profitability (Smith, 1980). Even though profitability does not necessarily mean liquidity, profitability ensures firm survival, growth and sustainability. Among the key factors that influence energy profitability include the size of the firm, growth strategy, level of risk in the environment, capital structure and level of debt.

Growing firms have more avenues to invest their funds and are likely to stay profitable than firms with little or no growth. Couple with the fact that companies with high growth options might exhibit shorter Cash Conversion Cycle (Emery, 1987; Petersen and Rajan 1997; and Cuñat, 2007) it is much more likely that energy firms with high growth prospects can increase their profitability. Petroleum firms that have existed for long are expected to have acquired economically beneficial loyalties from their suppliers of funds and customers. These loyalties, in addition to the wealth of experience gained over the years, are expected to translate to high profitability. However this may hardly be the case for new entrants in the petroleum industry that haven't acquired a reputation yet. Most of these firms also have heavy investment in fixed assets as their operations are mechanized

hence capital intensive. They need to employ the fixed assets efficiently and effectively in order to realize maximum returns on the assets.

1.1.3 Effect of Working Capital Management on Profitability

Decisions that tend to maximize profitability have a negative effect on liquidity. On the other hand, greater focus on liquidity undermines profitability. A firm can experience growth in sales because of a generous credit policy. Many researchers have shown that the longer the cash conversion cycle, the lower is the profitability (DeLoof, 2003). Cash conversion cycle is the net time interval between cash collection from the sale of a product and cash payment to suppliers of raw materials. It represents the time interval over which additional funds should be obtained in order to carry out the firms operations.

According to Bodie and Merton (2000), Cash conversion cycle represents number of days between the dates the firm must start to pay cash to its suppliers and the date it begun to receive cash from its suppliers. Cash Conversion Cycle is equal to Days of Sales Outstanding (DSO) plus Days of Sales in inventory (DSI) minus Days of Payable Outstanding (DPO). Days of Sales Outstanding is equals to Accounts receivables divide by Sales multiply by 365 days. The Days Sales Outstanding represents the average number of days for which a firm has to wait before its account receivables pay up. A shorter average collection period ensures the firm has adequate liquidity. It also helps in determining a firm's credit policy.

Day of Sales Inventory measures the speed with which the stock is converted into sales. Day of Sales in Inventory is equals to Inventory divide by Cost of Goods sold multiplied by 365 days. It is inevitable for every firm to keep an optimal level of inventory so as to be able to meet its daily operating requirements that will be able to satisfy its customers demand with minimal delays, stock outs and wastages. An efficient management of inventory usually indicated by high ratio is as a result of high sales hence less funds are required to finance inventory. Lower inventory turnover ratio indicates the inefficient management of inventory and this could be explained by over investment in inventories, low season, poor quality of goods, stock accumulations and slow moving goods. Account receivables constitute a substantial portion of total current assets. Days of Payables Outstanding is equals to Accounts Payable divide by Cost of Goods Sold multiply by 365 days. According to Garci-Tereuel and Martiniz-Solana (2007), the Average Collection Period is used as a proxy for the collection policy as independent variable. DSI refers to the time taken to convert inventory held in a firm into sales. According to Deloof (2003), inventory conversion period was used as a proxy for inventory policy as an independent variable.

1.1.4 Petroleum Industry in Kenya

Petroleum sector is the main source of commercial energy in Kenya. Kenya is a net importer of petroleum products and has a refinery owned and managed by the Kenya Petroleum Refineries Ltd (KPRL) and run by the Kenya Pipeline Company (KPC). The sector has over 30 oil importing and marketing companies comprising of five major companies namely Shell, Total, Kenol/Kobil, Oil Libya, Chevron, and other emerging oil

companies. The sector, which was liberalized in 1994, has since seen a lot of growth and improvements in quality and level of service. In 2006, the Energy Act No. 12 of 2006 was enacted. This led to the transformation of the then Electricity Regulatory Board to the Energy Regulatory Commission (ERC) to also regulate petroleum and renewable energy sectors in addition to electricity. The Act states in Section 5(a) (ii) that the objects and functions of ERC include regulating the importation, exportation, transportation, refining, storage and sale of petroleum and petroleum products.

Therefore one of the functions of the ERC is licensing of petroleum import, export, transport, storage, refining and sale. Construction Permits are also to be issued by ERC for all petroleum related facilities in order to check proliferation of substandard sites. All petroleum operators are required to comply with provisions for Environment Health and Safety. (www.erc.go.ke). Over 95% of the Kenyan petroleum products are handled by Kenya Pipeline Company (KPC) as white oil imports while Kenya Petroleum Refineries Limited (KPRL) handles all crude oil through Kipevu oil terminal (KOT).

Despite the oligopolistic nature of their market, energy firms must make profits in order to survive. This calls for prudent management of its assets and ensuring that it maximizes the returns on its capital investments. In addition, the working capital management must be managed efficiently and effectively so as to ensure continuous smooth operations and also enough liquidity to enable the firms meets both its short term and long term obligations.

1.2 Research Problem

Management of the CCC has proved from past studies to influence both the profitability and liquidity of many firms. Firms need profits so as to survive in the today's competitive business environment. However, while the desire to maximize profits should be the key focus of any firm, failure to manage its liquidity means that the firm may fail to ensure a smooth running of its daily operations. The decisions that enhance profitability have shown to have a negative impact on liquidity of the firm hence most firms face a tough balancing between profitability and staying liquid.

Working capital has emerged as a critical element of financial management hence resulting in a lot of interest in analyzing the relationship between working capital management and financial performance of firms. The studies done include; Vishnany and Shah (2007) who studied impact of working capital management policies on corporate performance, Padachi (2006) on trends of working capital management and its impact on firms performance and lastly, Christopher and Kamalavalli (2009) who analyzed the sensitivity of profitability to Working capital management in Indian Corporate hospitals.

Mathuwa (2010) studied the Influence of Working Capital Components on Corporate Profitability. This was a survey of Kenyan Listed Firms carried out on the influence of Working Capital Management components on Corporate Profitability among 30 firms listed at the NSE. The study established existence of a negative relationship between average collection period and profitability of the firms. Firms with lower collection period were found to be profitable relative to those with higher collection period.

Furthermore, firms that took a longer time to pay its creditors were also profitable relative to those with lower average payment period.

Nyakundi (2003) observed that aggressive working capital management policy is the most predominant among the public companies in Kenya. He attributes this to the high cost of long term funds in Kenya. The energy industry in Kenya is one of the most critical sectors of our economy as macro-economic changes in the industry have a major impact on the other sectors of the economy. Kenya imports crude oil which it uses to power her economy.

Recent oil exploration activities in the country have created a lot of interest in investors both local and international to drill oil for commercial purposes. Investment in the oil sector requires massive resources. Potential investors in this sub sector will also require a lot of investments especially infrastructural so as to be able to supply energy efficiently and profitably. Major investments will be in fixed and current assets which will require financing in form of owner's equity or even debt.

While past studies have reviewed the relationship between WCM and profitability of firms listed at the NSE, there is limited research work done on the Kenyan Energy sector of the economy. This is one of the most critical sectors of the local economy and which have continuously been overlooked by previous researchers. Operations in this sector require significant investment in working capital components and thus it's vital to establish the impact of these working components on the energy firm's profitability.

1.3 Research Objective

To establish the relationship between working capital management and profitability of Petroleum companies in Kenya.

1.4 Value of the Study

This study will provide valuable information to all investors in the country's Petroleum sector. The findings would also assist potential investors in the oil marketing and distribution to use working capital as leverage in gaining foothold in the potentially lucrative oil market.

The study will also assist the Kenyan government to design long term strategies and policies that will enable the country to maximize use of gains made as a result of oil discovery in the country and promote establishment of an efficient and affordable oil industry in Kenya. All these geared towards achievement of the Vision 2030 goal of economic development. In addition, the findings would help Petroleum firm's managers to streamline their operations so as to minimize operating inefficiencies and maximize on profitability hence enhancing shareholders wealth and returns. This would in turn earn the government adequate revenue in form of taxes to be used in implementing its goals.

To the Academia, the study shall enrich the body of knowledge to matters affecting the petroleum business in the country especially with regard to efficient management of working capital and how it affects sustainability of firms. It will stimulate further research on how the country can make the industry competitive and oil products affordable by a majority population of this nation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the various theories of working capital management, empirical studies on working capital and various conclusions from literature review. The chapter is divided into three main areas; theoretical review, Empirical review and conclusions from the literature review.

2.2 Theoretical Review

The theory of working capital management describes how working capital should be managed and demonstrates the benefits in terms of liquidity, solvency, efficiency, profitability, and shareholder wealth maximization which accrue to the company from appropriately managing working capital (Brigham, et al. 1999, Gitman, 1997). There is a need for the mix of short and long term financing of current assets in firms so as to achieve maximum returns (Pandey,2011).The major factors to consider when deriving the appropriate mix of financing will include the borrowing risk, flexibility (short term funds easier to refund) and risk return trade off. The relationship between the investment, financing and working capital decision has been considered from the perspective of the cash conversion cycle (henceforth CCC) which is an aggregative approach (Gitman, 1997). Several models have been advanced to explain the importance of working capital management to firms. These include the Baumol and Miller _Orr Models.

2.2.1 Baumol Model

Baumol model is an economic order quantity model which was developed to manage the ordering of Inventory and was modified to be able to set target cash balance (Baumol, 1952). It is based on restrictive assumptions concerning the behaviour of cash flows e.g. cash outflows, inflows, and the net cash flows at a steady and predictable rate. The target cash balance is set using these restrictive assumptions. A portfolio of marketable securities acts as back up reservoir of funds from which cash balances can be replenished or to which excess cash can be moved in order to earn a return. The target cash balance minimizes the total cost of holding cash by taking transactions costs and opportunity costs into account. Transaction cost refers to cost of converting marketable securities into cash or vice versa. Opportunity cost on other hand refers to rate of interest earned on marketable securities or interest earning given up as a result of holding funds in non interest earning cash account. The purpose of cash management is to determine and achieve the appropriate level and structure of cash, and marketable securities, consistent with the nature of the business's operations and objectives (Brigham, et al. 1999, Gitman, 1997). Cash and marketable securities should be managed so as to achieve a balance between the risk of insufficient liquid or near liquid resources, and the cost of holding excessively high levels of these resources. This model is computed as follows;

$$\text{Economic Conversion Quantity (ECQ)} = \sqrt{\frac{2 \times \text{Transaction cost} \times \text{demand for cash}}{\text{Opportunity cost}}}$$

Total cost = (Unit Transaction cost × no. of transactions) + (Opportunity cost × average cash balance)

$$\text{Average cash balance} = \frac{\text{ECQ}}{2}$$

$$\text{Number of conversions} = \frac{\text{Demand for cash}}{\text{ECQ}}$$

2.2.2 Miller Orr Model

Miller-Orr model for determining the target cash balance assumes that cash flows are subject to volatility, and that the distribution of daily net cash flows follows a trendless random walk. With this model, management determines the lower cash limit, and the model generates the target cash balance, as well as the upper cash limit. When the firm's cash limit fluctuates at random and touches the upper limit, the firm buys sufficient marketable securities to come back to a normal level of cash balance i.e. the return point. Similarly, when the firm's cash flows wander and touch the lower limit, it sells sufficient marketable securities to bring the cash balance back to the normal level i.e. the return point. When setting the return point, firms have to consider the conversion cost, daily opportunity cost of funds and variance of daily net cash flows. Daily cash flow deviation can be affected by the daily transaction cost, variance of cash flows and interest rates. This model has been empirically tested and was found to perform reasonably well (Miller and Orr, 1966). The assumption that the distribution of net cash flows follows a trendless random walk can be relaxed without dislocating this model.

$$\text{Return point} = \frac{\sqrt[3]{3 \times \text{Conversion cost} \times \text{Variance of daily net cash flows}}}{4 \times \text{Daily opportunity cost}}$$

$$\text{Upper limit} = 3 \times \text{Return Point}$$

$$\text{Cash converted to marketable securities} = \text{Upper Limit} - \text{Return point}$$

2.2.3 Economic Order Quantity Model

The Economic Order Quantity (EOQ) is the order quantity that minimizes total holding and ordering costs for the year. It is one of the oldest production scheduling models. EOQ assumes an annual demand which is evenly spread across the year, a constant ordering cost regardless of number of units ordered, fixed lead time, constant price, and only applies for case of one product. Inventory management should minimize the costs of inventory handling, carrying and their financing (Brigham, et al.1999). The way in which inventory is managed affects the level of raw materials, work in progress and finished goods needed to sustain efficient operations and sales. Any changes to the levels of inventory held or the manner in which it is ordered will have a direct impact on how working capital should be managed (Back, 1988). In any firm, there exist conflicts among departments due to different goals. For example, whereas the marketing manager would desires plenty of finished goods to satisfy demand whenever it arises and large volumes of raw materials are preferred by the production managers to ensure continuous production runs, the finance manager has to consider both the risk and returns while investing in working capital. The formula for EOQ is as shown below.

$$Q = \frac{\sqrt{2xDxK}}{h}$$

Total cost=purchase cost +ordering cost +holding cost.

Purchase cost=C xD. This is the variable cost of goods.

Ordering cost=KxD/q

Where;

C=Purchase price

q= Order quantity

Q= Economic order quantity

D=Annual demand

K=Fixed cost per order

h=Annual holding cost per unit

Accounts payable refers to the credit, which has been extended to a firm by its suppliers (Gallinger and Healey, 1987). The decision to make use of supplier credit needs should be carefully assessed in terms of other available forms of financing working capital. The objective for firms stretching the repayment period is to fund the investment in current assets from trade creditors and hence reduce the need for a level of working capital (Brigham, et al. 1999). Management must ensure that in the bid to stretch accounts payable, all costs are quantified so as to determine the maximum stretching period consistent with value maximization.

Accounts receivable management results from sales on credit. The purpose of credit sales is to encourage sales in order to grow the market share (Brigham, et al. 1999). The management of accounts receivable is largely determined by the firm's credit policy. The investment in accounts receivable must earn a rate of return in excess of the required rate of return. The risks associated with accounts receivables include bad debts and debtor delinquency, because they reduce the returns from the investment in accounts receivable, and if inadequately monitored can impact severely on the firms performance. Any changes in credit and collection policy have a direct impact on the average outstanding

accounts receivable balance maintained relative to a business's annual sales (Moss and Stine, 1993).

2.3 Measures of Profitability and WCM

The main measures of a firm's profitability include the Rate of return on a firm Assets (ROA), Rate of return on firms Equity (ROE) and Operating profit Margin. ROA measures how profitable firm's assets are in generating revenue and it usually gives an indication of the capital concentration of the firm which depends on the industry. For the case of energy and petroleum firms which have high initial investments, the returns on assets are generally lower compared to other industries (Industry is capital intensive). ROE measures the rate of return on the owners' equity employed in the firm. It can be used relative to ROA to establish if a firm is making a profitable return on money borrowed from the owner (Hadlock and James, 2002). Operating profit margin measures the return to capital per dollar of a firm's gross revenue. It focuses mainly on profit per unit of production and the asset turnover ratio.

For this study, profitability shall be analyzed using the accounting measures of profitability i.e. ROA.

ROA = Profit after Taxes

Book Value of Assets

WCM shall be analyzed using its various components such as CCC, DSO, DSI and DPO which have been discussed in detail under 1.1.3.

2.4 Empirical Review

Many studies have been done both globally and locally in Kenya on importance of Working capital management on many firms across many sectors of world economy. Studies have been done to establish the impact of working capital management on profitability of firms with mixed results. Whereas some researchers argue that there exist a significant relationship between WCM and profitability, other researchers have shown either no relation or presence of this relationship albeit on statistical insignificance.

Narware (2004) undertook a study on Indian National Fertilizer limited between the year 1990 to 1991 and 1999 to 2000. The objective of the study was to assess the effect of working capital on profitability. It examined the interrelationship between working capital and profitability using ratios. Secondary data was used and had been obtained from the annual financial statements published in the annual reports of the National Fertilizer Limited. WCM and profitability of the company disclosed both the positive and negative relationship. In the study, it emerged that the increase in profitability of firms was less relative to proportional decrease in working capital.

Teruel and Solano (2005) set out to establish empirical evidence on effects of working capital management on profitability of small and medium sized Spanish firms. Data was collected from a panel of 8,872 SMEs covering the period 1996 to 2002. The selection of firms was carried out according to the requirements established by the European Commission's recommendation 96/280/CE of 3rd April, 1996, on the definition of small and medium-sized firms.

This was basically firms with less than 250 employees, a turnover of less than 40 million Euros and asset base of less than 27 Euros. Firms with anomalies were eliminated from the study. Return on Assets (ROA) was used as the dependent variable while various working capital measures such as average collection period, inventory turnover ratios, CCC and average payment period were used as dependent variables. From the study, they established that managers can create value by reducing the firm's number of days of account receivables and inventory. In addition, reducing the cash conversion cycle all improves the firm's profitability.

Lazaridis and Tryfonidis (2006) also affirmed the above findings by using a sample of 131 companies listed in the Athens stock exchange (ASE) for a period between 2001 and 2004. They had set to investigate a relationship that is statistically significant between profitability, CCC and its components for the firms listed at the ASE. CCC was used as a measure of profitability. They found out the existence of statistical significance between profitability, measured using gross operating profit and the cash conversion cycle. Moreover managers could create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

Afza and Nazir (2007) conducted a study on efficiency of working capital management of cement sector of Pakistan for the period 1988 to 2008. This study is based on data of cement companies operating in Pakistan from a period of 1988-2008. Data was collected from 22 cement companies operating in Pakistan and it was obtained from various

editions of “Balance Sheet Analysis of Joint Stock Companies listed on the Karachi Stock Exchange” published by State Bank of Pakistan (SBP). The efficiency of WCM was evaluated using the performance, utilization and efficiency indices i.e. average performance of components of current assets, degree of utilization of total assets in relation to sales and efficiency in managing the working capital respectively. They established existence of a negative relationship between the profitability measures of firms and the degree of aggressiveness of working capital investment and financing policy.

Caffaso (2011) studied the relationship between working capital management financing policy and profitability of manufacturing firms in Kenya. Her population of interest for the study was all manufacturing firms in Kenya. There were 600 registered manufacturing firms as at 31st Dec 2010. Convenient sampling technique was used in the study. Secondary data for the research was extracted from the audited financial statement of the companies sampled. A descriptive statistics analysis was conducted on all the variables to give the general behavior of the manufacturing firms quoted at the NSE with respect to working capital financing policy and ROA. Pearson correlation coefficient analysis was also conducted to establish the relationship among the variables. The relationship between the dependent variable, ROA and the other variables was conducted using a general regression model. To establish whether level of the aggressiveness/conservativeness had any significant relationship a regression model was conducted separately between the dependent variable and the independent variables

alongside the control variables for each of the group. She established that having adequate levels of working capital is critical for the survival of many businesses.

Samuel (2011) in his study sought to examine the relationship between working capital management and profitability of manufacturing firms listed at the Nairobi Stock Exchange. The study used secondary data obtained from the annual reports and financial statements of manufacturing companies listed on the NSE for the period 2006-2010. A sample of 17 companies was selected but which was later reduced to 14 after a screening process had been carried out. A regression model was determined to establish the relationship between net operating profit and the working capital variables namely, average collection period, inventory holding period, average payment period and cash conversion cycle. The control variables that were used included the age and leverage of the firms. Pearson's correlation and regression analysis were used for the analysis and tests of significance. The results showed that there is a strong negative relationship between average collection period, inventory holding period and CCC. This was consistent with the view that the time lag between expenditure for purchases of raw material and the collection of sales of finished goods can be too long and that decreasing this time lag increases profitability. This suggested that managers can create value for their shareholders by reducing the number of days of accounts receivable and of sales in inventories. A positive correlation between the net operating profit and the accounts payment period, the age of the firm and the debt used by the firm was found, indicating that if the firm could lengthen these variables, then it would increase its profitability. Therefore, it will be important for a firm's management to understand the relationship

that exists between various working capital components and profitability and the direction that they affect the profit for effective management of the working capital.

Njenga (2011) studied the relationship between working capital management and profitability in small and medium enterprises in Kenya. The study used secondary data obtained from financial statements of 40 small and medium enterprises registered by small and medium enterprises resource centre. The financial statements from the enterprises were analyzed to determine the effects of CCC, days of sales in inventory outstanding, days of sales outstanding and days of payables outstanding on the net profit margin. Pearson's correlation and regression analysis were used to analyze the data. The results showed a negative relationship between CCC, days of sales in inventory outstanding, days of sales outstanding and the profitability of the firms. There was a significant positive relationship between days of payables outstanding and profitability. The results suggest that small and medium enterprises can increase profitability by maintaining an optimal level of working capital. The firms can wait longer to pay the accounts payables.

2.5 Summary of Literature Review

A review of past studies reveals discussions on risk and return tradeoffs between different working capital policies. An aggressive approach to WCM is associated with higher returns and higher risk while conservative approach is associated with lower returns and risk. WCM is important because of its effect on the firm's profitability, risk and consequently its value (Smith, 1980). Generally, there is no conclusive agreement as to

which WCM policy guarantees a higher profitability. The long term value of firm is important to its owners in the long term. WCM takes care of short term value creations. It is these short term values that are summed up to get the long term value of a firm. The studies also found out that CCC is an important measure of liquidity than the current ratios. Studies have also shown that efficient WCM is crucial in creating value for shareholders. In Kenya, studies have concentrated on specific drivers such as accounts payable, receivables and their impact on profitability. In addition, there have been studies on manufacturing firms, cement companies, small and medium enterprises. However, there has been little or no research on oil Industry which is a crucial driver of the local economy. It is with this in mind that the study has been undertaken to fill in the existing knowledge gap by seeking to establish the relationship between WCM and profitability in the Petroleum industry. Management of firms' liquidity in the petroleum industry is crucial as there is a risk of going concern if the firms fail to meet its obligations. Time is of essence in the oil sector as the firms must be able to deliver products to the market when they are required.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research design, population of interest, how the sample was selected, source of data and techniques of data analysis to be used.

3.2 Research Design

The research design used was a Cross-Sectional Study. This is where the data on the whole study population is collected at a single point in time. The study was undertaken without researcher's interference. The research design was selected given the different variables that need to be compared at the same time. The purpose of the research was to establish the relationship between WCM and Profitability of Petroleum firms in Kenya. Data was gathered over a seven year period between 2007 and 2013. This period was considered by the researcher to be adequate to establish the existence of any relationship.

3.3 Population of Interest

The target population of interest comprised all petroleum firms that were existing in Kenya as at December 2013. The petroleum industry has over 30 oil importing and marketing companies (www.erc.go.ke) and as shown under Appendix A. In addition, only firms that have been in existence between 2007 and 2013 were selected for the

study. This is due to their manageable numbers and availability of audited financial statements which formed the bulk of sources of data.

3.4 Sample Design

From the 30 petroleum companies in Kenya, the study purposively selected 6 large petroleum companies that were operational in Kenya from 2007 to 2013. This sample was selected due to the ease of collecting data from large companies as their data is readily available, verifiable and reliable. Data from small petroleum companies may be difficult to access, have material measurement errors or be entirely unreliable. For this reason, the study sought to narrow down on the 6 large petroleum companies.

3.5 Data Collection

Secondary data was used for this study. The data for the seven year period was collected from annual audited financial reports of the firms. Financial data from the statement of comprehensive income and statement of financial position of the petroleum companies was used to compute ROA, DSO, DSI, DPO, CCC and leverage.

3.6 Validity and Reliability

Secondary data was relied upon in this study. To ensure that data collected was reliable and valid, only audited financial statements were used to come up with the different measures applied in the study. Internal reports and any data for management purposes were not used.

3.7 Data Analysis

The data collected was analyzed using descriptive and quantitative techniques. Descriptive analysis shows the average and standard deviation of different variables of interest in the study. In addition, it used percentiles values of the variables of the interest of study to show maximum and minimum values in a variable. Quantitative analysis was carried out using Pearson and correlation analysis to measure the degree of association between different variables under consideration. A multivariate regression analysis was used to estimate causal relationship between the CCC, DSI, DSO, DPO and ROA in the study.

The following are the variables that were used for the study;

Profitability=F (WCM)

Return on Assets (ROA) which measures profitability of a firm will be used as dependent variable. ROA is defined as net profit after tax divided by the book value of assets.

CCC shall be used as an independent variable. CCC is computed as Days of Sales Outstanding (DSO) plus Days of Sales in inventory (DSI) minus Days of Payable Outstanding (DPO).

The leverage ratio shall be used as a control variable in the relationship so as to distinguish the variations in the firm's characteristics of financing. It is computed by dividing total debt over fixed assets. The Age of the firm will be used as a control variable. A multivariate regression model shall be used to analyze the relationship

between working capital management and profitability of the energy and petroleum firms as follows:

$$ROA = f \{CCC, DSO, DSI, DPO, LEV, AGE, \alpha\}$$

Specifically, the regression model will be as follows;

$$ROA = \{\beta_0 + \beta_1 CCC + \beta_2 DSO + \beta_3 DSI + \beta_4 DPO + \beta_5 LEV + \beta_6 AGE + \alpha\}$$

Where;

LEV is leverage

AGE is age of the firm.

$\beta_0, \beta_1, \beta_2, \dots, \beta_6$ are the constants representing the extent to which each variable is influencing profitability of the firm and α is the error term. The Statistical Package of Social Science (SPSS) was used for analysis.

To establish the strength of the model, the researcher conducted an ANOVA test. This helped to establish whether the model was significant in explaining the relationship between working capital management and profitability of petroleum companies in Kenya. A significance test at 5% and confidence level conducted at 95% were used to measure the significance of the factors in explaining the changes in the dependent.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research objectives and research methodology. The study findings are presented on the relationship between working capital management and profitability of petroleum companies in Kenya. The data was gathered exclusively from the secondary data. First, descriptive analysis of the data is provided followed by correlation analysis results. Further, regressions analysis is presented which reveals that influence of the independent variables (CCC, DSO, DSI, DPO, LEV and AGE) on the dependent variable (ROA).

4.2 Response Rate

The study sought secondary data from six petroleum companies operating in Kenya from 2007 to 2013. Data for all six companies was available except data for 2 years for Kenya Pipeline which was not available. Data for 2007 and 2008 for Kenya Pipeline was not available. This therefore indicated that 95% of the data targeted in the study was available. This was a reliable response rate.

4.3 Data Validity

Secondary data for the study was sourced from petroleum company websites, Published annual accounts and the NSE. The data was audited which indicated its validity and reliability. This study did not use data that was unaudited. The measurements errors in the

data are therefore expected to be immaterial and unable to have serious estimation errors in the models used.

4.4 Descriptive Statistics

Presented herein are the descriptive statistics relating to trends of the variables over the years, means and standard deviations. Results presented in Tables 4.1 indicate the mean, median, standard deviation, maxima and minima of all the variables considered in the study. In Table 4.1, results reveal that Total Kenya had an average ROA of 0.02409 over the seven years. The mean for DSO was 45.51, 52.69 for DSI, 52.86 for DPO and 45.35 for CCC. Mean for leverage was 0.59 while mean for Age was 56 years. On the other hand, Kenol Kobil had a mean ROA for firm at 0.042 for the seven years. The Mean for DSO was 27.93, 32.19 for DSI, 25.79 for DPO, 34.33 for CCC, 1.45 for leverage and 51 on age.

Kenya Pipeline had a mean of 0.1 for ROA, 215.41 for DSO, 53.03 for DSI, 125.15 for DPO, 102.35 for CCC, 0.14 for leverage and 37 in age. The Descriptive results for Shell indicated that mean ROA for the seven years was 0.076, Mean for DSO was 64.74, 34.37 for DSI, 90.88 for DPO, 8.41 for CCC, 0.17 for leverage and 49 years on age. Results for Chevron indicate that mean ROA was 0.11 over the seven years while mean DSO was 32.92. The Mean for DSI was 16.19, 55.4 for DPO, 0.07 for CCC, 0.07 for leverage and 38 on age. Statistics for National Oil Company of Kenya indicate that mean ROA was 0.042. Mean for DSO was 31.07, 39.97 for DSI, 32.45 for DPO, 41.46 for CCC, 1.15 for leverage and 29 on age.

Table 4. 1: Descriptive Statistics for the Six petroleum Companies

Total Kenya	ROA	DSO	DSI	DPO	CCC	LEV	AGE
Mean	0.0241	45.5129	52.6957	52.8571	45.3514	0.5929	56
Median	0.03016	40.2	49.57	49.49	38.39	0.39	56
Std Deviation	0.0194	29.5287	20.7684	27.6611	25.0985	0.6272	2.16
Minimum	0	19.19	35.49	21.12	26.54	0.02	53
Maximum	0.048	109.5	96.25	105.85	99.9	1.82	59
Kenol Kobil							
Mean	0.0425	27.9286	32.1900	25.7857	34.3314	1.4457	51
Median	0.0448	24.81	31.11	19.5	25.34	1.76	51
Std. Deviation	0.0255	7.3616	16.4866	15.2545	18.7277	1.2006	2.16
Minimum	0	21.29	9.99	17.19	15.41	0.02	48
Maximum	0.071	39.9	53.04	59.54	70.97	3.24	54
Kenya Pipeline							
Mean	0.1050	215.4120	53.0340	125.1480	102.3543	0.1400	37
Median	0.10315	179	65.07	133.03	86.98	0.07	37
Std. Deviation	0.0624	89.0898	30.1261	136.2594	103.2123	0.1654	2.16
Minimum	0	143.38	0.16	0.35	0	0	34
Maximum	0.213	360.01	72.27	338.1	299.3	0.36	40
Shell Kenya							
Mean	0.0760	64.7357	34.3657	90.8843	8.4143	0.1657	49
Median	0.07696	65.33	31.01	86.37	9.57	0.17	49
Std. Deviation	0.0267	10.7720	10.0148	18.1787	4.4564	0.0294	2.16
Minimum	0.044	51.1	19.63	71.91	0	0.12	46
Maximum	0.116	77.84	49.27	120.71	14.65	0.21	52
Chevron							
Mean	0.1100	32.9186	16.1871	55.4000	0.0700	0.0743	38
Median	0.11304	34.49	15.93	59.57	0	0.07	38
Std. Deviation	0.0286	5.7734	2.2855	9.4747	0.1852	0.0140	2.16
Minimum	0.064	21.2	13.49	35.31	0	0.06	35
Maximum	0.149	37.65	20.25	61.82	0.49	0.1	41
NOCK							
Mean	0.0419	31.0667	39.9699	32.4513	41.4553	1.1457	29
Median	0.0397	30.328	41.11	29.51	44.51	1.04	29
Std. Deviation	0.0204	5.4417	8.1899	8.6611	14.3533	0.9104	2.16
Minimum	0.019	25.092	27.712	27.219	25.721	0.02	26
Maximum	0.078	38.817	51.48	51.781	61.848	2.24	32

4.5 Correlation Analysis

Bivariate correlation analysis was performed on the variables to test the linear relationship among the variables. The results as shown under Table 4.2 below indicate that there was a moderate positive relationship between ROA and DSO ($r = 0.305$; $p > 0.05$). However, this relationship was not significant at 5% level. Further results indicate that DSI had an insignificant weak negative relationship with ROA ($r = -0.234$; $p > 0.05$). DPO had an insignificant positive relationship with ROA ($r = 0.238$; $p > 0.05$). Results also revealed that CCC had an insignificant positive relationship with ROA ($r = 0.20$; $p > 0.05$). The correlation was controlled for leverage and age.

Table 4. 2: Correlation Analysis

	ROA	DSO	DSI	DPO	CCC
ROA	1				
DSO	0.305	1			
DSI	-0.234	.455**	1		
DPO	0.238	.714**	.408**	1	
CCC	0.02	.658**	.487**	-0	1

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

**. Correlation is significant at the 0.01 level (2-tailed).

4.6 Regression Analysis and Hypotheses Testing

A multiple linear regression was performed with independent variables being CCC, DSO, DSI and DPO while controlling for Leverage and Age. The dependent variable was ROA. Table 4.3 presents the r , r^2 and the standard error of estimate. The results indicate that the independent variables included in the model explained 36.6% of change in return on assets of the surveyed oil companies. This therefore indicates that 63.4% of change in return on assets of oil companies was explained by other factors that were not included in the model.

Table 4. 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604	.365	.249	.034082

a. Predictors: (Constant), DPO, CCC, DSI, DSO

Results in Table 4.4 reveal that the model was significant and useful in predicting ROA of oil companies ($f = 3.161$; $p < 0.05$). These results indicate that the independent variables considered in the model (CCC, DPO, DSI and DSO) could be used to predict ROA of oil companies.

Table 4. 4: Analysis of Variance

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Regression	.022	4	.004	3.161	.015 ^b
Residual	.038	35	.001		
Total	.060	39			

a. Dependent Variable: ROA

b. Predictors: (Constant), DPO, CCC, DSI, DSO

Test of significance of the independent variables in influencing ROA was done through the t- test. Study results are presented in Table 4.5. The results indicate that DSO was not a significant predictor of ROA ($\beta = -.001$; $t = -.728$; $p > 0.05$).

Further, t-test indicated that DSI was a significant predictor of ROA. The effect was shown to be negative ($\beta = -.002$; $t = -2.857$; $p < 0.05$). Regression results further indicated that DPO did not have a significant influence on ROA ($\beta = .001$; $t = 0.918$; $p > 0.05$). Results in Table 4.10 further reveal that CCC was not a significant influencer of ROA ($\beta = 0.001$; $t = 0.859$; $p > 0.05$).

Table 4.5: Test of Significance of Independent Variables

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.117	.030		3.918	.000
DSO	-.001	.001	-1.802	-.728	.472
DSI	-.002	.0007	-.978	-2.857	.003
DPO	.001	.001	1.897	.918	.365
CCC	.001	.001	1.712	.859	.397

a. Dependent Variable: ROA

4.7 Discussion of Research Findings

Correlation results indicate that there was a moderate positive relationship between ROA and DSO ($r = 0.305$; $p > 0.05$). However, this relationship was not significant at 5% level. Further results indicate that DSI had an insignificant weak negative relationship with ROA ($r = -0.234$; $p > 0.05$). DPO had an insignificant positive relationship with ROA ($r = 0.238$; $p > 0.05$).

This study partly agrees and partly disagrees with a study by Njenga (2011) who studied the relationship between working capital management and profitability in small and medium enterprises in Kenya. The study used secondary data obtained from financial statements of 40 small and medium enterprises registered by small and medium enterprises resource centers. The financial statements from the enterprises were analyzed to determine the effects of CCC, days of sales in inventory outstanding, days of sales outstanding and days of payables outstanding on the net profit margin. Pearson's correlation and regression analysis were used to analyze the data. The results showed a negative relationship between CCC and days of sales outstanding and the profitability of the firms. This is contrary to the findings of this study. However, the study agrees with the current study that days of sales in inventory had a negative influence on profitability.

Further, results also revealed that CCC had an insignificant positive relationship with ROA ($r = 0.20$; $p > 0.05$). This study results disagree with findings by Deloof (2003) who established that the longer the cash conversion cycle, the lower is the profitability. Further, the study results partly agree and partly disagree with the findings by Teruel and Solano (2005). They set out to establish empirical evidence on effects of working capital management on profitability of small and medium sized Spanish firms. Data was collected from a panel of 8,872 SMEs covering the period 1996 to 2002. Return on Assets (ROA) was used as the dependent variable while various working capital measures such as average collection period, inventory turnover ratios, CCC and average payment period were used as dependent variables. From the study, they established that

managers can create value by reducing the firm's number of days of account receivables and DSI. This concurs with the findings from the current study.

The current study disagrees with the study by Teruel and Solano (2005) on the effect of the cash conversion cycle. The current study established that CCC does not have any significant effect on profitability while the study by Teruel and Solano indicated that reducing the CCC improves the firm's profitability.

Study results indicate that DSO was not a significant predictor of ROA ($\beta = -.001$; $t = -0.728$; $p > 0.05$). This disagrees with Afza and Nazir (2007) who conducted a study on efficiency of working capital management of cement sector of Pakistan for the period 1988 to 2008. This study was based on data of cement companies operating in Pakistan from a period of 1988-2008. Data was collected from 22 cement companies operating in Pakistan. They established existence of a negative relationship between the profitability measures of firms and the degree of aggressiveness of working capital investment and financing policy. The current study found no significant relationship.

Further, t-test indicated that DSI was a significant predictor of ROA. The effect was shown to be negative ($\beta = -.002$; $t = -2.857$; $p < 0.05$). These findings agree with a study by Deloof (2003) that indicated that the efficient management of working capital would help a firm maximize profits which will go a long way in maximizing shareholders wealth. Management of working capital through reducing the DSI has effect on the

returns, profitability and the value of a firm. The current study results indicate that a shorter DSI would lead to higher ROA.

Leverage according to study results had a significant negative influence on ROA ($\beta = -0.007$; $t = -2.333$; $p < 0.05$). This indicated that increase in leverage would lead to reduced ROA for the surveyed oil companies. Lastly, age of surveyed oil companies had a significant negative influence on ROA ($\beta = -.001$; $t = -2.527$; $p < 0.05$). This indicates that firms that were younger performed better than their older counterparts in the oil sector.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter presents a summary of the results on the relationship between working capital management and profitability of petroleum companies in Kenya. Based on the findings in the previous chapter, the study gives recommendations on what the petroleum companies' management can do to improve their financial performance based on management of working capital. The recommendations are presented also based on the objective of the study after which recommendations for further studies are drawn.

5.2 Summary of Findings

Correlation and regression analysis was performed to establish the relationship between working capital management and financial performance of petroleum companies in Kenya. The results indicate that there was a moderate positive relationship between ROA and DSO ($r = 0.305$; $p > 0.05$). However, this relationship was not significant at 5% level. Further results indicate that DSI had an insignificant weak negative relationship with ROA ($r = -0.234$; $p > 0.05$). DPO had an insignificant positive relationship with ROA ($r = 0.238$; $p > 0.05$). Results also revealed that CCC had an insignificant positive relationship with ROA ($r = 0.20$; $p > 0.05$).

Regression results indicate that DSO was not a significant predictor of ROA ($\beta = -.001$; $t = -.728$; $p > 0.05$). Further, t-test indicated that DSI was a significant predictor of ROA. The effect was shown to be negative ($\beta = -.002$; $t = -2.857$; $p < 0.05$). Study results

further indicated that DPO did not have a significant influence on ROA ($\beta = .001$; $t = 0.918$; $p > 0.05$). CCC was not a significant influencer of ROA ($\beta = 0.001$; $t = 0.859$; $p > 0.05$).

Regression results further indicated that DPO did not have a significant influence on ROA ($\beta = .001$; $t = 0.918$; $p > 0.05$). Results in Table 4.5 further reveal that CCC was not a significant influencer of ROA ($\beta = 0.001$; $t = 0.859$; $p > 0.05$). This study disagrees with findings by Lazaridis and Tryfonidis (2006). The study by Lazaridis and Tryfonidis was conducted using a sample of 131 companies listed in the Athens stock exchange (ASE) for a period between 2001 and 2004. They had set to investigate a relationship that is statistically significant between profitability, CCC and its components for the firms listed at the ASE. CCC was used as a measure of working capital management. They found out the existence of statistical significance between profitability, measured using gross operating profit and the cash conversion cycle.

5.3 Conclusion

Working capital management is particularly important in the case of petroleum companies. Most of these companies' assets are in the form of current assets. Also, current liabilities are one of their main sources of external finance. In this context, the objective of the current research has been to provide empirical evidence about the effects of working capital management on the profitability of a sample of petroleum companies in Kenya. To this end, a sample of six firms was used to conduct a study with data on DPO, CCC, DSI and DSO while controlling for age and leverage.

Though working capital plays an important role in value generation in petroleum companies, the study concludes that DSO, DPO and CCC did not have a significant relationship with financial profitability of the surveyed petroleum firms. The study also concludes that DSO, DPO and CCC do not have a significant influence on profitability of firms in the petroleum sector. However, the study concludes that DSI had a significant negative influence on financial profitability of petroleum firms. This therefore implies that petroleum firms which focus on ensuring that there is consistency and efficiency in the employment of current assets and current liabilities during their day to day activities stand a better chance of realizing growth in sales but may suffer reduced profitability as more money is tied into the working capital. As firms make more investment in current assets, the risk is reduced and so is the return.

5.4 Recommendations

5.4.1 Recommendations for Practice

While working capital management is of importance to all firms, working capital management is of particular importance to the business firms operating in some developing and emerging markets like Kenya. Firms in emerging and developing markets are mostly constrained with financing options and have poor access to the long - term capital markets.

These firms therefore, tend to rely more heavily on owner financing, trade credit and short-term bank loans to finance their needed investment in cash, accounts receivable and

inventory. It is therefore recommended to management of companies in the Kenyan market to effectively manage their working capital to ensure that maximum returns are derived from working capital.

Secondly, given the significant investment in working capital and the effect of working capital policy on firm risk in most firms, working capital management policy choices and practices could have important implications not only for accounting profitability but also for market performance. Successful management of resources will lead to corporate profitability.

Given that management success might be measured by market value, it is recommended that efficient working capital management should bring more shareholders market value. Since working capital management is best described by the cash conversion cycle the management should try to manage the link between accounting as well as market performance and management of the cash conversion cycle. This linkage will include all three very important aspects of working capital management. It is an indication of how long a firm can carry on if it was to stop its operation or it indicates the time gap between purchase of goods and collection of sales. This therefore calls for firms to relook on their credit policy.

5.5 Limitations of the Study

A limitation for the purpose of this research was regarded as a factor that was present and contributed to the researcher getting inadequate information. The main limitations of this

study included the fact that the data used was secondary data which had been generated for other purposes i.e. to fulfil statutory obligations. In addition the data accessibility was limited given that a majority of the organizations sampled were private companies who were not willing to share the information contained on their financial statements and only referred the researcher to their website. However, the data on the website was limited and scanty forcing the researcher to work with the selected firms.

The secondary data used in the research may be biased since the primary users of the data had wanted it in their own form to suit their interests e.g. attract more investors through reporting profitability which may not serve the researchers purposes in analysing the relationship. In addition, given that Kenya is an importer of petroleum products, factors that would impact on the behaviour of working capital in relation to profitability and are outside the country have not been captured in the study.

5.6 Suggestions for Further Research

The corporate finance literature has traditionally focused on the study of long-term financial decisions. Researchers have particularly offered studies analyzing investments, capital structure, dividends or company valuation, among other topics. But the investment that firms make in short-term assets, and the resources used with maturities of under one year, represent the main share of items on a firm's balance sheet. This study therefore recommends that other studies linking working capital management to financial performance need to be conducted. Such other studies should be focused on commercial banking sector, manufacturing sector and the SMEs.

REFERENCES

- Afza, T. & Nazir, M. S. (2007). Working Capital Management Policies of Firms: Empirical evidence from Pakistan. *Journal of Finance* 15(2): 11-18.
- Angelique, N.S. (2000). *Working Capital Management; Theory and Evidence from New Zealand Listed Limited Liability Companies*. (Unpublished Masters Project). Lincoln University, New Zealand.
- Back, P.L. (1988). *Corporate Cash Management*. New York: Nichols Publishing.
- Baumol, W.J. (1952). The Transactions Demand for Cash: An Inventory Theoretic Approach. *Quarterly Journal of Economics*, November, 545-556.
- Blinder, A.S. & Maccini, L. J. (1991). The Resurgence of inventory Research: What Have We Learned? *Journal of Economic Survey*, 5 (4), 291 – 328.
- Brigham, E.F., Gapenski, & L.C., Ehrhardt, M.C. (1999). *Financial Management: Theory and Practice*. (19th Ed.). Japan: The Dryden Press, 791-896.
- Brigham, E.F. & Ehrhardt, M.C. (2004). *Financial Management: Theory on Practice* (11th Ed.). New York: South-Western College Publishers.
- Bodie, Z. & Merton, R.C. (2000). *Finance*. (International Ed.), Prentice Hall, New Jersey.
- Caffaso, U. A. (2011). *Relationship between Working Capital Management Financing Policy and Profitability. A survey of manufacturing Firms in Kenya*. (Unpublished MBA Project) University of Nairobi, Kenya.
- Carpenter, M.D. & Johnson, K.H. (1983). The Association between Working Capital Policy and Operating Risk. *Financial Review*, 18(3), 106.
- Cheatham, C. (1989). Economizing on Cash Investment in Current Assets. *Managerial Finance*, 15 (6), 20-25.
- Chiou, J.R. & Cheng, L. (2006). The Determinant of Working Capital Management. *Journal of American Academy of Business* 10 (1), 149-155.
- Christopher, S.B. & Kamalavalli, A.L. (2009). *Sensitivity of Profitability to Working Capital Management in Indian Corporate Hospitals*. (Working Paper) NCrM College, India.

- Deloof, M. & Jegers, M. (1996). Trade Credit, Product Quality, and Intra Group Trade: Some European Evidence, *Financial Management* 25(3), 33-43.
- Deloof, M. (2003). Does Working Capital Management Affect Profitability of Belgian firms? *Journal of Business Finance & Accounting*, 30(3& 4), 573 – 587.
- Filbeck, G.& Krueger, T. (2005) Industry Related Differences in Working Capital Management. *Mid-American Journal of Business* 20(2): 11-18
- Financial Analysis and Commentary (2013, July 29). Market Outlook, *Business Daily, Kenya*, pg. 32.
- Gallinger, G.W. & Healey, P.B. (1987). *Liquidity Analysis and Management Reading*, Massachusetts: Addison-Wesley Publishing Company.
- Gitman, L.J. (1997). *Principles of Managerial Finance*. (7th Ed.). New York: Harper Collins College Publishers, 684-710.
- Gitman, L.A. (2005). *Principles of Managerial Finance* (11th Ed.). New York: Addison Wesley Publishers.
- John, K. C. (2012). *Challenges of Strategy Implementations for Firms in the Petroleum Industry in Kenya*. (Unpublished MBA Project) University of Nairobi, Kenya.
- Jose, M.L., Lancaster, C.& Stevens, J.C. (1996), Corporate Returns and Cash Conversion Cycle. *Journal of Economics and Finance* 20(1): 33-36
- Joshi, J. (1994). Cash Management Comes to the ball. *Journal of Finance* 3(9), 26-35.
- 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, I. & 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.
- Mathuwa, D.M. (2010) The Influence of Working Capital Components on Corporate Profitability. A Survey of Kenyan Listed Firms. *Research Journal of Business Management*, (4), 1-11.
- Miller, M.H.& Orr, D. (1966). A Model of the Demand for Money by Firms. *Quarterly Journal of Economics*, August, 413-435.
- Moss, J.D.& Stine, B. (1993). Cash Conversion Cycle and Firm Size: A Study of Retail Firms. *Managerial Finance*, 19 (8), 25-34.

- Moyer, MacGuiyan & Kretlow. (2005). *Contemporary Financial Management*. (6th Ed.). West Publishing.
- Narware, P.C (2004). Working Capital and Profitability: An empirical Analysis. *The Management Accountant*, 39, (6), 120-127.
- Nazir, M.S. (2009). *Impact of Working Capital Aggressiveness on Firm's Profitability*. IABR and TLC Conference proceedings, San Antonio, Texas, USA.
- Nganga, S.C. (2009). *Relationship between Working Capital and Profitability of listed companies in NSE*. (Unpublished MBA Project). University of Nairobi, Kenya.
- Njenga, J.W. (2011). Effect of Working Capital Management on Profitability of Small and Medium Enterprises in Kenya. (Unpublished MBA Project). University of Nairobi, Kenya.
- Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firm's Performance. Analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research Papers*, 2, (2), 45-58.
- Pandey, L. (2011). *Financial Management (10th Ed.)*. Vikas Publishing House, New Delhi.
- Pandey, I.M. & Parera, K.L.W. (1997). Determinants of Effective Working Capital Management-A Discriminant Analysis Approach.
- 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 Pakistan Firms. *International Review of Business Research Papers*, 3, (2), 276-296.
- Rehman, A. (2006). *Working Capital Management and Profitability: Case of Pakistan Firms* (Unpublished Dissertation). COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan.
- Samuel, M. K. (2011). *The Relationship between Working Capital Management and Profitability of Manufacturing Firms Listed at the Nairobi Stock Exchange*. (Unpublished MBA Project). University of Nairobi, Kenya.
- Schilling, G. (1996). Working Capital's Role in Maintaining Corporate Liquidity. *TMA Journal*, 16, (5), 4-7.

- Shin, H.H.& Soenen, L. (1998). Efficiency of Working Capital and Corporate Profitability. *Financial Practice and Education* 8: 37-45.
- Smith, K. (1980). Profitability versus Liquidity Trade-Offs in Working Capital Management in *Readings on the Management of Working Capital*. Newyork. St. Paul West Publishing Company.
- Teruel, P.J.G.& Solan, P.M. (2005). Effects of Working Capital Management on SME Profitability. *Working Papers Series*.
- Uyar, A. (2009). The Relationship of Cash Conversion Cycle with Firm Size Profitability: An Empirical Investigation in Turkey. *International Research Journal of Finance and Economics, ISSV 1450-2887, Issue 24, Euro journals Publishing, Inc.*
- Van-Horne, J.C.& Wachowicz, J.M. (2004). *Fundamentals of Financial Management* (12th Ed.). Newyork: Prentice Hall Publishers.
- Vishnani, S. (2007). Impact of Working Capital Management Policies on Corporate Performance: An Empirical Study. *The Manage. Acc, ICWAI Kolkat, (748-750)*.

APPENDICES

Appendix A: List of Petroleum firms used in the Study as at December 31, 2013

1. Kenya Pipeline Corporation
2. Royal Dutch Shell Kenya Limited
3. TOTAL Kenya
4. Kenol/Kobil Limited
5. National Oil Company of Kenya
6. CHEVRON Corporation, CHEVRON Kenya Limited

Source (www.erc.go.ke)

Appendix B: Summary of Data Collected for the Study

FIRMS	YEAR	ROA	DSO	DSI	DPO	CCC	LEVERAGE	AGE
TOTAL KENYA	2007	0.042	41.520	38.830	53.810	26.540	1.010	53
TOTAL KENYA	2008	0.048	36.790	35.490	30.080	42.200	1.820	54
TOTAL KENYA	2009	0.015	109.500	96.250	105.850	99.900	0.440	55
TOTAL KENYA	2010	0.030	43.800	58.400	65.700	36.500	0.390	56
TOTAL KENYA	2011	0.000	40.200	50.010	43.950	46.260	0.110	57
TOTAL KENYA	2012	0.000	27.590	49.570	49.490	27.670	0.020	58
TOTAL KENYA	2013	0.033	19.190	40.320	21.120	38.390	0.360	59
KENOL KOBIL	2007	0.045	22.610	9.990	17.190	15.410	0.120	48
KENOL KOBIL	2008	0.042	21.290	31.110	27.050	25.340	0.020	49
KENOL KOBIL	2009	0.051	29.200	53.040	59.540	22.700	2.240	50
KENOL KOBIL	2010	0.068	39.900	49.480	18.410	70.970	0.700	51
KENOL KOBIL	2011	0.071	21.900	41.710	21.140	42.470	3.240	52
KENOL KOBIL	2012	0.000	24.810	17.230	17.670	24.370	2.040	53
KENOL KOBIL	2013	0.020	35.790	22.770	19.500	39.060	1.760	54
NOCK	2007	0.035	30.328	27.712	27.219	25.721	0.120	26
NOCK	2008	0.040	26.768	41.110	31.187	28.541	0.020	27
NOCK	2009	0.049	31.291	43.040	51.781	27.216	2.240	28
NOCK	2010	0.078	38.817	51.480	28.541	61.848	1.700	29
NOCK	2011	0.051	25.092	46.710	31.140	52.732	2.140	30
NOCK	2012	0.021	27.190	37.267	27.781	44.510	1.040	31
NOCK	2013	0.019	37.981	32.470	29.510	49.619	0.760	32
KENYA PIPELINE	2007	0.213				0.000		34
KENYA PIPELINE	2008	0.000				0.000		35
KENYA PIPELINE	2009	0.102	240.180	70.410	11.290	299.300	0.000	36
KENYA PIPELINE	2010	0.086	360.010	65.070	338.100	86.980	0.070	37

KENYA PIPELINE	2011	0.107	179.000	72.270	142.970	108.300	0.360	38
KENYA PIPELINE	2012	0.123	143.380	57.260	133.030	67.610	0.270	39
KENYA PIPELINE	2013	0.103	154.490	0.160	0.350	154.290	0.000	40
SHELL	2007	0.116	76.160	43.850	105.350	14.650	0.120	46
SHELL	2008	0.094	65.330	19.630	86.370	0.000	0.140	47
SHELL	2009	0.044	77.840	49.270	120.710	6.390	0.180	48
SHELL	2010	0.064	69.520	37.830	98.670	8.680	0.210	49
SHELL	2011	0.092	61.720	28.580	80.730	9.570	0.170	50
SHELL	2012	0.077	51.100	30.390	71.910	9.580	0.160	51
SHELL	2013	0.046	51.480	31.010	72.450	10.030	0.180	52
CHEVRON	2007	0.126	37.090	14.540	59.570	0.000	0.060	35
CHEVRON	2008	0.149	21.200	14.600	35.310	0.490	0.070	36
CHEVRON	2009	0.064	37.650	20.250	60.200	0.000	0.080	37
CHEVRON	2010	0.104	36.970	17.210	60.360	0.000	0.080	38
CHEVRON	2011	0.129	31.350	13.490	51.480	0.000	0.060	39
CHEVRON	2012	0.113	31.680	15.930	59.060	0.000	0.070	40
CHEVRON	2013	0.085	34.490	17.290	61.820	0.000	0.100	41