THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND PROFITABILITY IN PETROLEUM PRODUCT MARKETING COMPANIES IN KENYA

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER IN BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

OCTOBER 2014

DECLARATION

This research Project is my original work and has not been presented for examination in any university.

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

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ACKNOWLEDGEMENTS

It has been an exciting and instructive study period in the University of Nairobi and I feel privileged to have had the opportunity to carry out this study as a demonstration of knowledge gained during the period studying for my master's degree. With these acknowledgments, it would be impossible not to remember those who in one way or another, directly or indirectly, have played a role in the realization of this research project. Let me, therefore, thank them all equally. First, I am indebted to the all-powerful GOD for all the blessings he showered on me and for being with me throughout the study. I am deeply obliged to my supervisor for his exemplary guidance and support without whose help; this project would not have been a success. Finally, yet importantly, I take this opportunity to express my deep gratitude to my loving family, and friends who are a constant source of motivation and for their never ending support and encouragement during this project.

DEDICATION

I dedicate this study to my dear family members, my husband and children for all the support they gave me all the time as I prepared and worked on this project.

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LIST OF ABBREVIATIONS

BSE- Bombay Stock Exchange

CAP- Chapter- Used to refer to laws of Kenya

CEO- Chief Executive Officer

DSO- Day Sales Outstanding

EOQ-Economic Order Quantity

ISE- Istanbul Stock Exchange

NSE- Nairobi Stock Exchange

OLS- Ordinary Least Square

KPC-Kenya Pipeline Company

TC-Total Cost

RCP-Receivables collection period

ICP-Inventories Conversion Period.

ABSTRACT

Working capital is simply current assets used in operations. Management of working capital aims at maintaining optimum level of working capital components which are cash, inventory, receivables and payables. Working capital management is an important component of corporate strategy for value creation and competitive advantage (Deloof 2003). The target population was all the 236 licensees as per the Energy Regulatory Commission license Register as at 31st December 2013. A sample size of 10 firms whose total market share is 81.9% was selected. The profitability of these companies measured by Return on Total Assets was analyzed. The following ratios were calculated for the last four years and compared with the Return on Assets to establish any relationship, receivables collection period, inventory conversion period, average payment period, current ratio and current asset to total assets ratio.The study sought to establish the relationship between working capital management of Petroleum Marketing Companies and profitability of Petroleum Marketing Companies in Kenya. From the determination coefficients, it could be denoted that there is a weak relationship between dependent and independent variables in the 2009-2008 datasets since the R2 values were less than 0.25. There was, however, a moderately strong relationship between the two variables in the 2013 dataset.   Using the adjusted R2 value which was a correction to the R² by taking into account the number of variables used in the model, the study found a moderately strong relationship in the 2013 dataset. The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated. From this study it was noted that inventory conversion period (ICP) and size of company would have the highest impact on profitability of petroleum products marketing companies. From the finding of the study in the year 2008, the study found that holding Current asset to total asset ratio, Inventory conversion period, average payment period (APP) and size constant, profitability was -0.526. From the study in this year it was noted that a company size and current asset to total asset ratio would have the highest effect on profitability though the former would have a positive effect and the latter negative effect. From the findings of the study in the last year of study which was 2013 it was noted that holding Current asset to total asset ratio, Inventory conversion period, average payment period (APP) and size constant, profitability was -1.304. From the study it was also noted that size and current asset to total asset ratio (CATA) would have the highest effect on profitability though on different directions with size having positive effect. From the results, possessing a lower average collection period is seen by the petroleum product marketing companies as optimal, since this means that it does not take them very long to turn its receivables into cash. This owes to the fact that these petroleum marketing companies need cash to pay off their own expenses (such as operating and administrative expenses) including suppliers who supply fuel products to them on credit. They also tend to have a longer average payment period so as to maintain a high current ratio and avoid cash flow problems. Monitoring the working capital is important for the petroleum product marketing companies' cash flow and its ability to meet its obligations when they fall due. However, they optimize this to ensure that their credit worthiness is not compromised, take advantage of discounts including avoiding incurring unnecessary interest costs.

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

Guthmann & Dougall (1948) defined working capital as excess of current assets over current liabilities. Brigham and Joel (2004), define working capital as simply current assets used in operations. Management of working capital aims at maintaining optimum level of working capital components which are cash, inventory, receivables and payables. Working capital management is an important component of corporate strategy for value creation and competitive advantage (Deloof 2003).

Firms have an optimum level of working capital that maximizes their value. Working capital management ensures that a company has sufficient cash flow to meet short term debt obligations and operating expenses. This study seeks to establish the relationship between working capital management and profitability of petroleum marketing companies in Kenya.

1.1. 1 Working Capital Management

The management of working capital involve managing inventories, accounts receivables, accounts payables and cash. Implementing an efficient and effective working capital management system is an excellent way for many companies to improve their earnings. The two main aspects of working capital management are ratio analysis and management of individual components of working capital. The main objective of managing working capital components is to achieve balance between profitability and risk that contributes positively to the firm's value (Soimo, 2010)

Inventories can be classified as supplies, raw materials, work in process and finished goods. All these are important for proper and smooth operation of any enterprise. The twin goal of inventory management is to ensure availability of inventory required for operations and also ensuring that inventory ordering and carrying costs are maintained at the lowest possible level. Lower inventory levels reduce storage handling, insurance, property taxes, spoilage and obsolescence costs and free up cash invested in these inventories. The cost of funds invested in inventories is measured by the required rate of return on these funds. On the other hand low inventory levels lead to stocks out costs whenever a business is unable to fill orders because

the demand for an item is greater than the amount currently available in inventory and frequent orders which result in high ordering costs and affect profitability (Brigham and Daves 2008)

To ensure optimum inventory levels, a firm must establish an inventory control system that will ensure that only required level of inventory is kept. ABC management technique divides inventories into three groups in descending order of importance and the level of monitoring on the basis of shilling investment. Economic Order Quantity models considers the inventory costs and determine the cost of inventory size that minimises the total inventory cost. Other techniques include just in time, redline method and Computerised Inventory System (Brealey, Myers and Allen 2010)

Receivables management is another component of Working capital. Receivables arise when firms sell goods on credit. Accounts receivable is represented by the average collection period which is the length of time from sale on credit till the payment becomes usable funds to the firm. Accounts receivable has two components, the time from sale on credit till when the customer makes the payment and the time from when the payment is mailed until the firm has collected funds in its bank account. The main objective of accounts receivable management is to collect accounts receivables as quickly as possible without losing sales through high pressure collection techniques. (Berk, Demarzo and Harford 2009). Cash Management is another component of working capital management. Cash management entails determining the appropriate target cash balance, collecting and disbursing cash efficiently and investing excess cash in marketable securities. The main objective of cash management is to keep the investment in cash as low as possible while still operating the firm's activities efficiently and effectively. This is because cash is a non-earning asset (Brigham and Houston 2004).

Ratio analysis of working capital key performance ratios will help management identify areas of focus, some of the ratios include current ratio, quick ratio, inventory conversion period, receivables collection period and payables deferral period (Soimo 2010)

1.1.2 Profitability

Profitability is the net result of a number of policies and decisions. It is the relationship between revenues and costs generated by using a firm's assets both current and fixed in productive activities. A firm's profits can be increased by increasing revenues or decreasing costs (Gitman, 2000). It measures the extent to which businesses generate profit from the

factors of production which are labour, land and capital. The success of a business is measured by its profitability; it is the single most important measure of success of a business. Investors invest in businesses that generate profits and pay dividends to the investors. Profitability analysis focuses on the relationship between revenues and expenses on the level of profit relative to the size of investment (Kweru, 2011).

Profitability ratios show the effect of liquidity, asset management and debt on operating results. Some of the profitability ratios are, Gross profit margin, operating profit margin, net profit margin, return on total assets, return on equity and repayment capacity (Gitman 2000).

Gross profit margin= $\frac{\text{Sales- cost of goods sold.}}{\text{Sales}}$

It identifies the gross profit per dollar of sales before deducting any expenses.

Operating profit margin= $\frac{\text{Earnings before interest and tax}}{\text{Sales}}$

Operating profit margin considers how the company is performing before considering the impact of interest and taxes.

Net profit margin= $\frac{\text{Net Income available to common stockholders}}{\text{Sales}}$

Net profit Margin gives the profit per dollar of sales after all expenses.

Return on Assets= $\frac{\text{Net income available to common shareholders}}{\text{Total Assets}}$

This ratio measures the return on assets after interest and taxes. It shows how the organization is using its scarce resources to earn profits. The higher the ratio the better for the organization.

Return on Equity= $\frac{\text{Net income available to shareholders}}{\text{Common Equity}}$

Shareholders invest to get a return on their investment and this ratio shows how well they are doing.

1.1.3 The Relationship between Working Capital and Profitability.

Profitability is the relationship between revenues and costs generated by using the firm's assets in productive activities. Current liabilities provide short term funding for these activities while current assets in most firm more so manufacturing firms account for more than half of the total assets (Horne & Wachowicz, 2008). Results from studies show that there is a relationship between working capital management and profitability.

Deloof (2003) in his study of Belgian firm, measured profitability by gross operating profit, he found a negative relationship between gross operating income on the one hand and the measures of working capital management (number of days accounts receivables, inventories and accounts payable and cash conversion cycle) on the other hand. This finding is consistent with the view that time lag between the expenditure for the purchases of raw materials and collection of sales of finished goods can be too long and that decreasing this time lag increases profitability.

Padachi (2006) examined the trend in working capital management and its impact on firm's performance. The results proved that high investment in inventories and receivables is associated with lower profitability. Further, he showed that inventory days and cash conversion cycle had positive relation with profitability. On the other hand, accounts receivables days and account payable days correlated negatively with profitability.

Makori and Jagongo (2013) found out that working capital management has a significant impact on profitability of firms and plays a key role in value creation for shareholders. The study found existence of a negative correlation between Return on Assets and the firms average collection period and cash conversion cycle. However their study also suggests there is a positive correlation between Return on Inventory Holding Period and Accounts Payment Period. These results therefore suggest that managers can create value for their shareholders by reducing the number of days accounts receivable and increasing the account payment period and inventories to a reasonable maximum.

1.1.4 Petroleum Product Marketing Companies in Kenya

Petroleum products marketing in Kenya is regulated by an Act of Parliament the Energy Act, 2006 Laws of Kenya. Part i of this act defines petroleum to include "petroleum crude natural gas and any liquid or gas made from petroleum crude, natural gas, coal, schist ,shale, peat or any other bituminous substance or from any product of petroleum crude, natural gas and includes condensate. It also defines petroleum business to mean "a concern carrying on the importation, refining, storage, transportation or sale of petroleum. Petroleum marketing companies in Kenya therefore, are going concerns that import, refine, store, transport or sale petroleum products to consumers of such products.

Part IV of the Act covers licencing of Petroleum and Natural Gas Activities in Kenya. Section 80 of the act specifically deals with licencing of petroleum business in Kenya. Given the nature of petroleum products, petroleum business is strictly regulated and licence is only issued if the commission is convinced that the licensee has complied with the requirements of Section 90 and 91 of the Energy Act which among other requirements, requires compliance with the Environmental Management and Co-ordination Act,1999 Laws of Kenya and in particular the report of the Environmental (Impact Assessment and Audit) Regulations, 2003, the Physical Planning Act, 1996 Laws of Kenya, The Local Government Act and any other relevant legislation (sec 91 subsection b). Petroleum products sold in Kenya is imported either as crude and refined by Kenya Petroleum Refineries or imported as already refined product for direct sale in the market.

Part 11 of the Energy Act, 2006, Laws of Kenya establishes Energy Regulatory Commission. Section 6 stipulates the powers of the commission. Under section 6 subsection a, the commission shall have powers to "issue, renew, modify, suspend or revoke licences and permits for all undertakings and activities in the Energy Sector" oil marketing being one of the activities in Kenya Energy Sector.

Companies marketing petroleum products in Kenya are private commercial enterprises formed with the main objective of profit maximization. Currently the sector boasts of over 30 oil importing and marketing companies comprising of five major companies namely Shell, Total, Oil Libya, Chevron and other imaging companies which include Government owned National Oil Corporation of Kenya (Energy Regulatory Commission).

Kenya is a net importer of petroleum products and has a refinery managed by KPRL and an 800 kilometre cross country oil pipeline managed by KPC for refining crude oil and transporting the refined petroleum products from Mombasa to Nairobi, Nakuru, Eldoret and Kisumu. (Energy Regulatory Commission).

Challenges facing the sector include proliferation of substandard petroleum dispensing and storage sites which pose environment health and safety risks, diversion of petroleum products meant for export into the local market by unscrupulous business people to evade tax and dominance of the market by a few marketing companies. The Kenyan Government is talking these challenges by reviewing the Petroleum Act Cap 116 Laws of Kenya and other sector statutes and the new energy sector legislation to cover petroleum, electricity and renewable energy (Energy Regulatory Commission).

Working Capital Management in Petroleum Marketing Companies is as vital as in any other industry and impacts on their profitability (Runyora 2012). The Income tax Act requirement that Petroleum Marketing Companies pay taxes upfront before sales (Income Tax Act Cap 470) and the slow tax refunds by Kenya Revenue authority increases the working capital requirements of Petroleum Marketing Companies. The Energy Act (2006) Sec. 96 requires Petroleum marketing companies in Kenya to maintain a minimum operational stock of petroleum products as prescribed by the Minister in consultation with the Commission. This is to safeguard against stock outs which have severe impact on the economy.

The amendment of the Energy Act (2006) to allow for price control by the Energy Regulatory Commission has led to reduced profit margins and increased pressure on the liquidity needs of Petroleum Marketing Companies. They therefore require cash to pay for imports and taxes upfront. They keep minimum stock as a legal requirement and have to wait for a long time for tax refunds from Kenya Revenue Authority (Muriuki 2013)

Given the regulations in this industry and competition within the industry, working capital management is vital and most of the profits in this industry are attributable to working capital management. Petroleum Marketing Companies must skilfully manage the working capital components to remain profitable. (Runyora 2012) Appendix one shows a list of licenced oil marketing companies and their market share.

1.2 Research Problem

Organizations exist to maximise profits and shareholders wealth. In order to maximise profits and shareholders wealth, organizations must invest in business that generate high returns at low costs. Investment in working capital is one the key decisions that finance manager have to make in ensuring profit maximization. This is because working capital management affect profitability and risk of the organizations. Higher levels of current assets lead to low profitability but less risk, while higher levels of current liabilities lead to higher profitability and higher risk due to low net working capital which can lead to insolvency, Finance managers must therefore balance off risk and profitability in coming up with working capital management to maximise profits.

In the oil marketing industry in Kenya, a common feature in the current assets is stock of petroleum products which is kept for sale. Apart from coming up with their own working capital practices, firms in this industry must comply with regulation on environmental issues pertaining to petroleum business (Energy Act 2006 S.179 Laws of Kenya).They are required to keep minimum stock by law to ensure constant supply of petroleum products to the economy (Energy Act 2006 s.175 Laws of Kenya). Oil Marketing Companies in Kenya import large quantities of oil products which are stored and sold to the public. This require large investments in stocks of these products and at the same time oil products are fast moving stock items given the nature of their use. Liquidity management in this sector is key making working capital management in this sector critical.

 Studies done by other scholars like Maltiz et al. (1993) and Deloof and Jegers (1996) found out that if working capital is not managed well, it will affect a firm profitability negatively. Research done by Pandachi (2006), Chowdhury (2007) among others focused on privately owned or quoted companies. Nyakundi (2003) did a survey of working capital management in public enterprises in Kenya focusing on all public enterprises both quoted and un-quoted. Soimo (2010) focused on the relationship between working capital management in commercial parastatal sub sector in Kenya and how such practices may have influenced their profitability. Mutungi (2010) focused on relationship between working capital management policies and financial performance of oil industry between the years 2006 and 2009. Waweru (2011) focused on the relationship between working capital management and profitability of Insurance companies in Kenya. Kweru (2011) studied the relationship between working capital management and profitability of firms listed at NSE. Gitonga (2011) looked at the relationship

between working capital management and the value of companies quoted at the NSE and Njenga (2011) focused on the effect of working capital management on the profitability of small and medium size enterprises in Kenya. Runyora (2012) carried out a study on the impact of working capital management on the profitability of the oil industry between 2007 and 2011.

Petroleum marketing industry in Kenya is highly regulated, the Energy Act 2006 Laws of Kenya, the environmental compliance regulation and the existence of a commission to regulate pricing of oil product, the high level of liquidity and stocks, the fact that they have to pay taxes upfront before sales, the frequency with which players are licenced to carryout oil marketing due to relatively low capital investment and the frequent changes in regulation (the Energy Bill 2006, Policies and Regulations are currently under Review) present this sector a unique area of study. The aim of this study is to identify the working capital management in Petroleum Marketing companies in Kenya for the four years 2010 to 2013 and see how it could have influenced their profitability. The study intends to address the following research question. What are the key working capital management practises in Petroleum Marketing Companies in Kenya? What is the relationship between working capital management and profitability of Petroleum Marketing Companies in Kenya?

1.3 Research Objective

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

1.4 Value of the Study

The findings of this study was of great use to the following groups:

The management of Petroleum Marketing Companies will be able to know the relationship between the working capital practices they are currently using and the company's profitability. This knowledge will help them to ensure that they keep optimum levels of working capital that maximise profits and the firms' value.

Petroleum marketing requires heavy investment in equipment like pipeline, tanks pumps and accessories. Marketing companies borrow from both local and international investors who provide capital for such capital intensive investment. The result of this study will help such

investors to evaluate the liquidity of these companies and their ability to honour their obligations as they fall due.

As owners of these companies, shareholders wasnefit from the outcome of this study as it will give useful information on how best the company can manage its working capital for maximum profits. The shareholders want returns on their investments in form of dividends which are paid based on profitability and earning. Efficient management of working capital lead to higher profits which translate to higher dividends per share.

Scholars and researchers can use the outcome of this study to evaluate the already existing working capital management theories with a view to coming up with theories that better address specific companies in specific industries.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

This chapter reviews literature relating to working Capital management and profitability. The first section will review the theories and the second part will review empirical literature on working capital management and profitability.

2.2. Theoretical Review

This Section reviews models and theories that other scholars have come up with in relation to working capital.

2.2.1 Economic Order Quantity Model

This inventory management model was developed by Harris (1923) but Wilson (1940), a consultant who applied it extensively is credited for his in-depth analysis. This classical inventory management model calculates an optimum order size by balancing the costs of holding inventory against the costs of ordering fresh supplies. This optimum order size is the basis of a minimum cost procurement policy.

The economic order quantity model assumes that, for the period under consideration costs and demand are constant and known with certainty. If we assume a constant demand for inventory, holding costs will increase as average inventory levels and order quantity increase, while ordering costs will decrease as order quantity increases and the number of orders falls. The total cost is the sum of the annual holding cost and the annual ordering cost. This inventory management technique is for determining an items optimal order quantity, which is one that minimises the total of its order and carrying cost. It helps management to lower total cost of inventory. The goal facilitated by using EOQ calculation is to lower total cost.

Total annual cost = Annual holding cost + Annual ordering cost

$$TC = \frac{(Q) \times (H)}{2} + \frac{(S) \times (F)}{Q}$$

Where: Q = order quantity in units

H = holding cost per unit per year

S = annual demand in units per year

F = ordering cost per order

TC = Total cost

EOQ aims at setting up the ordering and carrying cost at minimal level. The underlying assumptions under EOQ are that the demand for a product is constant over the year and that each new order is delivered in full when the inventory reaches zero. There is a fixed cost charged for each order placed, regardless of the number of units ordered. There is also a holding or storage cost for each unit held in storage (sometimes expressed as a percentage of the purchase cost of the item).

2.2.2 Cash Conversion Cycle Model

Cash balances and safety stock of cash are influenced by the firm's production and sales technique and by its procedure for collecting sales receipts and paying for purchases. Cash conversion cycle helps in understanding this, (Pandey, 2008). Cash conversion cycle focuses on the length of time between when the firm makes payments for production inputs and when it receives cash inflows from the sale of finished products. The key terms used in the model are; inventory conversion period, which is the average time required to convert materials into finished goods and then to sell those goods, receivables collection period, which is the average length of time required to convert the firm's receivables into cash and payables deferral period, which is the average length of time between the purchase of materials and labour and the payment of cash for them. Cash Conversion Cycle, which nets out the periods just defined and which therefore equals the length of time between the firm's actual cash expenditures to pay for productive resources and its own cash receipts from the sale of products: that is, the length of time between paying for labour and materials and collection of receivables. (Brigham and Houston, 2004)

CCC =OC-APP

Where CCC is the cash conversion cycle

OC-Is the operating cycle which is the period of time from the beginning of production process to the collection of cash from the sale of finished products= ICP+RCP

Where ICP= (Days in a year/Inventory turnover ratio)

RCP= (Accounts receivable / credit sales)*days in a year.

APP is Average payment period which the time between purchases and actual payment for the goods = (Creditors/purchases)*days in a year.

A firm's goal should be to shorten the cash conversion cycle as much as possible without hurting operations. This will increase a firm's value because the shorter a firm's conversion cycle, the lower the required net operating working capital and the higher the resulting free cash flows. Cash conversion cycle can be shortened by reducing the inventory conversion period by processing and selling goods as soon as possible, by reducing the receivables collection period by speeding up collection or by lengthening the payables deferral period by slowing down a firm's own payment. These actions should only be taken without increasing costs or depressing sales (Ehrhardt and Brigham, 2008)

2. 2.3 Baumol Model

Baumol Model developed by Baumol (1952) is cash management approach that aids in determining the optimum amount of cash for a company to hold under conditions of certainty. The objective is to minimize the sum of the fixed costs of transactions and the opportunity cost of holding cash balances that do not yield a return. This is similar to the EOQ model used in inventory management. Baumol Model of cash management assumes the firm is able to forecast the cash needs with certainty, the firm's cash payments occurs uniformly over a period of time, the opportunity cost of holding the cash is known and it does not change over time, the firm will incur the same transaction cost whenever it converts securities to cash. The costs can be expressed as follows according to this model: F (T/C) + I (C/2)

Where: F = Fixed costs of a transaction

T = Total cash required for the specified time period

I   = Interest rate on marketable securities

C = Cash balance

Optimal level of cash = $\sqrt{(2FT / I)}$

2.2.4 The Miller- Orr Model

The Miller-Orr model developed by Miller and Orr (1966) assumes that net cash flows are normally distributed with a zero value of mean and standard deviation. The model provides for two control limits- the upper control limit and the lower control limit as well as a return point. If the firm's cash flows changes randomly and hit the upper limit, then it takes appropriate corrective action to come back to a normal level of cash balance and when the firm's cash flows decreases below the lower limit, it also takes the appropriate corrective control measures . A firm will sale marketable securities to return to the correct cash levels and will purchase marketable securities if above the required limit. Firms set lower limits (L) depending on how much risk of cash shortfall the firm is willing to tolerate.. The return point is the cube root of the square root of 3 multiply by conversion cost multiply by variance of daily net cash flows divided by 4 times daily opportunity cost.

Figure: Miller-Or Model
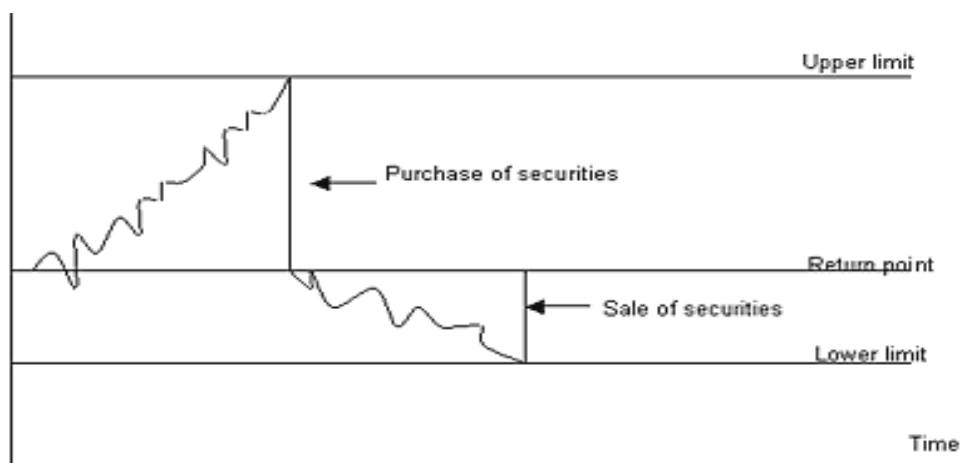
Source: 2014

The difference between the upper limit and the lower limit depends on the transaction cost, the interest rate, and the standard deviation.

$Z = (3\sqrt{3}F\alpha 2/4k) + L$

$H = 3Z - 2L$

Where Z is the target cash balance

H is the upper limit

L is the lower limit

F is the cost per transaction of buying and selling marketable securities. It is assumed to be constant.

$\alpha 2$ variance of net daily cash flows and

K is the % opportunity cost per period of holding cash.

All these theories and techniques point to a relationship between working capital management and profitability.

2.3 Determinant of Profitability

Determinants of profitability are factors that influence the profitability of Petroleum Marketing Companies positively or negatively by increasing or decreasing costs or revenues.

2.3.1 Working Capital

Working Capital is one of the determinants of profitability of Petroleum Marketing Companies. Efficient management of working capital reduces a firms costs leading to higher profitability. Makori and Jagongo (2013) carried out a study to analyze the effect of working capital management on firm's profitability in Kenya for the period 2003 to 2012. They used balanced panel data for five manufacturing and construction firms each which are listed on the Nairobi Securities Exchange.

Pearson's correlation and ordinary Least Square regression models were used to establish the relationship between working capital management and firm's profitability. The study found a negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of day's payable.

Based on the key findings of this study it has been concluded that the management of a firm can create value for their shareholders by reducing the number of day's accounts receivable, increasing inventories to reasonable levels, and increase accounts payable period without straining the relationship. Petroleum Marketing Companies in Kenya likewise are capable of gaining competitive advantage by means of efficient and effective utilization of the resources through careful reduction of the cash conversion cycle to its minimum. In so doing the profitability of the firm is expected to increase.

2.3.2 Foreign Exchange risk.

Foreign exchange risk is the exposure to potential financial loss due to devaluation of local currency against a foreign currency. Njihia (2013) studied the relationship between foreign exchange risk and profitability of oil companies listed at NSE. Using descriptive analysis, correlation and regression analysis, research results indicate that the foreign exchange risk greatly influences the profits reported by these oil companies. Oil companies import oil products from other countries and pay for oil in foreign currency. When the Kenya shilling is devalued, oil companies will pay more for oil products imported increasing their cost of sales and reducing the gross profits and profitability.

2.3.3 Capital structure.

Capital structure is how a firm finance its assets. It is also referred to as the proportion of debt and equity in a firm's balance sheet. Devinanga (2010) included capital structure as a variable in their study of determinants of bank profitability and performance because capital also serves as a source of funds along with deposit and borrowing. They argue that capital structure which include shareholders funds, reserves and retained earnings affect the profitability of commercial banks because of its effect on leverage and risk. They documented that a bank's assets could be financed by either capital or debt. But debt financing could be risky as compared to capital financing with regard to liquidity risks which commercial banks are

exposed to. Runyora (2012) found out that leverage positively influence the profitability of oil firms in Kenya.

2.3.4 Inflation

Inflation reduces the purchasing power of consumers by reducing the disposable income. Oil marketing companies sales will reduce due to inflation and cost will increase leading to low profitability. Devinaga (2010) in his study of determinant of profitability of commercial banks in Ghana during the financial crisis, found out that the central bank in their capacity to control inflation increase the cost of borrowing and reduce credit creating capacity thus the funds being given to commercial banks as loans.

As a result of this, the cost of borrowing becomes higher and the banks becomes more stringent in their lending policies which will subsequently lead to lower demand for funds and a fall in volume of spending. Inflation affects all sectors of the economy including Petroleum industry. Petroleum Marketing Companies in Kenya finance their purchases through Collateral Financing Agreements with banks, during inflation; these financing agreements become expensive leading to lower profits (Petroleum Insight, 4th Quarter 2013)

2.3.5 Competition.

Competition in any industry affects profitability. According Michael Porter, there are certain competitive forces that impact on profitability in any industry. These forces are said to be drivers of competition and profitability in any industry including Petroleum marketing industry. He further stressed that it is difficult for firms which operate in highly competitive industries to earn favourable returns on investment. Among these forces is what Michael Porter,(2001) termed ˮRivalry among Existing Competitors'' , he documented that higher rivalry among existing competitors which takes many forms including the fight for market share erodes the profitability of an industry especially in slow growth market with numerous competitor who are equal in size and power.

2.3.6 Corporate Philanthropy

The World Business Council on Social Development (2008) describes corporate social philanthropy as the continuing commitment by businesses to behave ethically and contribute to economic development while improving the quality of life of the workforce, their families,

local communities and society in general. Kerubo (2011) carried out research on corporate philanthropy as determinant of profitability of commercial banks in Kenya. From the study, she observed that there are ways in which expenditure on corporate social responsibility may translate into increase in the value of the company.

For example, a company that decides to become more energy efficient will not only have positive impact on the environment but will also reduce its cost leading to higher profitability. Other activities bring reputational benefits that lead to higher profits, while others dissuade future action by the Government and other regulatory authorities that impose significant costs on the company also affect profitability. Petroleum Marketing Companies carryout several philanthropic activities for Example Total Kenya runs ECO programme which is an environment conservation programme in Kenya encouraging people to plant trees ((Petroleum Insight, 4th Quarter 2013)

2.3.7 Technological Innovations.

Technological innovations is the process through which new or improved technologies are developed and brought into widespread use bringing efficiency in operations, new products and better customer care (Gitman, 2000). Muiruri (2013) carried out a study to determine the effect of technological innovations on the performance of commercial banks in Kenya. The study, which was a census, employed a descriptive cross sectional design and targeted all the commercial banks in Kenya. Secondary data in form of annual financial reports was obtained from Central Bank of Kenya. In addition, primary data was gathered from personnel from the customer care departments using a structured questionnaire. Data were analyzed using IBM SPSS Statistics 21.0 and involved computation of frequencies, descriptive statistics and multiple regression analysis. The response rate in the study was 79%. Most of the respondents affirmed the positive impacts of technological innovations including ease of access, convenience, user friendliness among others. The study showed that customer care employees at the banks valued technological innovations.

Moreover, the results revealed a positive and significant relationship between banks' performance in terms of profitability and adoption of various technological innovations including customer independent technology, customer assisted technology and customer transparent technology. The combined effect of the predictor variables (customer independent technology, customer assisted technology and customer transparent technology) was positively

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correlated with profitability (r=0.7) with 50.8% of the variations in profitability of banks in Kenya being explained by the model. The study underscored the need for banks to continuously invest in technological innovations for them to remain highly competitive.Companies in the banking sector in Kenya and communication sector have realised significant growth due to use of technological innovations. For example MPESA and mobile phones has revolutionised banking industry in Kenya. Petroleum Marketing Companies allow customers to pay using MPESA and credit cards.

2.4 Empirical Evidence

Many researchers have studied working management from different views in different economies. This section will highlight some of the studies done internationally and locally.

2.4.1 International Evidence

To test the relationship between working capital management and corporate profitability, Deloof (2003) used a sample of 1,009 large Belgian non-financial firms for a period of five years from 1992-1996. By using correlation and regression tests, he found significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Based on the study results, he suggests that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories.

Velnampy (2006) examined the relationship between financial position and profitability of public quoted companies in Sri Lanka. He took a sample of 25 public quoted companies in Sri Lanka and used the Altman Original Bankruptcy Forecasting model for data analysis. His finding suggests that, out of 25 companies, only 4 are in the condition of going into bankruptcy in the near future. He also found out that earnings/total asset ratio, market value of total equity/book value of debt ratio and sales/total assets in times are the most significant ratios in determining financial position of quoted companies.

Ganesan (2007) analysed the working capital management efficiency of firms from telecommunication equipment industry in the US. The relationship between working capital management efficiency and profitability is examined using correlation and regression analysis. ANOVA analysis was done to study the impact of working capital management on

profitability. Using a sample of 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001-2007, this study found evidence that even though "days working capital" is negatively related to the profitability, it is not significantly impacting the profitability of firms in the telecommunication equipment industry in USA.

Stephanu, Elfanu and Lois (2008) investigated the effect of working capital management in an emerging market. They analysed firms listed in the Cyprus stock exchange for the period 1998-2007. Using Multivariate regression analysis, their result supported their hypothesis. The result indicated that cash conversion cycle and all its major components namely day's sales outstanding and creditors payment period are associated with a firm's profitability.

Samiloglu and Demirgunes (2010) analysed the effects of working capital management on firm's profitability in Turkey for period 1998-2007. Empirical results showed that accounts receivable period, inventory turnover period and leverage significantly and negatively affect profitability. They also proved that cash conversion cycle, size and fixed financial assets had no statistically significant effect on profitability.

Agan, Akbas, Ozsozgun and Durer (2010) carried out a study to provide empirical evidence on the effects of working capital management on the profitability of selected companies in the Istanbul Stock Exchange for the period of 2005-2008. The panel data methods were employed in order to analyse the mentioned effects. Results of the study showed a company's return on assets is increased by shortening number of day's accounts receivable, accounts payable and number of days of inventory. And reducing cash conversion cycle provides positive contribution to company's return on assets. The estimation results indicate that working capital management is exceptionally vital for a company when it comes to the control variables; while a company's size has positive effect on profitability, its debt ratio negatively affects its profitability.

Shamar and Kumar (2011) carried out a study to examine the effect of working capital on profitability of Indian firms. They collected data from a sample of 263 non-financial BSE 500 firms listed at the Bombay stock exchange from 2000 to 2008 and evaluated the data using OLS multiple regression. The findings of the study significantly depart from the various international studies conducted in different markets. The result revealed that working capital management and profitability is positively correlated for Indian Companies. The study further revealed that inventory of number of days accounts payable are negatively correlated with a

firm's profitability, whereas number of days accounts receivable and cash conversion period exhibit a positive relationship with corporate responsibility.

Gomes (2013), analysed the relationship between working capital management and firm's profitability for Portugal. He used a database combining firm-level financial data with a matched employer –employee data, for the period from 2004 to 2009, obtaining a sample of 106, 961 observations corresponding to 41, 536 firms. The relationship between working capital and profitability is analysed using panel data methodology, applying fixed effect model with robust standard error. The results showed that there is a concave relationship between working capital management and profitability, indicating that firms have optimum working capital levels where firms should stand to maximise profitability.

Agha (2014) carried out study to test the impact of working capital management and profitability of Glaxo Smithline Pharmaceutical Company registered in Karachi stock Exchange for the period of 1996-2011. Return on Asset was used to measure profitability and accounts receivable turnover, creditor's turnover, inventory turnover and current ratio as working capital management criteria. He used secondary data and used regression analysis to analyse the data. The result show significant impact of the working capital on profitability of the company. Therefore manager may enhance profitability of their firms by minimizing inventory turnover, accounts receivable ratio and by decreasing creditors turnover ratio but there is no significant effect of increasing or decreasing the current ratio on profitability.

2.4.2 Local Evidence

In the Kenyan context, a study of the influence of working capital management has been carried out by many scholars; Kithii (2008) studied the relationship between working capital management and profitability of listed companies in the Nairobi Stock. The study used secondary data obtained from annual reports and financial statements of companies listed on the Nairobi Stock Exchange (NSE). A sample of 24 companies listed on the (NSE) for a period of six (6) years from 2001 – 2006, were studied to determine the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period and cash conversion cycle on the gross operating profitability.

Current ratio, size of the firm (measured in terms of natural logarithm of sales), fixed financial assets to total assets ratio and debt ratio were used as control variables. Pearson‟s correlation and regression analysis (pooled least squares) were used for analysis. The results show that

there is a statistical significant negative relationship between variables of working capital management and the profitability of firms except for the average payment period which showed a positive relationship. This means that managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component of working capital management (accounts receivables, accounts payables and inventory) at an optimal level.

Mathuva (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study were that: i) 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, ii) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and iii) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Mutungi (2010) carried out a study on thee relationship between working capital management policies and financial performance of oil marketing firms in Kenya. The design came up with a regression model with the dependent variable being the net operating income with independent variables including Average collection period, inventory turnover period, average payment period, current ratio, debt ratio and natural logarithm of sales. The population for the study focused on the oil marketing firms who are members of Petroleum Institute of East Africa, analyzing financial statements for the 4 years from the year 2006 to 2009. The analysis includes statistics like mean, correlation, regression analysis, ANOVA and coefficients statistics. Analysis of the questionnaire was done and the findings represented in tables, graphs and pie charts. The study found out that the identified independent variables affect the performance by 56.7%, and that the oil marketers reviewed apply aggressive working capital policy.

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

from 2003-20069 was studied. The average stock price was used to measure the value of the firm. The regression model indicated that there was some relationship between working capital and a firms value while the result of pearson correlation indicated negative relationship between average cash collection period, inventory turnover in days, cash conversion cycle and the value of the firm. Wanjohi (2011) assessed relationship between working capital management and profitability of insurance companies in Kenya. The study covered a sample of eighteen (18) insurance companies. The data covered a period of five years starting from 2005 to 2009. The research used secondary sources of data obtained from the insurance companies' websites, AKI, CMA and NSE. The data collected was analyzed using descriptive and quantitative techniques. Descriptive analysis was used to describe relevant aspects and provide detailed information about each variable.

The variables relating to working capital management in the case of a manufacturing firm includes: cash conversion cycle, accounts receivables period, inventory period, and leverage. Return on assets on the other hand was taken as a measure of profitability. This study utilized the following variables: return on assets, accounts receivables period and leverage. The findings of this study show that there is a positive relationship between working capital management and profitability in the insurance industry in Kenya. It also shows that when accounts receivable period increases it will have a positive impact on profitability. It further indicates that if debt ratio is increased, then profitability would increase

Runyora (2012) carried out a study to establish the impact of Working Capital Management on Profitability as evidenced in the oil industry in Kenya. The research design adopted was cross-sectional study in which data was gathered over the period 2007 to 2011. The study was carried out through the use of secondary data as detailed in oil industry in Kenya annual reports. The researcher obtained the data from the financial statements in their annual report. The population of the research consisted of all the 30 oil companies in Kenya registered with Petroleum Institute of East Africa (PIEA) within Nairobi and its environs. The data collected was analyzed by use of Microsoft Excel 2010 and Statistical Package for Social Sciences (SPSS) Version 17. Regression analysis was used to determine the relationship between working capital management and profitability. The Chi-square test (χ^2), a non-parametric test was used to test the goodness of fit, test the significance of association between two attributes, and test the homogeneity or the significance of population variance. It was also established that most of the profits of oil firms in Kenya is attributable to working capital management. The study concludes that there exists relationship between Working Capital Management and

Profitability of oil firms in Kenya; leverage was found to positively influence the profitability of oil firms in Kenya. The study recommends that for oil firms in Kenya to remain profitable, they should employ working capital management practice that will help in making decisions about investment mix and policy, matching investments to objectives, asset allocation for institutions, and balancing risk against profitability.

Mwangi (2013) established the relationship between working capital management and financial performance of manufacturing firms listed in NSE. The research used both descriptive and quantitative research design. The population of interest in this study constituted all manufacturing companies quoted at the NSE for the period of five years from 2007 to 2011.The quantitative research approach was employed to arrive at the findings of the study. From the regression models, the study found out that inventory turnover in days has negative relationship with Return on Equity which means that companies 'financial performance can be increased by reducing inventory in days.

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

2.5 Summary of Literature Review

From the theoretical literature review, scholars have come up with theories on Cash, inventories and accounts receivable management however no many theories and models have been developed on accounts payables management which is a source of cheap financing for organizations. From the empirical review above, it is evident that working capital management affects profitability of the firm. Some studies like Ganesan (2007) found no significant relationship between working capital management and profitability. Samiloglu and Demirgunes (2008) found that cash conversion cycle, size and fixed financial asset has no significance statistical relationship with profitability.

Other scholar agreed that there is a relationship between working capital management and profitability but not agreeing on the direction of the relationship. Some found positive relationship while other found negative relationship. Local scholars however tend to concur that working capital affects profitability and the direction of the effect. The two studies done in the oil industry by Mutungi (2010) and (Runyora2012) covered the periods 2006 to 2011. There is therefore no current study on this industry creating a knowledge gap that this study is going to address.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section describes the methodology that was used in this study. The specific issues addressed includes, research design, target population, sampling plan, data collection and data analysis.

3.2 Research Design

Out of the basic research design methods namely: exploratory, descriptive and causal research designs, the study adopted a descriptive design in analyzing the various working capital practices of the various oil marketing companies in Kenya. Descriptive studies give descriptions of phenomena or characteristics associated with a subject population (the who, what, when, where and how of a topic). The other objectives are the estimation of the proportions of a population that have these characteristics and discovery of association among different variables (Cooper and Schindler, 2006)

Descriptive studies are not only restricted to fact findings, but often result in formulation of important principles of knowledge and solution to significant problems. This method portrays the facts as they are (Mugenda & Mugenda, 2003).

3.3 Population

Cooper and Schindler (2006) describe population as the total collection of elements about which one wish to make some inference. The target population was all the 236 licensees as per the Energy Regulatory Commission license Register as at 31st December 2013.

3.4 Sample

A sample size of 10 firms whose total market share is 81.9% was selected. Purposive sampling was used to select the firms as listed in the quarterly market share report by the Institute of Petroleum Studies for analysis as at 31st December 2013 (Appendix 1).

3.5 Data Collection

Given the nature of this study, historical data was most appropriate as the study was trying to establish the relationship between working capital management practices and profitability of these companies. Data was obtained from the Audited Statement of Income and Expenditure, and Statement of financial position which contain data on profit after tax, revenue, current assets, current liabilities and fixed assets of these companies for the past four years from 2010 to 2013.

3.6 Data Analysis

The study intended to find out the relationship between working capital practices in Petroleum Marketing Companies in Kenya and profitability of these companies. The profitability of these companies measured by Return on Total Assets was analyzed. The following ratios was calculated for the last four years and compared with the Return on Assets to establish any relationship, receivables collection period, inventory conversion period, average payment period, current ratio and current asset to total assets ratio.

3.6.1 Analytical Model

A Multiple linear regression analysis was used to get the relationship working capital management and Profitability of Petroleum Marketing Companies in Kenya.

The basic model is $Y=\beta o+\beta i \chi i+\acute{\epsilon}$ where the value of the dependent variable Y a linear function of the corresponding value of the independent variable xi in the ith observation. The slope of Y βi is the change in Y for I unit change in X. The Intercept, βo, is the value for the linear function when it crosses the Y axis and $\acute{\epsilon}$ is the error term.

The specific model was as follows:

$$Y=\beta_0+\beta_1\chi_1+\beta_2\chi_2+\beta_3\chi_3+\beta4\chi_4+\beta_5\chi_5+\beta_6\chi_6+\beta_7\chi_7+E$$

Y –Is the profitability measured by return on total assets=<u>Net Income</u>
Average Total Assets

βo- Is a constant, the value of Y when all X values are Zero.

Where $\beta1$-$\beta7$ is the constant representing the direction and extent to which each variable influences performance of the firm.

X_1 (RCP)-Receivables collection period. =Accounts receivables*Days in a year.

<div align="center">Credit Sales</div>

X_2 (ICP) - Inventory Conversion Period. = Inventory*Days in a year

<div align="center">Cost of Sales</div>

X_3 (APP)-Average Payment Period. = Creditors *Days in a year

<div align="center">Purchases</div>

X_4 (CR)-Current Ratio. =Current Assets

<div align="center">Current Liabilities</div>

X_5 (CATA)-Current Asset to Total Asset Ratio. = Current Assets

<div align="center">Total Assets</div>

X_6 (L) - Leverage as measured by debt to equity ratio. = Debt

<div align="center">Equity</div>

X_7 (U)-Size as measured by value of capital employed. = Total Assets less current liabilities.

E-The error term.

The variables were restated in terms of their standard scores. They were standardized to their beta weights (β). Beta weights indicate the relative importance of the associated x values particularly when the predictors are unrelated. The value of the regression co efficient states the amount that Y varies with each unit change of the associated x variable when the effect of all other variables are held constant.

3.6.2 Test of Significance.

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

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents analysis and findings of the research. The study used both descriptive and inferential statistics to analyze the data found. Data analysis and information was collected using data collection sheets. The data has been presented mainly by tables, graphs and pie-charts then analyzed and interpreted under headings.

4.2 Response Rate

From the study population target of 10 companies, 10 companies were used for analysis representing 100% of the sample size. The data was collected from the firms as listed in the quarterly market share report by the Institute of Petroleum Studies for analysis as at 31st December 2013 (Appendix 1).

4.3 Pilot Test Results

To establish validity, the research instrument was given to experts who were experienced to evaluate the relevance of each item in the instrument in relation to the objectives. The same were rated on the scale of 1 (very relevant) to 4 (not very relevant). Validity was determined by use of content validity index (CVI). CVI was obtained by adding up the items rated 3 and 4 by the experts and dividing this sum by the total number of items in the questionnaire. A CVI of 0.854 was obtained. Oso and Onen (2009), state that a validity coefficient of at least 0.70 is acceptable as a valid research hence the adoption of the research instrument as valid for this study.

For reliability analysis Cronbach's alpha was calculated by application of SPSS. The value of the alpha coefficient ranges from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = poor, 4 = excellent). A higher value shows a more reliable generated scale. Cooper & Schindler (2008) indicated 0.7 to be an acceptable reliability coefficient. Since, the alpha coefficients were all greater than 0.7, a

conclusion was drawn that the instruments had an acceptable reliability coefficient and were appropriate for the study.

4.4 Descriptive Statistics and Data Distribution

The table below presents the descriptive statistics and the distribution of the variables considered in this research: Receivable Collection Period (RCP), Inventory Conversion Period (ICP), Average Payable Period (APP), and Current Ratio (CR),Current Asset Total Asset Ratio(CATA),The descriptive statistic considered were minimum, maximum, mean, standard deviation, Skewness and kurtosis.

The study showed that Profitability which was a representation of return on assets (ROA) had a mean of 0.225 and standard deviation of 0.157. The return on assets was on average, 22.5% of the petroleum companies' (total assets − financial assets). However, the value went highs of 73% and lows of up to 1%. Mean value of average payable period (APP) was 248.4 which denote that the petroleum marketing companies took an average of 248 days to pay up their financial obligations. However, it took some of these petroleum companies as short as 78 days or as long as 472 days to honour their financial liabilities to those due payable; in this case, their crude oil suppliers. The study also showed that the Receivable Collection Period was on average (RCP) 106.7 days. This was approximately 107 days. This indicated that the approximate amount of time that it took for the petroleum marketing companies to receive payments owed, in terms of receivables, from its customers and clients was 107 days.

This value was however noted to go up to highs of 378.68 days and lows of 21.88 days. On average, it was noted also that the Current Asset total Asset Ratio (CATA) which is the total amount of debt relative to assets had a mean of 1.0456 and a standard deviation of 0.55042. The mean was noted to go up to highs of 2.41 and lows of 0.17. Assets were used as control variables; CR which is a traditional measure of liquidity is on average 1.27, with standard deviation of 0.65. The leverage which is measured as a debt to the equity ratio was noted to have a mean of 144.39 and a standard deviation of 98.997.the Mean was however seen to go up to highs of 435.08 and lows of up to 28.13.From the study it was also noted that the size which is measured by the value of capital employed was calculated to have an average of 89.576 and a standard deviation of 76.857.The value was noted to go up to highs of 321.853 and lows of 23.215.

Table 4.1: Descriptive Statistics

	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
Profitability(return on assets)	.01	.73	.2250	.15750	.900	.289	.787	.570
Current Ratio(CR)	.27	3.85	1.2707	.65285	1.451	.289	3.779	.570
CATA	.17	2.41	1.0456	.55042	.366	.289	-.565	.570
RCP	21.88	378.68	106.7328	58.68438	1.529	.289	5.615	.570
APP	78.01	472.39	248.4347	102.59900	-.183	.289	-1.022	.570
LEV	28.13	435.08	144.3934	98.99683	1.378	.289	1.755	.570
SIZE	23.215	321.853	89.576	76.857	1.989	.279	5.005	.570

Source: Research Findings

4.4 Correlation Analysis

4.4.1 Regression Models

Regression analysis was considered to measure the relationship between individual independent variables (receivable collection period(RCP), average payable period(ACP), inventory conversion period(ICP) ,Average payment period(APP), Current ratio(CR),Current asset total asset ratio(CATA),Leverage(L),Size(U)and dependent variable profitability(which is measured by return on total assets). The regression model was as shown below

$Y=\beta0+\beta1\chi1+\beta2\chi2+\beta3\chi3+\beta4\chi4+\beta5\chi5+\beta6\chi6+\beta7\chi7+E$

Y –Is the profitability measured by return on total assets=<u>Net Income</u>

Average Total Assets

βo- Is a constant, the value of Y when all X values are Zero.

Where β1-β7 is the constant representing the direction and extent to which each variable influences performance of the firm.

X_1 (RCP)-Receivables collection period. =<u>Accounts receivables</u>*Days in a year.

Credit Sales

X_2 (ICP) - Inventory Conversion Period. <u>= Inventory</u>*Days in a year

<div align="center">Cost of Sales</div>

X_3 (APP)-Average Payment Period. = Creditors *Days in a year

<div align="center">Purchases</div>

X_4 (CR)-Current Ratio. =Current Assets

<div align="center">Current Liabilities</div>

X_5 (CATA)-Current Asset to Total Asset Ratio. = Current Assets

<div align="center">Total Assets</div>

X_6 (L) - Leverage as measured by debt to equity ratio. = Debt

<div align="center">Equity</div>

X_7 (U)-Size as measured by value of capital employed. = Total Assets less current liabilities.

E-The error term.

R value in Table 4.3 denotes the correlation coefficient between dependent and independent variables; that is, if there is a linear relationship and the nature of the relationship if at all exists. Coefficient values 0.679, 0.636, 0.636 and 0.635 were established in first to fourth regression models respectively. This indicated a positive, strong and significant correlation between profitability and working capital management with the independent variables. R-square values present the strength of the relationship between profitability and independent variables.

From the adjusted determination coefficients, generally it was noted that there was a strong positive correlation between dependent variable (profitability) and independent variables. Adjusted R-square values between 0.349 and 0.412 were established. Their R-squared are higher reflecting the increased explanatory power of model. The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto-correlated since independence of the residuals is one of the basic hypotheses of regression analysis. Since DW statistics were noted to be close to the prescribed value of 2.0 for residual independence, it was accurate to conclude that there was no autocorrelation.

Analysis of Variance's (ANOVA) f-test was used to make simultaneous comparisons between two or more average values; this assisted in testing whether a significant relation exists between variables that is both the dependent and the independent variables. This enabled bringing out the significance of the regression model. Since the values were below 0.05, it can be concluded that the regression models were significant.

Table 4.2: Regression Coefficients

	Dependent Variable: Return on Assets(ROA)			
	(ACP)	(ICP)	(APP)	(SIZE)
Constant	-1.234***	-1.484***	-1.322***	-1.396***
Receivable Collection Period(RCP)	-.00074**			
Inventory Conversion Period(ICP)		9.613E-05**		
Average Payable Period(APP)			-1.017.E-04*	
L(leverage)	.069***	0.074***	.069***	.071***
Current Asset Total Asset Ratio (CATA).	.022	.057	.057	.045
Current Ratio	.005	.030	0.0202*	.029
R	0.679	0.636	0.636	0.635
R-squared	.460	.404	.405	.403
Adjusted R-squared	.412	.351	.352	.349
Durbin-Watson	1.792	1.960	1.915	1.969
F-Value	9.558***	7.593***	7.616***	7.552***
N	62	62	62	62

***. Significant at the 0.01 level; **. Significant at the 0.05 level; *. Significant at the 0.1 level

Source: Research Findings

Dependent Variable: profitability (Return on Assets)

Predictors: (Constant), Current Asset Total Asset ratio, leverage, Receivables Collection Period (RCP), Average Payable Period (APP), Inventory conversion period (ICP) and the Current Ratio

Table 4.3 shows that the regression coefficients of independent variables and in this case working capital management were significant: Receivables collection period, inventory conversion period and average payment period were at 95% confidence level, while average payment period at 90% confidence level. Current asset total asset ratio (CATA), CR, and LEV all show positive coefficient, however only the first two, that is, Current Asset Total Asset Ratio (CATA) and CR are significant at 90% and 99% level respectively.

4.4.2 Correlation Results

The study sought to establish the association between individual independent variables and profitability (which as measured by return on total assets) from the average values of the same

within the five year period (2009 – 2013). Pearson correlation coefficients were used to test the hypothesis for the study:

H01: Receivables Collection Period (RCP) does not negatively relate with profitability of petroleum marketing companies in Kenya

H02: Average payable period (APP) does not negatively relate with profitability of petroleum marketing companies in Kenya

H03: The current asset total asset ratio (CATA) do not positively relate with profitability of petroleum marketing companies in Kenya

H04: Inventory Conversion Period (ICP) does not negatively relate with profitability of petroleum marketing companies in Kenya

The result is presented in table 4.3 below:

Table 4.3: Correlation Matrix

Variables		RCP	ICP	APP	CR	CATA	L	U	Profitability
RCP	Correlation	1 --- .593***	1						
	Sig.	.000							
ICP	Correlation	.023	-.235*	1					
	Sig	.861	.066						
APP	Correlation	.100	.007	.384***	1				
	Sig.	.413	.953	.002					
CR	Correlation	-.119	-.404***	.121	-.322***	1			
	Sig.	.332	.001	.350	.007				
CATA	Correlation	-.298**	-.013	-.380***	-.349***	-.068	1		
	Sig.	.013	.917	.002	.003	.577			
L	Correlation	-.261**	-.283**	.048	-.352***	.117	.345***	1	
	Sig.	.030	.019	.713	.003	.339	.004		
U	Correlati	-	-	-.137	-.200*	.243	.432*	.486*	1

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	on	.301**	.500***			**	**	**	
	Sig	.012	.000	.287	.099	.045	.000	.000	.121
Profitability	Correlation	-.169**	-.175	-.343**	-.035	.066	.544**	-.282*	.350	1
	Sig.	.016	.150	.006	.778	.590	.000	.019	-.380***

Source: Research Findings

The study sought to establish the relationship between working capital management of Petroleum Marketing Companies and profitability of Petroleum Marketing Companies in Kenya. Pearson Correlation analysis was used to achieve this end at 99%, 95% and 90% confidence levels. The correlation analysis enabled the testing of study's hypothesis that working capital has a strong, positive and noteworthy effect on petroleum product marketing companies' profitability. Table 4.2 illustrates significant, negative but low linear relationships between the companies' profitability and: the receivables collection period (R = -0.169, p = .016); the inventory conversion period(R = -0.175, p = .150); Average payment period in days (R = -0.343, p = .006); , Credit ratio (R = -0.035, p = .0778).,Current asset total asset ratio(R=0.066 ,p=590) and Leverage measured as debt to equity ratio(R=-.282 ,p=.019)

Table 4.4: Annual Correlation Results

	2009	2006	2007	2008	2013
Profitability	0.006	-0.057	0.134	-0.148	-0.443
Current Asset total asset ratio(CATA)	0.112	0.432	0.167	0.058	0.331
ICP	-0.009	-0.101	-0.040	-0.005	-0.111
Size	-0.035	0.022	0.212	0.228	0.262

 Source: Research Findings

4.4.3 Goodness of Fit Statistics

The study sought to determine the goodness of fit for the regression analysis using the correlation coefficient between the overall independent variables and profitability and the coefficient of determination from the same. Coefficient of determination established the strength of the relationship between the two.

Table 4.5: Goodness of Fit Statistics

	2009	2006	2007	2008	2013
Observations	28	28	28	28	28
DF(degrees of freedom)	23	23	23	23	23
R² (determination coefficient)	0.031	0.249	0.074	0.163	0.519
Adjusted R²	-0.137	0.119	-0.087	0.017	0.435
Durbin-Watson (DW) Statistic	1.812	1.839	1.747	1.718	1.995

Source: Research Findings

Table 4.5 illustrates that the strength of the relationship between profitability and independent variables Current Asset total Asset ratio (CATA), Inventory Conversion Period (ICP) and size). From the determination coefficients, it can be denoted that there is a weak relationship between dependent and independent variables in the 2009-2008 datasets since the R^2 values were less than 0.25. There was, however, a moderately strong relationship between the two variables in the 2013 dataset. Using the adjusted R^2 value which is a correction to the R² by taking into account the number of variables used in the model, the study found a moderately strong relationship in the 2013 dataset. The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated since independence of the residuals is one of the basic hypotheses of regression analysis. Being that the DW statistics were close to the prescribed value of 2.0 for residual independence, it can be concluded that there was no autocorrelation.

4.4.4 Regression Analysis

From the finding of the study in the above table, the following regression equations were established by the study:

Table 4.6: Regression Analysis - 2009

	Value	Standard error	T	Pr > |t|
Intercept	0.773	0.651	1.188	0.247
Current Asset total Asset ratio (CATA)	0.074	0.476	0.155	0.878
Inventory conversion period(ICP)	0.064	0.076	0.837	0.411
Average payment period(APP)	-0.0103	0.220	0.468	0.644
Size	0.041	0.073	-0.564	0.578

The established regression equation for year 2009:

Profitability = 0.773 + 0.0738* Current Asset total Asset ratio (CATA)+ 0.0639*Inventory conversion period(ICP) + 0.103*Average payment period -0.0413*Size

From the finding in the above table the study found that holding Current Asset total Asset ratio (CATA), Inventory Conversion Period (ICP), Average payable period (APP) constant l was 0.773. The study also found that a unit increase in current asset total asset ratio (CATA) will lead to a 0.074 increase in profitability, a unit increase in Inventory conversion period (ICP) will lead to an increase in profitability by 0.0639, a unit increase in average payment period (APP) will lead to a decrease in profitability by a factor of 0.0103 and lastly it was noted a unit increase in size which is measured by the value of capital employed will lead to 0.041 increase the profitability. The results are presented in Figure 4.2, which further accentuate the fact that current asset total asset ratio (CATA) followed by Inventory conversion period (ICP) would have the highest positive effect on Profitability.

Figure 4.1: Profitability/Standardized Coefficients – 2009
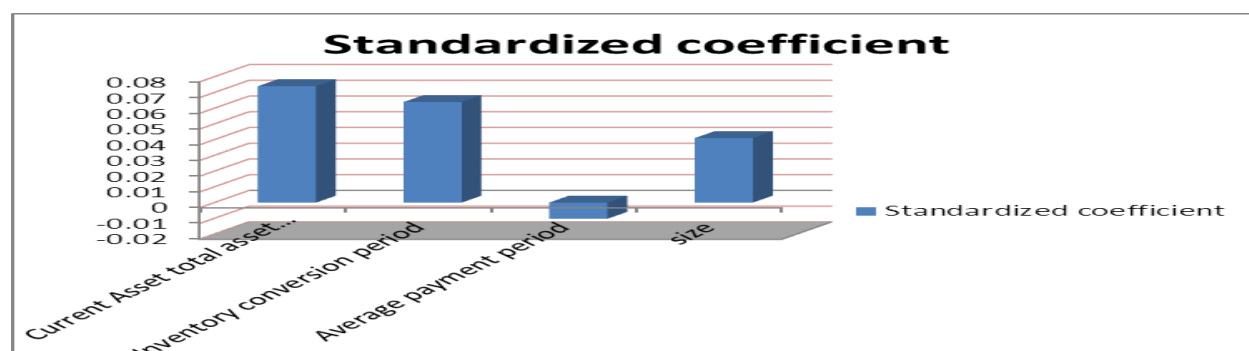
Table 4.7: Analysis of Variance - 2009

Source	DF	Sum of Squares	Mean squares	F	Pr > F
Model	4	0.035	0.009	0.186	0.943
Error	23	1.087	0.047		
Corrected Total	27	1.122			

Analysis of Variance (ANOVA) was used to make simultaneous comparisons between two or more means; thus, testing whether a significant relation exists between variables (dependent and independent variables). This helps in bringing out the significance of the regression model.

The ANOVA results presented in Table 4.7 shows that 2009 regression model used in the study has a margin of error of 0.943. This indicates that the model has a probability of 94.3% of giving false prediction. The t-significance presented in Table 4.6 also shows a high margin of error in using the model coefficients. From the finding of the study in the above table the following regression equation was established by the study for the year 2006.

Table 4.8: Regression Analysis - 2006

	Value	**Standard Error**	**t**	**Pr > |t|**
Intercept	0.616	0.589	1.045	0.307
Current asset total Asset ratio(CATA)	0.665	0.661	-1.006	0.325
Inventory Conversion Period(ICP)	0.951	0.356	2.672	0.014
Average Payment period(APP)	-0.076	0.151	-0.507	0.617
Size	-0.019	0.064	-0.295	0.770

The established regression equation:

Profitability= 0.616 -0.665*CATA + 0.951*ICP - 0.076*APP -0.019*Size

Source: Research Findings

From the finding in the above table, the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant in relation to the dependent variable profitability was noted to be 0.616. The study found that a unit increase in the inventory conversion period will cause a 0.951 increase in profitability. Table 4.8 further indicates that a unit increase in current asset total asset ratio (CATA) will lead to a decrease in profitability by 0.665, a unit increase in average payment period will lead to a decrease in profitability by a factor of 0.076 and a unit increase size will lead to a decrease in profitability by a factor of 0.019. Figure 4.3 shows that growth will have a positive effect on capital structure while profitability, asset structure and size lead to decrease in that reducing order.

Figure 4.2: Profitability (return on assets) / Standardized Coefficients – 2006

Source: Research Findings

Table 4.9: Analysis of Variance - 2006

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	4	0.306	0.076	1.909	0.143
Error	23	0.921	0.040		
Corrected Total	27	1.227			

Source: Research Findings

ANOVA statistics presented in Table 4.9 illustrates that the regression model has an error margin of 0.143. That is, the probability of the 2006 regression model having wrong prediction is 14.3%. The t-significances presented in Table 4.8 shows that only the inventory conversion period(ICP) would give significant results (p=0.014).

From the finding of the study in the above table the following regression equation was established by the study for the year 2007:

Table 4.10: Regression Analysis - 2007

| Source	Value	Standard error	t	Pr > |t|
Intercept	-0.104	0.622	-0.168	0.868
Current Asset total asset ratio(CATA)	-0.021	0.563	-0.037	0.971
Inventory conversion period(ICP)	0.184	0.219	0.841	0.409
Average payment period(APP)	-0.016	0.155	-0.101	0.921
Size	0.058	0.067	0.869	0.394

Source: Research Findings

The established regression equation for year 2007:

Profiatbility = -0.104 – 0.021*Current asset total asset ratio (CATA) + 0.184*inventory conversion period (ICP)– 0.016*Average payment period(APP) + 0.058*Size

From the finding in the above table the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant in relation to profitability was -0.104. The study found that a unit increase in Inventory conversion period (ICP) will cause a 0.184 increase in profitability and a unit increase in Size will lead to a 0.058 increase in profitability. The study found that a unit increase in Current Asset total asset ratio (CATA) will lead to a decrease in profitability by a factor of 0.021 and a unit increase in Average payment period (APP) would cause a 0.016 decrease in profitability. Figure 4.4 shows that inventory conversion period (ICP) and size of company would have the highest impact on profitability of petroleum products marketing companies.

Figure 4.3: Profitability / Standardized Coefficients – 2007
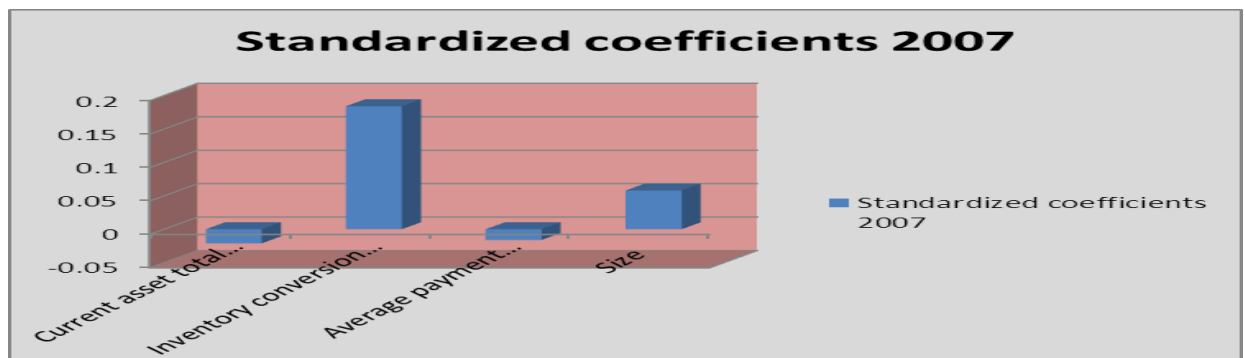
Source: Research Findings

Table 4.11: Analysis of Variance - 2007

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	4	0.074	0.018	0.459	0.765
Error	23	0.922	0.040		
Corrected Total	27	0.995			

Source: Research Findings

ANOVA statistics presented in Table 4.11 for 2007 regression model shows that model has a 76.5% probability of error in predicting what it purports to predict. The t-significances of the regression coefficients also presented insignificant results ($p > 0.05$).

From the finding of the study in the above table the following regression equation was established by the study for the year 2008:

Table 4.12: Regression Analysis - 2008

Source	Value	Standard error	t	Pr > |t|
Intercept	-0.526	0.547	-0.960	0.347
Current asset total asset ratio(CATA)	-0.639	0.376	-1.697	0.103
Inventory conversion Period(ICP)	0.048	0.093	0.512	0.613
Average payment period(APP)	0.048	0.150	0.318	0.754
Size	0.113	0.058	1.940	0.065

Source: Research Findings

The established regression equation

Profitability = -0.526 - 0.639*Current Asset total asset ratio (CATA) + 0.048*inventory conversion period (ICP) + 0.048*average payment period(APP) + 0.113*Size

From the finding in the above table the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant profitability was -0.526. The study found that a unit increase in growth and asset structure would both cause 0.048 increases in leverage and a unit increase in size will lead to an increase in profitability by 0.113. However, the study found a negative increase in profitability, of value -0.639, through a unit increase in current asset total asset ratio (CATA) holding other factors constant. Figure 4.5 shows that a company size and current asset total asset ratio would have the highest effect on profitability though the former would have a positive effect and the latter negative effect.

Figure 4.4: Profitability Standardized Coefficients – 2008

Source: Research Findings

Table 4.13: Analysis of Variance - 2008

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	4	0.162	0.041	1.119	0.372
Error	23	0.833	0.036		
Corrected Total	27	0.995			

Source: Research Findings

Table 4.13 presents ANOVA statistics for the 2008 regression model. The ANOVA statistics presents a high error margin (p=0.372). Thus, the model would most likely (37.2%) present a wrong prediction of the relationship between profitability and independent variables. The t-significances shows that only size would be significant at 90% confidence level (p=0.065)

From the finding of the study in the above table the following regression equation was established by the study for the year 2013

Table 4.14: Regression Analysis - 2013

Source	Value	Standard error	T	Pr > |t|
Intercept	-1.304	0.495	-2.632	0.015
Current Asset total asset ratio(CATA)	-1.623	0.401	-4.049	0.000
Inventory conversion period(ICP)	-0.005	0.028	-0.182	0.857
Average payment period(APP)	0.025	0.138	0.184	0.855
Size	0.206	0.055	3.785	0.001

Source: Research Findings

The established regression equation:

Capital Structure = -1.304 - 1.623*current asset total asset ratio (CATA) − 0.0052*Inventory conversion period + 0.025*average payment period (APP) + 0.206*Size

From the finding in the above table the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant profitability was -1.304. The study found that a unit increase in average payment period will cause a 0.025 increase in profitability and a unit increase in size will lead to a 0.206 increase in profitability. It was also found by the study that a unit increase in Current asset total asset ratio will lead to a 1.623 decrease in profitability and a unit increase in inventory conversion period (ICP) will lead to a decrease in profitability by a factor of 0.005. Figure 4.6 also shows that size and current asset total asset ratio (CATA) would have the highest effect on profitability though on different directions with size having positive effect.

Table 4.15: Analysis of Variance - 2013

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	4	0.698	0.174	6.194	0.002
Error	23	0.648	0.028		
Corrected Total	27	1.346			

Source: Research Findings

ANOVA statistics presented in Table 4.15 shows that the 2013 is the most significant regression model between capital structure and factors (profitability, growth, asset structure and size). As shown by the f-significance, regression model is significant at 99% confidence level, that is, 0.002 margin of error. The t-significances presented in Table 4.14 shows that profitability and size would be significant at 99% confidence level.

4.5 Regression Modeling by Ownership

Table 4.4 shows that the regression coefficients of independent variables categorizing the linear relationship between working capital and profitability by ownership; whether the profitability is private or government-owned. Table 4.4 shows that privately owned petroleum marketing companies had a much stronger linear relationship between profitability and working capital management as shown by R-square value of 67.9% compared to government-owned that had R-square value of 37.9%.

This can be attributed to the fact that government owned companies are occasionally bailed out of operating from the red by the government coupled with bad corporate governance that rarely look into its working capital. A unit change in cash conversion cycle influenced profitability by -0.00006 among privately owned petroleum product marketing companies compared to -0.000106 among government owned petroleum products marketing companies

Table 4.16: Regression Modeling by Ownership

	Government	Private
Constant	2.269**	-1.790***
Current Asset total asset ratio(CATA)	-1.064E-04*	-5.943E-05*
Average payment period(APP)	-.101**	.094
Inventory conversion period(ICP)	.205***	.025
Current Ratio	.026	-.020
R	.616	.824
R-squared	.379	.679
Adjusted R-squared	.275	.599
Durbin-Watson	1.814	1.778
F-Value	3.662**	8.464***
N	36	26

***. Significant at the 0.01 level; ** Significant at the 0.05 level; *. Significant at the 0.1 level

Source: Research Findings

Dependent Variable: profitability (measured by return on total assets)

Predictors: (Constant), Current asset total asset ratio (CATA), Average payment period (APP), inventory conversion period (ICP) Current Ratio,

4.6 : Interpretation of the Findings

The study sought to evaluate the relationship between working capital management and profitability of Petroleum Marketing Companies in Kenya. The study findings established that the management of working capital involved managing inventories, accounts receivables, accounts payables and cash. This results were in line with Eljelly (2004), who tested the relationship between firm profitability and liquidity since working capital can be considered as an indication of firms' liquidity. The study used a sample of 929 joint stock companies in Saudi Arabia. The big difference in his paper from the previous paper is that he uses two measures, current ratio and cash conversion cycle, for liquidity. There are two significant study results found: first, firm's profitability has a negative relationship with its liquidity level, which is measured by current ratio. Second, cash conversion cycle is more important than current ratio that affects profitability as a measure of liquidity. Two study results stay stable over time

in the study sample. Moreover, the regression coefficients of independent variables categorizing the linear relationship between working capital and profitability by ownership; whether the profitability is private or government-owned.

Implementing an efficient and effective working capital management system is an excellent way for many companies to improve their earnings. The two main aspects of working capital management were found to be ratio analysis and management of individual components of working capital .The findings were as well in line with Ding, Guariglia and Knight (2012) who asksed whether good working capital management can make a difference in keeping fixed investment for firms even if firms have cash flow fluctuation and financial constraints. They expounded this question by using panel data of a sample of 116,000 Chinese firms of different ownership for the period 2000-2007. The study exhibits that those non-state owned firms have sensitivity of investment to cash flow, indicating that firms suffer from financial constraints. They also found out that even though with financial constraints, a firm with high working capital has low sensitivity to fixed capital investment to cash flow, suggesting an efficient Working Capital Management can help firms to relieve the pressure of financing constraints.

 The study findings also established that the main objective of managing working capital components was to achieve balance between profitability and risk that contributes positively to the firm's value, as supported by how working capital management affects firms' performance on small manufacturing firms examined by Padachi (2006). Return on asset is used to measure firms' profitability in the paper. The paper gives the relationship between working capital management and firms' profitability a further look and it can be distinguished from other papers because this study gives a detailed test on how each component of working capital management impacts on firms' performance. This can give managers more insight when making decision on working capital. The results show that the higher the investment in inventories and receivables, the lower the profitability is, and that cash conversion cycle is negatively related to the firms' profitability.

The study findings also found out that privately owned petroleum marketing companies had a much stronger linear relationship between profitability and working capital management as shown by R-square value of 67.9% compared to government-owned that had R-square value of 37.9%. This was in line with Garcia-Teruel and Marinez-Solano (2007) study of the importance of working capital management to corporate profitability by providing empirical evidence on the effects of working capital management on the profitability of Spanish firms. They demonstrated in their study how managers can improve profitability by shortening the

cash conversion cycle through inventory reduction and reduction in the outstanding number of day's receivables. Equally a question of 'Can holding cash in a reasonable level also affect the management of working capital and a firm's value? Autukaite and Molay (2011) tried to find out the relationship between cash holding and working capital and firm value separately. They took French listed companies as sample in their paper. The test shows that for an extra one Euro the company holds, is less one Euro for investors. The similar methodology is applied in the relationship between working capital and a firm's value. It shows that one Euro invested in cash or working capital is valued less than one Euro. The importance of cash holding and working capital management should not be underestimated by managers.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, summary of the main study findings is presented. The chapter also covers conclusions and recommendations of the study as well as suggestions for further research. The purpose of this study was to investigate the relationship between working capital management of Petroleum Marketing Companies and profitability of Petroleum Marketing Companies in Kenya. The following are the summary of the research findings upon which the conclusions and recommendations of the study were made.

5.2 Summary

The study sought to establish the relationship between working capital management of Petroleum Marketing Companies and profitability of Petroleum Marketing Companies in Kenya. From the determination coefficients, it could be denoted that there is a weak relationship between dependent and independent variables in the 2009-2008 datasets since the R2 values were less than 0.25. There was, however, a moderately strong relationship between the two variables in the 2013 dataset.   Using the adjusted R2 value which was a correction to the R² by taking into account the number of variables used in the model, the study found a moderately strong relationship in the 2013 dataset. The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated.

The results that were presented in Figure 4.2, further accentuated the fact that current asset total asset ratio (CATA) followed by Inventory conversion period (ICP) would have the highest positive effect on Profitability. From the findings in 2006, the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant in relation to the dependent variable profitability was noted to be 0.616.The study in 2006 noted also that growth had a positive effect on capital structure while profitability, asset structure and size lead to decrease in that reducing order. From the findings in the year 2007, the study found that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant in relation to profitability was -0.104.From this study it was noted that inventory conversion period (ICP) and size of company would have the highest impact on profitability of petroleum products marketing companies.

From the finding of the study in the year 2008, the study found holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant profitability was -0.526.From the study in this year it was noted that a company size and current asset total asset ratio would have the highest effect on profitability though the former would have a positive effect and the latter negative effect. From the findings of the study in the last year of study which was 2013 it was noted that holding Current asset total asset ratio, Inventory conversion period, average payment period (APP) and size constant profitability was -1.304. From the study it was also noted from the study that size and current asset total asset ratio (CATA) would have the highest effect on profitability though on different directions with size having positive effect.

5.3 Conclusion

From the results, possessing a lower average collection period is seen by the petroleum product marketing companies as optimal, since this means that it does not take them very long to turn its receivables into cash. This owes to the fact that these petroleum marketing companies need cash to pay off their own expenses (such as operating and administrative expenses) including suppliers who supply food products to them on credit. They also tend to have a longer average payment period so as to maintain a high current ratio and avoid cash flow problems. Monitoring the working capital is important for the petroleum product marketing companies' cash flow and its ability to meet its obligations when they come due. However, they optimize this to ensure that their credit worthiness is not tainted, take advantage of discounts including avoiding accruing interest rates unnecessarily.

The petroleum product marketing companies also monitor their inventory conversion period to ensure that it is a short as possible since conversion period is negatively correlated with profitability. If conversion period is long, the petroleum product marketing companies will take longer to pay off their suppliers and meet their financial obligation. The study also noticed that increasing the variable Size which was measured as the total assets less current liabilities led to increase in the dependent variable return on assets.

In summary, the findings from this study suggest that Petroleum Marketing Companies can improve their profitability by reducing their current asset to total asset ratio. These findings are generally in line with many previous studies done on working capital management such as those of Raheman and Nasr (2007), Deloof (2003), and Mathuva (2010).

5.4 Recommendations for policy

Based on the findings and results from the analysis of the study, a general recommendation would be for the petroleum product marketing companies to seriously rethink their corporate financial management practices in order to boost the financial performance and profitability and subsequently create value for stakeholders. This can be achieved by taking specific actions in the following areas;

Increasing the size variable, increasing the value of the total assets invested in the petroleum product marketing companies and reducing the liabilities of the companies will naturally increase the level of the variable. This was recommended mostly because it was noted that a positive and significant coefficient to the variable had a significant positive impact on the dependent variable return on assets (ROA).

On inventory conversion period in days, the petroleum product marketing companies, on average, 144 days to make total sales but this could be as short as 28 days and as long as 435 days. Whereas the study found positive relationship between inventory conversion period in days and return on assets on the petroleum marketing companies, it can be noted that in as much as maintaining higher inventory ensures companies have sufficient products that might result in more sales, the practice also attracts costs like storage, carrying, spoilages, insurance, and opportunity cost. On the other hand keeping low inventory may result in high liquidity.

As a result, petroleum marketing companies' managers have to adapt proper inventory control techniques such as economic order quantity (EOQ), depending on the nature of inventory they hold. Furthermore, the firms must create stronger linkage between stores, purchasing and marketing departments that enhances communications thereby providing each other with the relevant information that positively helps the firm in managing its inventory operations and minimizing costs.

5.5 Limitations of the Study

The main limitation of the study was the inability to include all petroleum product marketing companies in Kenya. The study focused entirely on 10 firms whose total market share is 81.9% was selected where a purposive sampling was used to select the firms as listed in the quarterly market share report by the Institute of Petroleum Studies for analysis as at 31st December 2013. The results of the study therefore may not necessarily reflect the true position for all petroleum product marketing companies in Kenya due to the differences in their supervision and reporting.

The time period captured in the study was also limited to the time licensing of all petroleum product marketing companies in Kenya. This meant that only data for some years was used. While all the data collected was used in the analysis, the limited period of time can portentially affect the interpretation of the findings.

5.6 Recommendation for Further Research

The study suggests that similar studies should be done on other company types as the relationship adduced does not conform to the rule of thumb or one-size-fits-all mantra as different industries and sectors have different operational environment. This might affect the relationship between working capital and the return on assets. There is need for further studies to carry out similar tests for a longer time period of time. This will help in observing the petroleum product marketing companies and the relationship between working capital management and the return on assets through to the earlier periods before liberalization when the petroleum product marketing companies had little competition and were subjected to political patronage with little accountability.

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APPENDICES

Appendix I: Descriptive Data

Petroleum product marketing companies	Year	Net Income	CS(log. turnover)	Sales Growth	CR	(LEV)Debt Ratio	ACP	APP	ITO	CCC
Kenya Petroleum Refineries Ltd (KPRL),	2009	0.4011	22.755		1.494	0.272	33.11	85.49	82.65	30.27
Kenya Pipeline Company (KPC)	2009	0.1551	21.600		1.968	0.374	138.65	359.74	124.69	-96.41
National Oil Corporation of Kenya (NOCK).	2009	0.2009	21.611		0.406	0.872	115.87	313.87	123.86	-74.14
Hared petroleum	2009	0.3573	20.880		1.021	0.954	153.69	350.62	57.37	-139.56
Oil Libya	2009	0.0896	21.264		1.222	0.542	129.02	156.57	80.22	52.68
Kenol/Kobil	2009	0.0080	16.453		1.6663	1.156	157.63	272.45	424.78	309.97
Kenya Petroleum Refineries Ltd (KPRL),	2010	0.5282	23.005	0.2836	1.4099	0.170	36.58	87.82	52.71	1.48
Kenya Pipeline Company (KPC)	2010	0.2790	21.830	0.2587	1.778	0.412	112.34	364.43	163.02	-89.07
National Oil Corporation of Kenya (NOCK).	2010	0.2223	21.694	0.0862	0.434	1.086	83.57	334.95	156.83	-94.55
Hared petroleum	2010	0.3086	20.825	-0.0538	0.979	1.138	127.25	263.82	67.00	-69.56
Oil Libya	2011	0.1441	21.486	0.2487	1.154	0.647	114.19	228.17	87.45	-26.53

Company	Year									
	0									
Kenol/Kobil	2010	0.2278	20.630		1.534	1.158	150.93	217.54	96.08	29.47
Kenya Petroleum Refineries Ltd (KPRL),	2010	0.0073	16.489	0.0370	1.172	1.152	127.09	356.78	435.08	205.39
Kenya Petroleum Refineries Ltd (KPRL),	2011	0.4517	23.034	0.0294	2.416	0.193	38.77	78.01	36.63	-2.61
Kenya Pipeline Company (KPC)	2011	0.1912	21.664	-0.1530	1.626	0.447	106.71	302.33	189.99	-5.63
National Oil Corporation of Kenya (NOCK).	2011	0.1280	21.635	-0.0573	0.846	1.277	74.42	197.75	127.78	4.45
Kenya Oil companies	2011	0.2743	20.854	0.0301	0.948	1.316	79.92	420.75	163.23	-177.59
Oil Libya	2011	0.1947	21.598	0.1187	1.100	0.599	111.79	221.93	93.98	-16.17
Kenol/Kobil	2011	0.2209	20.990	0.4334	2.226	1.002	78.98	98.97	84.73	64.73
Kenya Petroleum Refineries Ltd (KPRL),	2011	0.0096	16.791	0.3522	0.905	1.670	98.25	297.92	334.67	135.01
Kenya Pipeline Company (KPC)	2011	0.4683	23.179	0.1565	2.179	0.351	44.30	110.41	33.87	-32.24
Kenya Petroleum Refineries Ltd (KPRL),	2012	0.2076	21.780	0.1233	1.394	0.471	119.01	362.05	228.05	-14.99
Kenya Pipeline Company (KPC)	2012	0.1767	21.577	-0.0562	0.385	1.596	172.22	274.75	197.16	94.63
National Oil Corporation of Kenya (NOCK).	2012	0.4199	21.387	0.7028	0.974	1.067	134.14	323.05	103.75	-85.16
Shell	20	0.2072	21.592	-0.0063	0.69	0.943	143.4	266.2	119.4	-3.3

	Year									
	12					8		7	1	2	2
Oil Libya	2012	0.3928	21.332	0.4072	1.265	1.339	27.42	258.31	157.08	-73.80
Kenol/Kobil	2012	0.0136	17.880	1.9719	3.438	1.479	46.86	260.28	68.21	-145.21
Kenya Oil Companies	2012	0.3815	23.063	-0.1095	2.279	0.300	74.34	81.98	28.13	20.50
Kenya Petroleum Refineries Ltd (KPRL),	2013	0.0783	21.640	-0.1306	1.370	0.460	124.68	221.60	181.39	84.47
Kenya Pipeline Company (KPC)	2013	0.0989	21.613	0.0365	0.270	1.459	160.16	266.05	142.18	36.29
National Oil Corporation of Kenya (NOCK).	2013	0.1774	21.074	-0.2687	0.939	1.166	173.29	362.60	130.47	-58.85
Shell	2013	0.1278	21.451	-0.1313	1.058	0.692	142.50	317.47	211.24	36.27
Oil Libya	2013	0.2471	21.179	-0.1419	1.461	1.165	128.34	316.71	269.14	80.77
Kenol/Kobil	2013	0.0170	18.097	0.2427	1.481	1.315	43.36	311.06	112.58	-155.12
Kenya oil \Companies	2013	0.3782	23.206	0.1531	1.346	0.361	80.23	133.91	51.57	-2.11

Appendix II- Licensed Oil Marketing Companies in Kenya by percentage market share as at 31st December 2014

Company	%
Total	21.7
VIVO	18.9
KenolKobil	13.9
Libya Oil	6.2
Hashi	4.5
Nock	4.3
Engen	3.6
Gapco	3.4
Gulf	2.8
Petro	2.6
Others	18.1
Total	100

Source: Petroleum Insight. Magazine of the Petroleum Institute of East Africa, 2nd Quarter, 2014.