



Strathmore
UNIVERSITY

Strathmore University
SU+ @ Strathmore
University Library

Electronic Theses and Dissertations

2015

The effects of working capital management on profitability of public listed energy companies in Kenya

Musau Januaris Wangomba
Strathmore Business School
Strathmore University

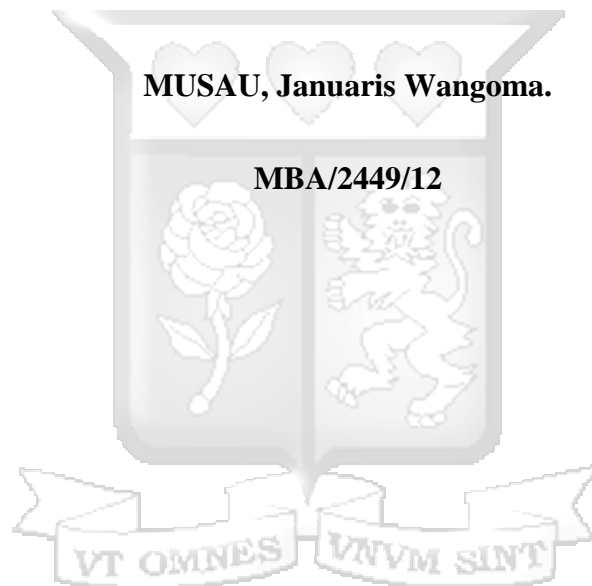
Follow this and additional works at: <https://su-plus.strathmore.edu/handle/11071/2474>

Recommended Citation

Musau, J. W. (2015). *The effects of working capital management on profitability of public listed energy companies in Kenya* (Thesis). Strathmore University. Retrieved from <http://su-plus.strathmore.edu/handle/11071/4724>

This Thesis - Open Access is brought to you for free and open access by DSpace @ Strathmore University. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of DSpace @ Strathmore University. For more information, please contact librarian@strathmore.edu

**THE EFFECTS OF WORKING CAPITAL MANAGEMENT ON
PROFITABILITY OF PUBLIC LISTED ENERGY COMPANIES IN KENYA**



**A Dissertation Submitted to Strathmore Business School, Strathmore University
in Partial Fulfillment of the Requirements for the degree of Masters in Business
Administration**

June 2015

DECLARATION

Declaration by the Candidate

This dissertation is my original work and all materials which are not my own have been cited and acknowledged. The work has not been presented for award of a degree in any other University.

MUSAU, Januaris Wangoma

MBA/2449/12

Signed: Date:

Declaration by Supervisor

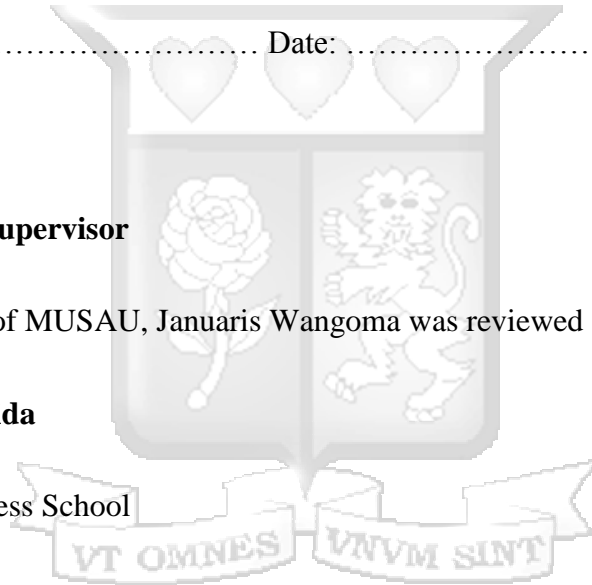
The Dissertation of MUSAU, Januaris Wangoma was reviewed and approved by:

Dr. Robert Mudida

Strathmore Business School

Strathmore University

Signed: Date:



ABSTRACT

The Kenyan energy sector is highly regulated by the government such that, among other things, the government sets all prices of energy products. This challenges attaining profits by only focusing on the external factors, thus, the need for internal measures like working capital management. The purpose of this study was to assess the effect of working capital management on the profitability of listed energy firms in Kenya. To achieve this purpose the study investigated the role of inventory management on the profitability; how cash conversion cycle affects profitability; the effect of account receivable days on profitability; and effect of account payable days on profitability of public listed energy companies in Kenya. An explorative design was used to conduct the study. Both secondary data and primary data were collected. In primary data, the researcher targeted senior managers concerned with working capital management, and employees from the accounts/finance department who interact with the variables of working capital. Stratified random sampling method was used to arrive to a sample size of 36 who were interviewed using a questionnaire. Secondary data was collected from financial statements of the four target companies for 7 years (2006-2013). The study used descriptive analysis and random effects regression to analyze data using STATA 12. Tables and graphs were used in presentation. The findings show that listed energy companies take 48.63 days to sell their inventory and they sell it 9.353 times a year. The companies have a cash conversion cycle of 1.1333 and take long to pay their creditors than they take to collect payment from their debtors. Inventory turnover ratio is not used by these companies to determine profits ($P=0.464$). The companies implement shorter cash conversion cycles to enhance their profits ($P=0.027$). Accounts receivable days has no effect on the profits of listed energy firms ($P=0.126$) while the companies take long to pay their creditors to enhance their profits ($P=0.031$). The study concludes that listed energy companies do not use inventory turnover ratio and accounts receivable days as determinants of net profit-related decisions and that managers of these companies reduce the number of days for converting assets into cash as well as take long to pay their creditors to enhance profits. The study recommends that managers of listed energy companies aspire to eliminate the time it takes to convert non-cash assets into cash by, for instance, introducing services that allow

customers to pay in advance-for instance using pre-paid cards and enhancing efficiency in billing. The companies should develop better relationships with their suppliers which will enable them make favourable agreements concerning the accounts payable and accounts receivable days.



TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
DEFINITION OF TERMS	x
ABBREVIATIONS	xi
ACKNOWLEDGEMENT	xii
DEDICATION	xiii
CHAPTER ONE: BACKGROUND TO THE STUDY	1
1.1 Introduction.....	1
1.2 Statement of the Research Problem	4
1.3 Research Objective	6
1.4 Sub-Objectives	6
1.5 Research Questions.....	6
1.6 Research Hypotheses	7
1.7 Significance of the Study.....	7
1.8 Scope of the Study	8
1.9 Study Outline	8
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Theoretical Review	9
2.2.1 Working Capital Theory.....	10
2.2.2 Inventory Management	13
2.2.3 Cash Conversion Cycle	16
2.2.4 Account Receivable and Accounts Payable	19
2.3 Empirical Literature	21
2.3.1 Inventory Management	21
2.3.2 Cash Conversion Cycle	24
2.3.3 Account Receivable and Accounts Payable	25
2.4 Research Gap	27
2.5 Conceptual Framework	29
2.6 Conclusion	31

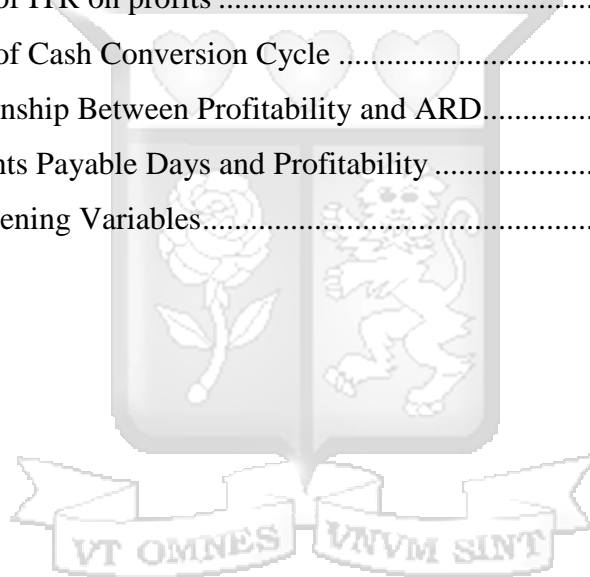
CHAPTER THREE: RESEARCH METHODOLOGY	32
3.1 Introduction.....	32
3.2 Research Design.....	32
3.3 Target Population.....	32
3.4 Sampling Technique	33
3.5 Sample Size.....	33
3.6 Data Collection Instruments and Procedures.....	34
3.7 Data Analysis.....	36
3.8 Research Quality.....	40
3.9 Ethical Considerations	41
3.10 Conclusion	41
CHAPTER FOUR: RESULTS, ANALYSIS, AND DISCUSSIONS	42
4.1 Introduction.....	42
4.2 Return Rate	42
4.3 Background Information of Respondents	42
4.3.1 Gender of Respondents	42
4.3.2 Cumulative Experience	43
4.3.3 Years Worked in Senior Management Level.....	44
4.3.4 Education Level.....	44
4.4 Descriptive Results	45
4.4.1 Inventory Management	45
4.4.2 Cash Conversion Cycle.....	47
4.4.3 Accounts Payables and Receivables	51
4.5 Profitability and Working Capital Management.....	52
4.5.1 Inventory Turnover and Profitability	52
4.5.2 Cash Conversion Cycle	53
4.5.3 Accounts Receivable Days.....	54
4.5.4 Accounts Payable Days.....	56
4.5.5 Intervening Variables	57
4.6 Conclusion	58
CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	59
5.1 Introduction.....	59

5.2	Summary of Findings.....	59
5.3	Conclusions.....	61
5.4	Recommendations.....	63
5.5	Recommendations for Further Study.....	64
	REFERENCES.....	65
	APPENDICES.....	76
	Appendix I: Introduction Letter.....	76
	Appendix II: Questionnaire.....	77



LIST OF TABLES

Table 3.1: Stratification of Population and Sample Size	34
Table 3.2: Test for Heteroskedasticity	37
Table 3.3: Hausman Test	39
Table 4.1: Respondent's gender.....	43
Table 4.2: Education Level.....	45
Table 4.3: Inventory Management.....	45
Table 4.4: Cash Conversion Cycle Statistics	48
Table 4.5: Accounts Payables and Receivables	51
Table 4.6: Effect of ITR on profits	52
Table 4.7: Effect of Cash Conversion Cycle	54
Table 4.8: Relationship Between Profitability and ARD.....	55
Table 4.9: Accounts Payable Days and Profitability	56
Table 4.10: Intervening Variables.....	57



LIST OF FIGURES

Figure 2.1 Working Capital Cycle	12
Figure 2.2 Conceptual Framework	30
Figure 4.1: Cumulative Experience of Respondents.....	43
Figure 4.2: Years Spent in Management.....	44
Figure 4.3: Frequency of Inventory Budgeting.....	46
Figure 4.4: Frequency of Review of Inventory Levels	47
Figure 4.5: Frequency of Billing Customers.....	49
Figure 4.6: Maximum Incentive Time for Customers to Pay their Bills	49
Figure 4.7: Period of Paying Creditors	50



DEFINITION OF TERMS

Accounts payable days	Also known as days payables outstanding (DPO), refers to the number of days it takes a company to pay its creditors (Akoto, Awunyo-Vitor and Angmor, 2013).
Accounts receivable days	Also known as days sales outstanding (DSO), refers to the time (in days) a firm takes to collect cash from its debtors (Akoto <i>et al.</i> , 2013).
Cash Conversion Cycle	Refers to the length of time a company takes to convert its current assets into cash (Akoto <i>et al.</i> , 2013).
Energy firms/companies	Include all industries dealing with the production and sale of energy. Specifically, the activities of these companies include extraction, manufacturing, refining, and distribution/sale of energy resources (Capital Markets Authority). This study will use the definition of energy as portrayed in this definition.
Inventory Turnover Ratio	Is the frequency at which inventory is converted into sales calculated by dividing Cost of Goods Sold and average inventory for a given period in time (Shim & Siegel, 1998).

ABBREVIATIONS

ARD	Accounts Receivable Days
CCC	Cash conversion cycle
DIO	Days Inventory Outstanding
DPO	Days Payables Outstanding
DSO	Days Stock Outstanding
IT	Information Technology
ITR	Inventory Turnover Ratio
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Stocks Exchange
ROE	Return on Equity
WC	Working Capital
WCM	Working Capital Management



ACKNOWLEDGEMENT

I acknowledge my family and supervisors who have invested their time and knowledge to help me compile this project.



DEDICATION

This work is dedicated to my family. God bless you for your support



CHAPTER ONE

BACKGROUND TO THE STUDY

1.1 Introduction

Proper working capital management (WCM) is a prerequisite for any firm targeting consistent profitability. Working capital management concerns making decisions relating to components of working capital and short-term financing. It helps in ensuring a firm has sufficient cash flow to meet its operating expenses and short-term requirements. Mainly the goal of working capital management is to help a firm continue with its operations with enough cash flows (Akoto, Awunyo-Vitor & Angmor, 2013). Generally, businesses engage in two main types of investments: long-term investment and short-term investment. The long term investment are normally invested using long-term funds or fixed capital, while short term investment are made using short term funds or working capital. Its working capital, therefore, that helps in carrying out day-to-day operations of the business efficiently (Akoto *et al.*, 2013). As such, management of working capital is crucial just as the management of long-term investments and important component in company's financial decision-making.

Working capital, which is the difference between current asset and current liabilities, is composed of several variables (Mathuva, 2010). These includes: stock of cash, stock of raw materials, stock of finished goods/work in progress, value of debtors, and miscellaneous current assets such as short term investment and advances. It is affected by factors such as nature of enterprise, manufacturing policy, operations, market condition, and availability of raw materials, price level changes and manufacturing cycle. If the value of current assets is less than current liabilities of a company then the net working capital would indicate deficit working capital, while the more current assets indicate surplus working capital. The actions taken by a firm regarding current asset and liabilities best explains working capital management. Therefore, understanding the variables and factors affecting the working capital can help in streamlining WCM for the profitability of a firm (Larson & Hammarlund, 2005).

Working capital management commonly involves planning and controlling current assets and current liabilities in a way that excessive and inadequate investments are eliminated in order to achieve efficiency (Eljelly, 2004). Since the problem of any given company is to maximize profits, WCM is important in balancing between profitability and liquidity. If profit increases at the expense of liquidity, the risk exposure of the firm increases. Firms with high liquidity of working capital may have low risk, thus, low profitability, while low liquidity of working capital faces high risk, hence, high profitability (Ray, 2012), hence the significance of WCM. Raheman and Nasr (2007); Deloof (2003) separately provide that working capital management is the core of corporate finance, as it directly affects firm's liquidity and profitability. These show that most companies that want to maximize their value must keep optimal levels of working capital.

Decisions related to WCM directly affect liquidity and profitability (Appuhami & Ranjith, 2008; Shin & Soenen, 1998) yet Brealey, Myres and Allen (2006) provides that there is still little knowledge about the ideal liquidity level represented by current assets to maximize company value. Raheman and Nasr (2007) observed that balancing between liquidity and profitability was a major dilemma to most managers. Further, most companies do not know the working capital (WC) level that maximizes company value. Jape and Korde (2013) argue that studies done on corporate finance mainly focus on the main decisions such as capital budgeting, capital structure and dividend, which show greater attention being put on long term investment than on working capital management. However, it is evident that a company that is more liquid has greater ability to quickly invest in profitable opportunities, hence, generate more cash flows for its future.

Several approaches have been applied in management of working capital, which has shown implication on firm liquidity and profitability. Mainly there are two basic policies of working capital management: conservative working capital management policy and aggressive working capital management policy. Both of these policies are geared towards affecting current assets and current liabilities. An aggressive investment policy with high levels of fixed assets and low investment in current assets may create more revenues for a firm. On the other hand, it also accompanies a menace of inadequate funds for day-to-day operations and for compensation of short-term obligations. A conservative investment

policy is opposite to it with less investment in fixed assets and more in current assets (Wamugo, Muathe, & Kosimbei, 2014). For financing of working capital, aggressive policy suggests that current liabilities are upheld in a larger ration as compared to long-term debts. Soaring levels of current liabilities require more resources to be in liquid form to pay back debts earlier. Nevertheless, current payouts bear less rate of interest and hence can cause more savings. In conservative working capital financing policy, a greater portion of long-term debts is used in contrast to current liabilities.

When considering the management of working capital, several components are investigated: accounts receivable days (ARD), accounts payable days (APD), Inventory conversion period (ICP), inventory turnover ratio (ITR), cash conversion cycle (CCC), current ratio (CR), among others. However, the common factors of interest to most researchers are CCC, accounts receivable days, accounts payable days, inventory turnover ratio and inventory conversion period. As such, this study will focus on four components of WCM: Inventory management, CCC, APD and ARD, as it is expected that these factors significantly affect the energy sector (Mathuva, 2010; Deloof, 2003; Akoto *et al.*, 2013).

Several factors have investigated the effect WCM has on profitability. Mathuva (2010), for instance, investigated the effect working capital had on profits of a sample of 30 firms listed on the Nairobi Stocks Exchange (NSE). This study concentrated on firms that were from the non-service industry, as companies from insurance sector, financial companies, firms from the commercial sector and other service firms were excluded. The findings showed that there is significant relationship between WCM and profitability. Another study by Makori and Jagongo (2013) focused on the effect of WCM and profitability of a group of ten Manufacturing and Construction Firms Listed on NSE and established significant relationship between the two factors. Other studies like Gakure, Cheluget, Onyango and Keraro (2012) who investigated the relationship between WCM and performance of 15 manufacturing firms listed on the NSE; Omesa, Maniagi, Musiega and Makori (2013) who examined the relationship among 20 manufacturing firms and Nyabwanga, Ojera, Lumumba, Odondo, and Otieno (2012) who studied the same relationship among small-scale enterprises in Kisii South District have been done in

Kenya. Others include Muchina and Kiano (2011); Kimeli (2012); Muchiri (2014); Nzioki, Kimeli, Abudho, and Nthiwa (2013) who investigated the relationship WCM has on profits in different industries including small and medium sized sector, manufacturing, and dairy.

The researcher found no single study that was done specifically on the energy sector to establish how WCM and profitability related. However, a study by Wamugo *et al.*'s (2014) which targeted 42 non-financial companies listed on the NSE for the period ranging from 2006-2012 included these firms. Out of the 42, only a small fraction, four, represented the energy sector. This indicates that the findings were dominated by results from non energy firms and cannot be adequately generalized to the energy sector.

The uniqueness of the energy industry arises from the fact that it is one of the significant sectors to Kenya's economic performance, as it is the driver of industries. As such, the industry is largely regulated by the government to the extent that price control is the government's responsibility. Additionally, majority of the raw materials used in this industry, like crude oil, are imported, hence, are significantly affected by international price fluctuations. What is more, contrary to other industries, the energy regulatory Commission (ERC) regulates all imports to the energy sector. The commission also regulates the generation and supply of electricity. This over regulation has partly, both directly and indirectly, seen most oil corporations exit the Kenyan market due to low profits. Thus, surviving in such over-regulated market requires managers' concentration of the internal factors that can enhance profits. This is why adequate WCM is important for the good performance of the sector.

1.2 Statement of the Research Problem

Across the world, researchers have shown that companies operating in highly competitive markets can enhance their profitability by ensuring they manage their working capital effectively. In developed nations, for instance, different cases have shown that managers who manage their working capital well end up making huge profits. However, this result has not been positive in all cases in these countries; some researchers have realized

negative relationship between WCM and profitability. Apparently, the effect working capital management has on the profits of companies change depending on the industry and country. Similar findings have been reported by researchers studying cases from African countries, though most of the cases are from countries from the western region of Africa. They have found that different components of working capital management affect profits differently depending on the industry being studied. Regionally, the results have not been significantly different. The relationship between working capital management and profits has been found to vary based on the industry being studied, even though fewer cases are available. Regionally, most of the studies are done among manufacturing firms.

Studies from the Kenyan case also show similar varying trends. Notable studies done on the relationship of working capital management are from the financial, manufacturing, dairy, SMEs and construction industries. The findings of these studies show that different components of working capital affect profits differently depending on the industry. This trend of relationships between profits and working capital management influenced the need to study how the same factors affect the energy sector.

The energy sector was chosen for several reasons. For instance, energy companies are some of the recent companies to be listed on the NSE. Prior to their listing, their financial statements were not items easily accessible to the public. Moreover, Kenya aspires to be a middle-income economy by the year 2030. For this to happen, energy companies must be making profits and growing. Government control of energy prices hinder the achievement of profits as industry companies are forced to charge prices not exceeding government provisions. Additionally, the industry faces stiff competition, which has seen some energy multinational companies like AGIP and Shell & BP exit the Kenyan market. High cost of electricity that has seen many low-income consumers resort to alternative sources of energy and high expenses energy companies incur have seen some of them make huge losses, hence, affecting the industry negatively. Moreover, Kenya has been identified as one of the countries in Africa with high cost of electricity owed to the high prices the electricity companies charge in order to remain profitable.

These factors make it relevant for the energy companies to device internal measures of ensuring profitability, as control of external variables like price increases is limited and can be imitated easily by competitors. Managing working capital is one such important measure that can enhance profitability of the industry. Establishing the kind of relationship WCM and profitability have will enable managers of listed energy companies make the right decisions towards enhancing their profit chances despite the noted challenges. This makes the energy industry and the relationship between WCM and profitability unique components of study in this research.

1.3 Research Objective

The overall objective of this study is to assess the effect of working capital management on the profitability of public listed energy companies in Kenya.

1.4 Sub-Objectives

The sub-objectives to be achieved are:

- i. To investigate the role of inventory management on the profitability levels of public listed energy companies in Kenya.
- ii. To establish how cash conversion cycle affects the profitability levels of public listed energy companies in Kenya.
- iii. To determine the effect account receivable days have on the profitability of public listed energy companies in Kenya.
- iv. To determine the effect account payables days have on the profitability of public listed energy companies in Kenya.

1.5 Research Questions

- i. To what extent does inventory management affect profitability levels of public listed energy companies in Kenya?
- ii. Does the time lag of cash conversion cycle affect the profitability levels of public listed energy companies in Kenya?

- iii. How do accounts receivable days affect the profitability of public listed energy companies in Kenya?
- iv. How do accounts payable days affect the profitability of public listed energy companies in Kenya?

1.6 Research Hypotheses

- i. The inventory turnover ratio of listed energy firms has no significance to the profits made.
- ii. Cash conversion cycle has no significant effect on the profitability of public listed energy firms in Kenya.
- iii. The number of accounts receivable days has no significant relationship to the profits of listed energy firms in Kenya.
- iv. The number of accounts payable days has no significant effect to the profits of listed energy firms in Kenya.

1.7 Significance of the Study

Different studies from different cases show varying relationships between components of working capital management and profitability. Most of the available literatures on this relationship inform studies from developed nations. Additionally, cases from regional studies are limited to certain industries with concentration put on non-energy firms. This study, having been done on listed energy companies in Kenya, a developing nation, contributes to the knowledge available by presenting information concerning how profit relates to WCM in the energy sector.

The study also provides findings upon which policy foundation can be based. Managers of energy companies, particularly listed ones, will use the findings of this study to develop necessary policies that will see them adopt effective methods of managing WC to boost their profits. The study shows extent to which WCM in energy companies has affected profits, hence, informing managers some of the areas they need to improve to achieve high profits. As such, based on the findings, managers will be informed of the relevant areas of WCM that need change.

Similarly, to protect public shares in listed energy companies, the findings of this study will inform the government of the policies needed for the energy sector to ensure that listed energy companies avoid losses at the expense of blaming the government for its strict regulations on energy prices. By instituting the policies, the government will ensure that listed energy companies operate profitably by managing WC in a desired way.

1.8 Scope of the Study

This study focused on assessing the effect of working capital management on the profitability of public listed energy firms in Kenya. The study investigated the extent to which Kenyan public-listed energy firms manage their working capital for seven years, that is, 2007 – 2013. Mainly the study focused on inventory management, cash conversion cycle, and account receivables components of working capital to describe how they affect company's profitability. To achieve these objectives the study used both primary and secondary data. Primary data was collected using structured questionnaires while the secondary data was extracted from statement of financial position.

1.9 Study Outline

This study has five chapters. The first chapter, chapter one, gives the background to the study by introducing the concept being studied, presenting the statement of research problem, identifying the research objectives, research significance and the scope for the study. The next chapter, chapter two, presents the literature review organized in three parts: the theoretical framework, the empirical review, and the critic of the literature review. The chapter also presents a conceptual framework that shows the relationship of variables under study. The research methodology is the third chapter. It presents the methodology the researcher used to collect valid and reliable findings that could address the research questions. Chapter four presents the results, analyses, and discussions. The last chapter, chapter five, presents the summary of the findings, conclusions, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the related literature on the subject under study presented by various researchers, scholars, analysts, and authors. The specific areas covered here are the theoretical review, empirical review, critique of existing literature, conceptual framework related to this study and research gaps existing.

2.2 Theoretical Review

Debate on which theory should be used to effectively manage working capital has recurred for long. Participants to the debate have argued between prescriptive (normative) and positive (description) positions of managing WC. According to Gaffikin (2007), positive views are those that explain ‘*what is*’ without offering any indication of acceptance or rejection while normative ones offer judgments as to whether circumstances or cases should be acceptable or unacceptable. Different from positive views, normative positions offer indication of what should be the ideal case. For instance positive theory would tell managers what ideal stock they ought to have in their companies while a normative theory could tell managers what the right stock to hold should be for a profitable firm.

Theories of WCM are founded on either of these two positions. However, many argue that it is simplistic to claim that only one of the positions can produce a better theory to explain WCM. As such, researchers and accounting managers have borrowed ideas from either position and implemented them in their WCM initiatives (Gaffikin, 2007). It is based on this that the study discusses the working capital theory, which shows the combination of positive and normative ideas.

2.2.1 Working Capital Theory

2.2.1.1 Basis of the Working Capital Theory

All active businesses including those that are fully equipped with all types of assets require working capital. In fact, working capital is like blood to a business. Without working capital, expenses such as procurement of adequate supply of raw materials for processing, cash to pay power and wages, capacity to grant credit to its customers and creating a stock of finished goods to feed the market demand regularly will be unmet. This curtails efficient carrying out of day-to-day activities of a business (Lambrg & Valming, 2009).

Working capital management is an area of corporate finance, which directly affects the liquidity and performance of a firm (Raheman & Nasr, 2007). It is the management of current assets and current liabilities to improve a firm's profitability (Hill, Kelly & Highfield, 2010). It involves maintaining an optimal balance among receivables, inventory, and payables (Nazir & Afza, 2007). WCM focuses mainly on the short-term financing and short-term investment decisions of firms (Sharma & Kumar, 2011). Given the above explanation, working capital management is critical for a firm, particularly for manufacturing, trading and distribution firms, because in these firms WCM directly affect the profitability and liquidity.

According to Deloof (2003), efficient WCM ensures an optimal level of working capital is maintained in order to maximize shareholder value and wealth. The objectives of maximizing profit or shareholder value are some of the key objectives for a company. However, certain levels of liquidity are essential to ensure short-term maturing obligations are met when they arise. Profitability is essential for the operations and continuity of a company. However, it should be maintained to manageable levels of liquidity to prevent insolvency or bankruptcy (Raheman & Nasr, 2007).

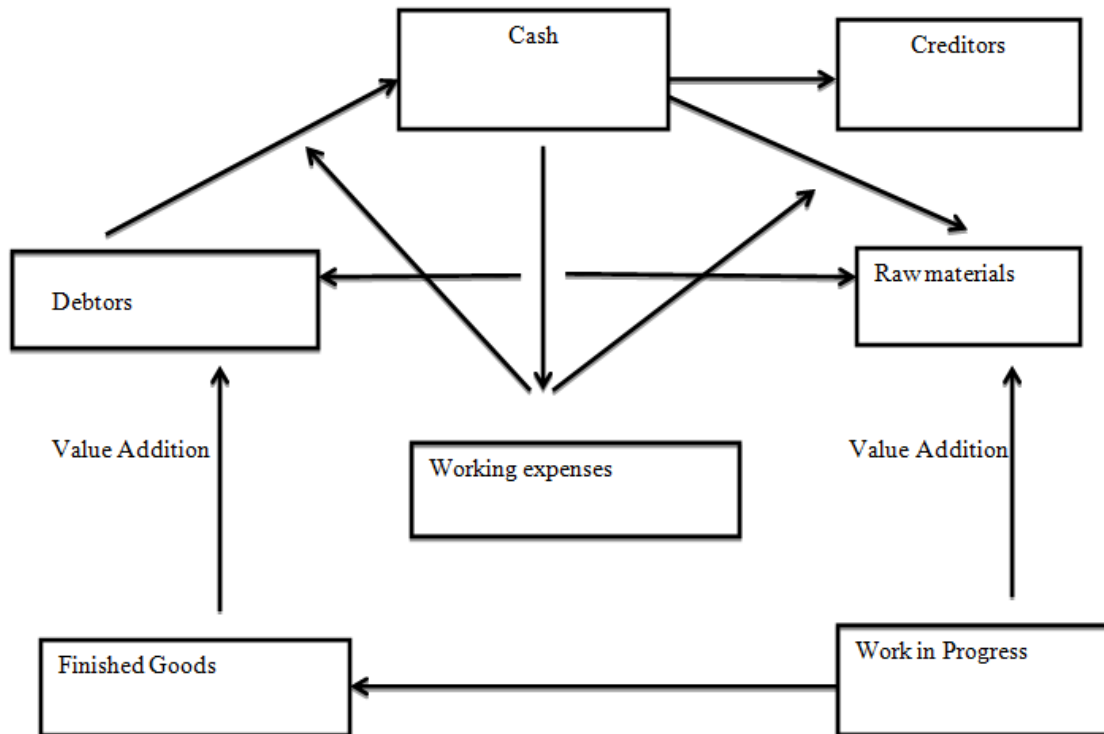
Efficient utilization of the firm's resources, as it relates to WCM, means that managers should seek effective and efficient ways to deal with the cash available for the day-to-day operations in order to achieve the optimum impact. Good WCM leads to increased cash

flows, and thereby leading to lesser need for external financing; therefore, the probability of default for the firm is reduced. A key factor in the working capital management is the cash conversion cycle (Deloof, 2003). Cash conversion cycle is defined as the time lag between the purchasing of raw materials or rendering of services and the collection of cash from the sale of goods or services rendered. The longer the lag, the greater the investment in working capital, and thus the financing needs of the firm will be greater. Interest expense will be also higher, which leads to higher default risk and lower profitability.

2.2.1.2 Working Capital Cycle

According to Harper (2009), a good working cycle helps to balance the incoming and outgoing payment hence maximizing working capital. Working capital plays a significant role to firms' growth and profitability. Larson and Hammarlund (2005) express working capital as the difference between current assets and current liabilities. Such that: Net Working Capital is equal to current assets minus current liabilities.

Both current assets and current liabilities are found in the statement of financial position. Here current assets are defined as the assets that are expected to generate cash in a financial year normally grouped under prepaid expenses and inventories, receivables, short-term investment, and cash and its equivalent. On the other hand, current liabilities are defined as the obligation maturing within a period of one financial year. Normally in the statement of financial position, current liabilities are classified as trade payables, short-term debt and accrued liabilities (Penman, 2007; Lambrg & Valming, 2009). The concept of working capital has been of concern to researchers and managers in both small and bigger firms. In fact, Pass and Pike (1984) found that small and medium firms have relatively larger capital knotted in current assets and liabilities compared to larger firms. This shows that there is no homogeneity across sectors when comparing working capital structure.



(Source: Arnold, 2008 as presented by Lambrg & Valming, 2009).

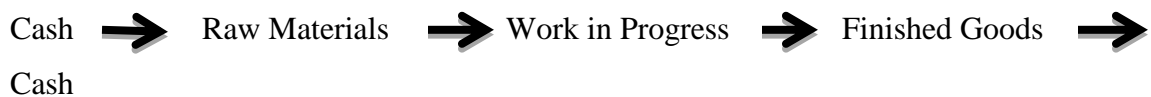
Figure 2.1 Working Capital Cycle

Generally, working capital cycle involves conversion and rotation of various components of working capital. At the initial stage, cash is converted into raw material, which passes through the cycles to its original form again. With the help of fixed assets, raw materials are converted into work in progress and finally in to finished products. The finished products when sold on credit assumes the form of debtors who are assets to the business as they pay cash on due date. This means that in a working capital cycle the original form is cash, which passes through various stages taking other forms of current assets due to value addition and finally gets converted into cash again. The rotation of these forms is what constitutes business operations (Lambrg & Valming, 2009).

According to Arnold (2008), the main purpose of working capital management is to balance those costs that help in maintaining the optimal levels of cash, raw materials, and finished goods. In addition, in each step of working capital cycle, costs are encountered and these costs represent the opportunity cost for working capital. Lambrg & Valming

(2009) provide that in adequate planning and control of working capital is the core reason of the failure of most businesses.

Doshi (2009) put the working capital cycle in its simplest form by presenting it in five stages. The initial stage is cash, which purchases raw materials, by the help of fixed assets raw materials are manufactured in stage known as work in progress in to finished goods that are sold either cash or credit generating cash finally. The simplified process can be presented as:



Source: Doshi (2009)

2.2.2 Inventory Management

According to Hilton (1994), one of the most critical decisions made in service, manufacturing, and retail industry businesses is the inventory level to keep on hand. In fact, inventory can be defined as the quality of goods/materials on hand. It involves a delicate balance between ordering cost, holding cost and shortage cost. Thus, proper budgeting is required in order to keep these levels at par. Generally, there are several reasons why there is a need to hold inventory. These include meeting unexpected demands, smoothing seasonal demands, taking advantage of price discounts, hedging against price increase and getting quality discounts.

Nyabwanga and Ojera (2012) assert that for a business to be competitive and efficient in its operation, inventory management is of great significance. Thus effective inventory management practices need to be embraced as strategy to improve competitiveness (Rajeev, 2008). According to Dimitros (2008), effective inventory management involves allotment of optimal inventory. Excess inventory normally consumes unnecessary physical space, increases possibility of damage, loss, and spoilage. Further is creates financial burden thus disturbing cash conversion cycle.

As noted earlier keeping optimal levels of inventory, reduces supply cost, protects against price fluctuation, and reduces the chance of scarcity of raw materials when needed. Time taken during working capital cycle is important as there exhibit negative relationship between inventory conversion and business performance. Shortening time taken in inventory conversion period might increase stock out costs of inventory resulting to losing sales opportunities and poor performance therefore (Rehman, 2006; Deloof, 2003).

According to Shah and Sana (2006), information technology investment has a notable effect on accelerating economic growth as witnessed in 1990s. Most firms heavily invested in new brands of IT enabling them to improve operational efficiency and coordination thus reducing inventory levels. Technology that helps in better dissemination of information enables firms to react more punctually to market indicator and to spend less on inventories, hence removing unnecessary inventories. Information technology helps in the management of inventories in an efficient manner hence streamlining operations leading to better inventory performance (Frohlich & Westbrook, 2002; Vickery *et al.*, 2003). Therefore, this shows that higher investment in IT results to higher inventory turns and lower inventory holding costs.

Stock outs normally accompany serious effect for a business as they affect manufactures, retailers, and consumers. Normally stock out leads to delayed purchase, product replacement, or even no purchase hence affecting consumer purchase behavior (Gruen & Corsten, 2007). Due to these, Zinn and Liu (2008) saw that consumers may find or prefer substitute product when faced by stock out. Long-term consequences are that a business may lose a consumer forever affecting long-term market share. To the loyal customer they normally visit another firm to find desired product a case that lead to loyalty switching. According to Nyabwanga and Ojera (2012) repeated stock out makes a retailer lose customer and employee time, while manufacturers lose sales or loss of brand. To avoid all these negative effect associated with stock out, Sushma and Bhupesh (2007) provide that proper inventory management policies are needed to boost profitability performance, while mismanagement will lead to tying up excess capital at an expense of profitable operations.

Deloof (2003) provides that stock monitoring is essential. This is because it helps in shortening inventory conversion period hence untying excess capital that is invested into operations that are more profitable. Nyabwanga and Ojera (2012) provide that inventory-monitoring frequency depends on the decision of managers. It can be done daily, weekly, fortnightly, monthly, or quaternary. The choice of all these time periods affects the action taken by the manager to improve efficiency of working capital management and hence inventory order. Improper stock monitoring leads to over stocking thus affecting financial liquidity and finally profitability. Rajeev (2008) noticed a high positive correlation between stock monitoring and inventory order frequency.

Moreover, Stevenson (2008) provides the need for holding inventory. This is because holding inventory helps the firm realize economies of scale through enjoying quantity discount, and reduction in transport cost. It helps from uncertainties of demand that distort work in progress leading to stock out that affect customer loyalty. Stock and Lambert (2001) provide that poor inventory management can be judged by observing large quantities of obsolete items, periodic lack of storage space, increased number of order cancelled, high customer turnover, deteriorating relationship with intermediaries due to order cancelling among others. All these finally affect firms' profitability.

Holding stock comes with both benefits and costs. Prudent working capital management should aim at balancing between benefit and cost associated with holding such stock. Holding stock helps a firm sell range of goods as customer demand them with no delay. However, holding stocks incur costs especially the opportunity cost of the finances tied up in the inventory. Mainly there are four types of cost related with inventory. These include ordering cost, purchase cost, stock out cost and holding cost (Atrill, 2006). All these types of cost affect profitability if not well optimized. One of the methods adopted in maintaining inventory levels is the economic order quantity model. This model helps in determining of the appropriate inventory levels that should be held taking in to account the ordering cost, stock out costs and total costs. In fact, the successful large firms had been seen to adopt this method unlike small firm that adopt management judgment.

Besides, the inventory conversion period, inventory turnover ratio is also of significance to inventory management. This ratio measures the efficiency with which inventory is turned into cash. Normally, a high inventory turnover ratio indicates efficient managing of inventory, as more stock is converted into cash. Thus, a company with high inventory turnover ratio incurs few stock related costs. When the ratio is low, it means that a company is not selling its inventory fast enough to release cash for day-to-day investment (Stickney, Weil, Schipper & Francis, 2010).

Additionally, a company that holds much of its inventory incurs costs related to storage. Low inventory turnover could also mean that a company does not have good business, or sells poor quality goods or the goods have better alternatives in the market. Since turnover ratio determines how much sales a company makes in a given period, it also shows the revenues collected thus the profits likely to be made. High inventory turnover indicates that management is efficient in managing a company's assets. It is calculated by dividing the cost of goods sold by the average inventory per given period. As such, increasing the cost of goods sold or reducing the average inventory increases the ratio (Stickney *et al.*, 2010).

2.2.3 Cash Conversion Cycle

The normal routine of a business involves acquiring inventory, which is then used to create products. These products are often times sold on credit generating debtors and creditors. Here the firm has to collect cash from debtors so as to pay creditors. This shows that reasonable time is required to complete the process, which continues to recur in the life of a business. The cash conversion cycle measures time (in days) that a company takes to convert resource input in to cash flows. It is estimated that the lower the time a company takes to sell inventory, collect cash from the debtors the better for the firm since this makes the firm more liquid to re-invest in more cash generating investment to boost return on investment. Further, the use of cash conversion cycle can be useful in assessing the management efficiency (Deloof, 2003). The researcher would wish to investigate the time taken by selected firms in their working capital cycles and cash conversion cycle to assess the efficiency of working capital management.

Cash flow is important to all firm and maximization of inflows while minimizing outflows can increase firms' profits. Appuhami and Ranjith (2008) provide that one of the most widely used method by firms to measure and evaluates risk and returns associated with liquidity management are cash flow cycle. Through cash flow cycle management industries, managers are able to identify the areas that require further improvement to enhance future cash flow. It also helps to also identify short and long run cash outflow and inflow to sort out any cash shortage or excess in order to formulate a comprehensive investment strategy. Most companies improve their profitability by reducing their cash conversion cycle. This is achieved through decreasing variables such as receivables collection period while lengthening credit payment period (Anser & Malik, 2013).

Gentry, Vaidyanathan, Lee, and Wai (1990) asserted that cash conversion cycle directly affects market value of a firm. Schilling (1996) provided that when cash conversion cycle increases, minimum liquidity requirement of a business increases showing a positive correlation. Filbeck & Krueger (2003) further argues that a variable such as interest rate increase lengthens the cash cycle period while Nobanee *et al.* (2004) proves that for better firm's performance inventory must be converted in to cash as early as possible. Jordan (2003) defined cash cycle as simply time lag between cash payment and cash collection.

According to Jordan (2003), cash cycle is time between cash disbursement and cash collection. It mainly has three components namely inventory period, account receivable period and account payable period. The inventory conversion period shows the days required for conversion of raw materials into finished goods and sell such goods. Receivables collection period on the other hand is the days required to convert accounts receivables into cash post sale. Finally, the account payable period explains the average length of time between the purchase of materials and labour, and the payment for the cash of the material and labour compensation. Cash cycle is given by subtracting the accounts payable period from the sum of the Inventory period and the accounts Receivable Period. To calculate the inventory conversion period, one must divide inventory by daily sales.

To get days sales outstanding, the receivables are divided by the daily sales while payables divided by daily purchases give the payable days period.

According to Velnampy (2005) today most organization spend large sum of money for various projects geared to generate income. These projects therefore are the source of profitability. Both profitability and liquidity are the most significant factor necessary to run an organisation. Therefore, as companies concentrate on management of projects to minimize costs and maximize returns, liquidity management in a firm is essential. This is because lack of proper liquidity management increases cash shortage causing difficulties in meeting its obligation. There exist a negative relationship between profitability and liquidity. Cash conversion cycle in this sense helps to evaluate working capital such that the best is realized.

One of the main shortcomings of cash conversion cycle is that is that it focuses only on time required for financial flow to be engaged in the cycle ignoring the amount of cash committed to a product as it moves in the cycle (Richards & Loughlin, 1980). Some the suggested solution this problem is taking weighted cash conversion cycle that takes the consideration of time taken on financial flow and the corresponding fund committed in each stage of the cycle Gentry *et al.* (2009) define the weighted cash conversion cycle as weighted days funds are committed in receivables, payables, and inventories less the weighted days financial flows are delayed to supplier. Later Shin and Soenen (1998) argue that the weighted cash conversion cycle as complex hence proposes adoption of net trade cycle. The net trade cycle is said to be better working capital efficiency measure compared to cash and weighed cash conversion cycle since it indicate the number of day sales a firm has to finance its working capital and hence finance manager can easily estimate the financing needs of working capital as a function of the projected sales growth.

Generally, studying cash conversion cycle together with its calculation helps in adjusting policies relating to credit sales and credit purchase, which affect profitability. It helps to get cash from debtors. If the calculation made on the component of cash credit cycle shows good cash liquidity position then the past credit policies are worthy to be

maintained. It also helps to study cash flow of a business. Generally, cash conversion cycle and cash flow statement are helpful for cash flow analysis (Graham & Smart, 2012).

Since shortening cash conversion cycle improves efficiency in working capital management, several approaches can be applied to shorten cash conversion cycle hence improving profitability. Among the methods that can be used to shorten cash conversion cycle is to reduce inventory costs by improving efficiency of the logistics and production processes. Reduction of receivable collection period such that customers are billed more frequently, utilizing lockbox plans and encouraging use of automatic electronic transfer systems. Use of trade credit by paying suppliers slowly depending with the terms and decreasing of the accruals by paying them regularly (such as paying employees monthly) since firm will have very little control over these accruals.

2.2.4 Account Receivable and Accounts Payable

ASECU (2013) provides that the account receivables are simply a measure of the unpaid claims that a firm has over its past customers at a point given time mainly within a period of one year. Normally the volume of account receivable shows firms supply of trade credit, and account payable shows firms demand for trade credit. According to Pindado and Bastos (2012) in period of financial constraints, most firm holding high levels of account receivables fail to pay their due to their suppliers. The suppliers on the other hand are not able to settle their debt, which constrains the supply chain. On the other hand customers delays in settling their debt, and the working capital cycle lengthens affecting profitability.

Management of account receivable and accounts payables is significant field of corporate finance due to its direct effect on firms' profitability and the risk exposure (ASECU, 2013). Demirgüç-Kunt and Maksimovic (2001) provides that in euro zone (Italy, Germany and France) account receivable exceed the quarter of companies total assets while in US firms, Rajan and Zingales (1995) found that 18% of total assets consisted of

receivables. This shows that it is important to carry out receivables management as a component of working capital that will in turn improve firms' profitability.

The main of purpose on management of account receivables is to maximize stakeholders' wealth. Most current assets are measured in terms of their net present value. Normally account receivables have three core characteristics: economic value, risk, and futurity, which point the need for efficient receivables management (Emery, Finnerty, & Stowe, 2004). Berry and Jarvis (2006) provide firm management needs to take into account factors such as investment in debt collection management, the level of risk firm is prepared to take and costs associated with account receivables such as administrative costs, opportunity cost and the trade of between sales procurement and profits while determining the optimal amount of account receivables. Generally, policy that leads to low account receivables causes profits to increase.

According to Kontus (2012), the management of account receivables should entail establishing credit collection policy. Normally, a good credit policy should have four variables. These include credit period, the discount provided for early credit settlement, credits principles, and collection policy. Therefore, in the management of account receivables, the policy makers should focus on the customers the credit should be extended, the terms of credit and the framework of collecting debt. Normally, if the terms of credit are tight less investment will be taken in account receivables and few bad debt issues.

According to Chambers and Lacey (2011), extension of credit to customers should be made after comparison of expected benefit and expected costs due to uncertain future payment that need to be computed based on the expected payment probabilities. Even though extension of credit is associated with costs, its worthy since it builds a long-term relationship between the firm and its customer making them become loyal to the firm. In economics, the guiding principle for such financial decision is use of marginal benefit versus marginal cost.

Shim and Siegel (2007) provide that as way of reducing occurrence of bad debt, evaluation of customers' ability to pay is vital. This evaluation requires that firms' integrity pledged collateral, financial soundness and the prevailing economic conditions be put in to consideration. It is expected that when a company sells too many customers, or firm has for a lengthy time not changed credit policies bad debt losses will be higher.

Brealey *et al.* (2006) in a balance sheet and ledger goods sold on credit are called receivables, are converted to cash after a credit period. Here, Brealey *et al.* asset that if the credit period is short, customer may prefer competitors, hence, interfering with the source of revenue. However, better policies such as discount on early paying customer can be used to reduce credit period. Larsson & Hammarlund (2009) the reason of shortening credit period is that longer credit time keeps firm from benefiting from capital inflow expected from sales. In addition longer credit time exposes customers to higher risk of becoming financially unstable. William and McAfee (2009) provide that the reasons given above best demarcate which company manages their working capital efficiently and the ones that does not.

2.3 Empirical Literature

The empirical literature presents findings of the different studies done on the relationship between working capital management and profitability. In this section, previous studies and their outcomes are presented according to the objectives the researcher was studying, hence the subheadings: inventory management; cash conversion cycle, accounts receivable days and accounts payable days.

2.3.1 Inventory Management

Kwame (2007) established that most businesses in Ghana prepared inventory budgets and often reviewed their inventory levels. Similar to the Ghanaian case, in Kenya Nyabwanga and Ojera (2012) in determining the inventory management practices of Small Scale Enterprises, found that most of these enterprises reviewed inventory levels and prepared inventory budgets. The result of Ghana and that of Kenya shows that managers have a

higher probability of effectively tracking down item quantities and make a balance between availability and customer demand.

Romano (2011) studied US firms and found that there are seldom inventory management practices such as assessing inventory levels and balancing stock out costs against expenses being practiced. However, most of the firms were found to use just-in-time inventory management practices to ensure high performance. Samiloglo and Demirgunes (2008) also found a negative relationship between profitability and inventory conversion period. By this result, Samiloglo and Demirgunes (2008) established that companies listed on the Istanbul Stock Exchange attained high profits when they took less time to sell their inventories in two ways: by enhancing liquidity since they sell their stock faster and by selling more stock within a given period.

Among some of the Kenyan listed firms, Mathuva (2010), using a sample of 30 firms, examined the influence of WCM components on corporate profitability for the periods 1993 to 2008. He used regression to analyze the resulting panel data. In his findings he established that the inventory conversion period had a positive statistical significance to the profits of listed firms. This study was elaborate enough though its exclusion of service companies like financial and related institutions made it impossible to generalize the findings to such companies. Makori and Jagongo (2013) also found that inventory conversion period among listed manufacturing firms positively related to profitability. They found this result after studying a sample of 20 manufacturing and construction firms listed on the NSE. They analysed their data using OLS regression model. Just like Mathuva's (2010), generalising this study to other firms is challenging as it only focused on manufacturing and construction firms.

Nzioki *et al.* (2013) found insignificant relationship between inventory conversion period and profitability among a sample of 6 listed manufacturing companies in Kenya. Data used was collected from financial statements of these companies from 2006 to 2010. Regression and correlation analysis were used to analyse collected data. Muchiri (2014) while studying a case of the new Kenya Creameries Cooperative (KCC) found that the company's profits negatively correlated with days it takes to convert inventory into cash.

This study could only be generalised to companies from the dairy sector whose items on the balance sheet and description of WCM match that of KCC.

Stickney *et al.* (2010) found that companies that have high inventory ratio realize high profits as they are able to make large stock sales in a given period. Okwo, Enekwe, and Ugwunta (2012) also agree with this finding by positing that high inventory turnover ratio signifies that a firm sells more inventory within a given period hence is more liquid to make investments that will enhance profits. However, they warn that it is not always true to expect high inventory turnover ratios to attract high profits. Sometimes, a company can have high ratios but make low profits owing to other variables. For instance, when managements of costs is poor, then a company could be incurring exorbitant costs for every bunch of inventories sold.

In a study they did on selected Nigerian firms in the pharmaceutical industry, Okwo *et al.* (2012) established that ITR had a negative statistically insignificant relationship with net profit margin. Their study reviewed data from 6 statements and used correlation and multiple regression for analysis. Gondal and Arshad (2013) also studied how working capital management impacted profitability of the cement industry in Pakistan and found that the ITR had no significant statistical effect on profitability. On the other hand, Mistry (2012) studied the determinants of profitability among Indian automotive industry and established that ITR had a positive statistically significant relationship to the profits made by firms in that industry. These results show that different cases show different relationship between ITR and profitability. It also shows some of the most studied sectors include manufacturing, construction and other product industries. Little concentration is given to purely service industries like the financial sector or even the energy sector. However, the studies still show the varying relationships between ITR and profits. Thus, based on the reviews, this study hypothesizes that:

H₀₁: The inventory turnover ratio of listed energy firms has no significance to the profits they make.

2.3.2 Cash Conversion Cycle

Garcia-Teruel and Martinez-Solano (2007) in a study of small and medium size firms in Spanish found a negative association between the number of days account receivables were collected, and the profitability of a firm. This shows that profits increased when the number of days accounts receivable reduced. A positive correlation was established between firm liquidity and financial performance. This shows that managers should keep optimal level of debtors, creditors, and inventory levels. Filbeck and Krueger (2005) found the significant negative relationship between cash conversion cycle and cash flow. They provide the evidence that the shorter the cash conversion cycle companies have, the larger the amount of cash flow. Cash flow per total assets is used as a cash flow measurement in their study.

Hillier, Ross, Westerfield and Jaffe (2010) find the significant positive relation between operating cash flow and working capital management measured by net liquid balance. They explained that companies with excess operating cash flow have more working capital, which implies that the companies have efficient working capital management. This is true given the relationship WCM has with operating income. In addition, they tend to keep it with high liquidity assets as cash and short-term investment. Operating cash flow reflects the company's ability to generate cash and its working capital management policy such as inventory policy, accounts receivable policy and accounts payable policy. Excess operating cash flow would result from the effective working capital management and the shorter cash conversion cycle period. As such, this means that shorter cash conversion cycles are characterised by a company's liquidity which can be invested in short term deals to earn more profit.

Cote and Latham (1999) argued that effective management of account receivables, accounts payable and inventory days positively impacted on cash flow and thus profitability. Jose, Lancaster, and Stevens (2003) after studying 2178 firms from 1974 to 1993 concluded that there is a negative correlation between cash conversion cycle and firms level of profitability. Akoto *et al.* (2013) after studying Ghanaian firms also found that ROE had a positive and statistically significant relationship with CCC. All these

researches studied cases on countries outside the East African region, hence, did not take care of country specific factors that may affect WCM in Kenya like economic growth.

Mathuva's (2010) study on Kenyan firms also found that profitability of listed Kenyan firms had a significant inverse relationship with CCC. Makori and Jagongo (2013) also found similar results among Kenyan manufacturing firms. Nzioki *et al.* (2013) found a significant negative relationship between profits and CCC among six listed manufacturing firms on the NSE. The arguments for shorter CCC is that it enhances a company's liquidity hence provides cash for investment to enhance profits. Though these studies present the case of Kenyan companies, they do give limited findings in terms of how they can be generalized to the energy sector. This is based on the industry specific factors that affect energy companies and the enhanced regulations governing energy prices. As such, there is need of a specific investigation for the energy sector. Thus, this study hypothesizes:

H₀₂: There is no significant effect of cash conversion cycle on the profitability of energy firms in Kenya.

2.3.3 Account Receivable and Accounts Payable

Several studies have established that accounts payable days relate to profits in a positive manner. This means that an increase in accounts payable induces a consequent increase in profits (Pindado & Bastos, 2012). For instance, Akoto *et al.* (2013) found that increase in profits among companies in Ghana was caused by increased accounts payable days. Additionally, they found that increasing firms' DSO and ARD resulted into a reduction in profit, which could be rectified by increasing accounts payable days. While investigating how profitability correlated with working capital management among 88US firms listed on the New York Stock Exchange, Gill, Nahum, and Neil (2010) found that statistically there was no significant association between average APD and profitability. They also found absence of statistical significance between the relationship of profitability and average inventory outstanding days and firm profitability. However, they observed that there was a negative relationship between accounts receivable days and profitability.

Karaduman, Akbas, Ozsozgun, and Durer (2010) similarly studied the effect working capital management practices had on the profitability of certain companies on the Istanbul Stock Exchange. Their findings indicated that there was a negative statistical relationship between firm profitability/return on assets and inventory days and accounts receivable. However, they found statistically significant positive association between profitability and accounts payable days. Another study of 131 firms listed on the Athens Stock Exchange by Lazaridis and Tryfonidis (2006) found statistically significant negative relationship between the companies' gross profits and the CCC, ARD and DIO. They further found that profits had a statistically significant positive relationship with accounts payable days.

Garcia-Teruel and Martinez-Solano (2007) using 8872 Spanish firms concluded that firms getting higher profits took less time to collect account receivables, paid their dues early and took short time to convert inventories into finished goods. Nazir and Afza (2007) found a negative relationship between firms' profitability and working capital investment policies. Zawaira and Mutenheri (2014) while studying Zimbabwean firms found no significant relationship between accounts receivable days and profit though he found negative statistical significance between profits accounts payable days.

Akoto *et al.* (2013) investigated how working capital management and profitability of listed manufacturing firms in Ghana related. The findings they collected showed that there was negative but statistically significant relationship between accounts receivable days (ARD) and return on equity (ROE). They also found accounts payable days (APD) to have positive but statistically insignificant relationship to ROE. Mathuva's (2010) findings show that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers and profitability. He also found that there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (APD) and profitability.

Another study by and Makori and Jagongo (2013) done on 20 manufacturing firms listed on the Kenyan NSE found that profits related negatively with accounts receivable days but a positive relationship between accounts payable and profits. Additionally, they found

positive relationship between leverage, sales growth, and firm size with profitability. A study by Nzioki *et al.* (2013) that involved six manufacturing firms listed on the NSE found that accounts payables and accounts receivables had a positive and statistically significant relationship with profits. Muchiri (2014) while studying the case of KCC found positive relationship between profit and APD and negative relationship between profits and ARD.

These reviews present different scenarios from different countries. Additionally they indicate that different samples of companies have different treatments to accounts receivables and payables to attain profit. Generalizing the results to the Kenyan energy sector is, therefore, compromised by the variations. For instance, country specific factors like inflation and GDP can make it challenging to generalize Akoto *et al.*'s findings to Kenyan manufacturing firms. Similarly, industry specific factors like similar definition of WC and WCM can make it easier to generalize results from manufacturing firms to other manufacturing firms than from manufacturing firms to service firms like insurance firms. As such, to be able to establish how accounts receivable and accounts payable affect profits of companies in the Kenyan energy sector requires a study that pays attention to industry unique factors affecting the companies. It is based on these findings on how profits relate to APD and ARD and the and arguments towards generalization that the study hypothesized that:

H₀₃: There is no significant effect on the number of days of account receivable and the profitability of energy firms in Kenya.

H₀₄: There is no significant effect on the number of days of account payables and the profitability of energy firms in Kenya.

2.4 Research Gap

The literature shows that numerous studies have been conducted on the relationship between WCM and profitability of companies. However, the relationships differ from case to case. For instance, studies like Shah and Sana (2006); Padachi (2006) found that there exists negative relationship between working capital components and firms'

profitability. Raheman and Nasr (2007) found a negative relationship between working capital components, debt, and profitability. Other studies (like Garcia-Teruel & Martinez-Solano, 2007; Akoto *et al.*, 2013) found positive relationship among components of WC and profitability. As such, different cases present different results, hence, the need to study the Kenyan energy industry as a case to establish the kinds of relationships different factors of WCM have over profits.

Several studies like Kimeli (2012); Nzioki *et al.* (2013); Muchina and Kiano (2011); Makori and Jagongo (2013) and Muchiri (2014) were done on the Kenyan sector in the insurance, manufacturing, dairy, SMEs and construction industries. Though these studies found significant relationships between components of WC and profitability, they did not comprise firms from the energy sector and as such their generalisations do not apply to the sector. Mathuva's (2010) study also investigated the relationship of working capital management and profitability among 30 firms listed on the NSE. His study concentrated on the non-service firms for the period ranging from 1993 to 2008. This means that Mathuva did not give emphasis to firms in the energy sector despite their unique challenges. Additionally, energy firms were listed on the NSE from mid 2000's and as such were not part of Mathuva's study that investigated statements from 1993.

Similarly, Wamugo *et al.*'s (2014) study investigated the relationship WCM had on return on equity (ROE) and return on assets (ROA) among 42 non-financial companies listed on the NSE for the period ranging from 2006-2012. Though this study included listed energy firms, the uniqueness of the energy industry was not considered as the assumption was that all companies were affected by similar variables. Additionally, given that only four energy firms participated in this study, their influence on the whole results is likely small, as four is just a small fraction of 42. As such, the studies done on the relationship between profits and WCM on Kenyan firms cannot be adequately generalised to apply to the energy sector given that they did not focus on the specifics of the energy sector.

Thus, it is clear that the literature affirms negative relationship, in some cases, and positive relationship in others between working capital components and profitability.

However, as to whether which findings can be replicated in the energy sector remains an issue this study aimed to uncover.

2.5 Conceptual Framework

In a broad sense a conceptual framework can be seen as an attempt to define the nature of research (Gay, 1992). A conceptual framework considers the theoretical and conceptual issues surrounding research work and form a coherent and consistent foundation that will underpin the development and identification of existing variables (ACCA, 2011). This study seeks to establish the Effect of Working Capital Management on the Profitability of Public Listed Energy Firms in Kenya and the conceptual framework is presented in figure

2.2.



Independent Variables

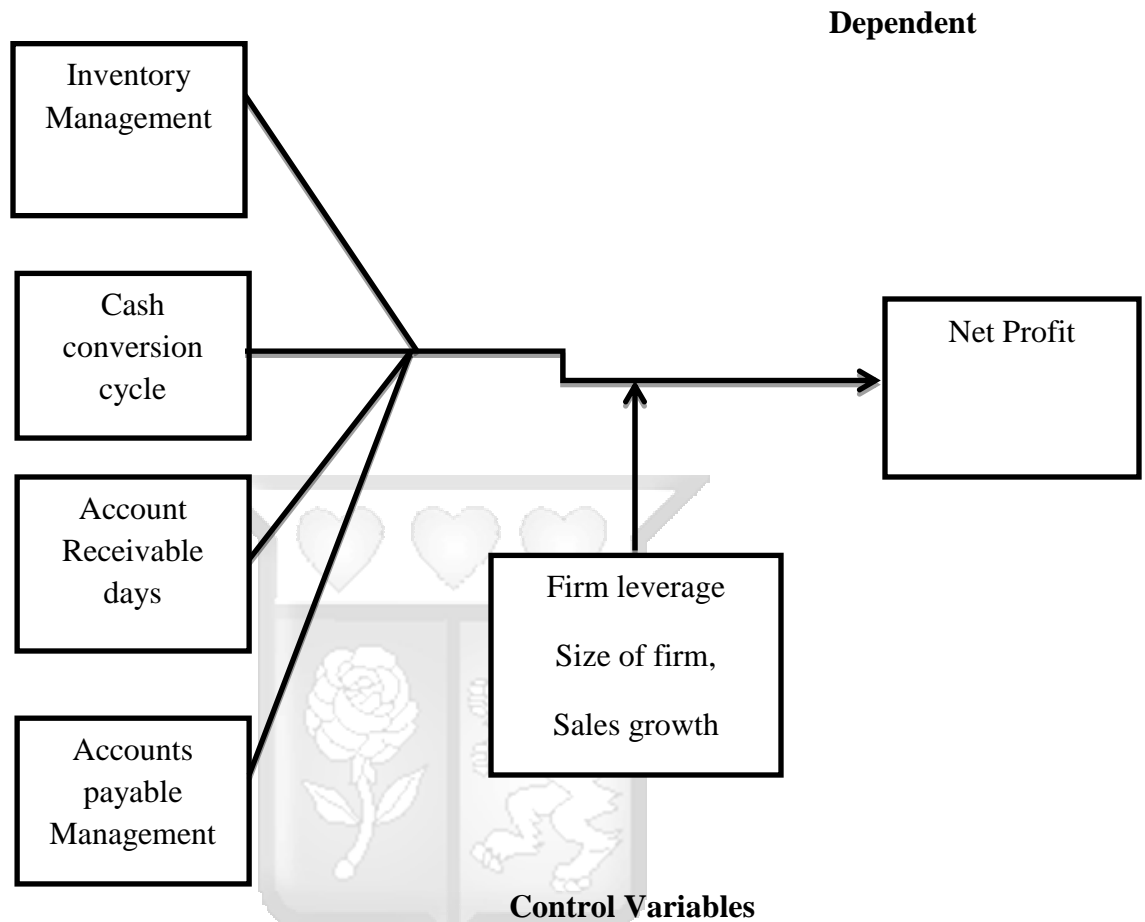


Figure 2.2 Conceptual Framework

Source: Author (2014)

This study proposes four variables that influence working capital management in Kenya's energy sector. The choice of these variables has been influenced by the previous studies related on working capital management done by previous researchers. All these variables are of great help to test hypothesis of this study. The independent variables used in this study include account receivables, accounts payables, cash conversion cycle and inventory management. These are the estimated core components of working capital that need to be managed to increase efficiency and effectiveness of working capital. The efficiency of these variables affects dependent variable (profitability). In the case of this study, profit used is net profit. The relationship between WCM and net profit has several

interveners affecting it. The kind of technology adopted by a firm, the size of that firm, the amount of sales the firm makes and the current ratio intervene between the relationship of working capital and profitability as indicated in the figure. The presentation of these intervening variables is similar to those presented by Makori and Jagongo (2013).

Inventory management involves how a company manages its inventory measured by the amount of inventory the company holds at a given period, the number of days it takes the company to convert inventory into cash, and the number of times a company sells its inventory in a year. Accounts receivable days refers to the number of days it takes a company to collect money it is owed. This is calculated by dividing average accounts receivables by the daily revenue. Accounts payable days refers to the number of days it takes a company to pay its creditors. It is estimated by dividing the average accounts payables by the daily cost of goods sold. Cash conversion cycle is calculated subtracting the days it takes a company to pay its creditors from the sum of the days the company takes to convert inventory into cash and the days it takes a company to collect its receivables. Firm leverage ratio is measured by dividing the sum of short-term and long-term loans by the total assets while size is measured as the natural logarithm of total assets of the firm while sales growth is measured as $(\text{this year's sales} - \text{last year's sales}) / \text{this year's sales}$ similar to what Garcia-Teruel and Martinez-Solano (2007) did.

2.6 Conclusion

This chapter has presented the literature the study reviewed. The review comprised the theoretical review, empirical review, gaps the research will fill, and the conceptual framework. The review has been done according to the research questions under study. Works from previous researchers as well as the researcher's input (criticism) have been presented.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter lays the methodology that was used to handle the research problem. It is organized as the research design, target population, sampling techniques and sample size determination, construction of research instruments, pilot study, validity, and reliability of the instruments, methods of data collection, data analysis, and presentation and the ethical consideration.

3.2 Research Design

This study used explorative research design. According to Rubin and Babbie (2009), exploratory researches aim to establish insights into a problem to provide a better understanding of a phenomenon. By exploring a phenomenon, a researcher is able to hypothesize on what is going on. Since this study investigated the impact of working capital management on profitability, exploratory design enabled the researcher understand the relationship between the two main variables under study hence lead towards hypothesizing how they relate in the context of listed energy companies.

3.3 Target Population

This study targeted listed energy companies in Kenya. According to the NSE statistics (as at November 2013), these companies are listed under the category of energy & petroleum firms and they are four including KenolKobil Ltd., Total Kenya Ltd., KenGen Ltd., and Kenya Power & Lighting Co. Ltd. The company's financial statements between 2007 and 2013 (when they were listed) were analyzed. Besides analyzing the financial statements, the study also targeted employees who are in the positions that have exposed them to information concerning their company's management of working capital and profitability. In line with this, the study targeted senior managers in positions concerned with or affiliated to working capital management and company profitability, and

employees from the accounts/finance department who directly manage variables of working capital. As for the case of employees in the accounts/finance category, the study focused on those at the companies' head offices in Nairobi. A survey by the researcher established that there are about 118 target employees from the four companies. As such, the target population for the study was 118.

3.4 Sampling Technique

Stratified random sampling method was used to realize a sample size that participated in the study. This sampling method involved stratifying the population in strata based on unique characteristics (Brown & Suiter, 2012). Since senior managers and employees from accounts department were targeted, the researcher stratified them into two major groups-one with senior managers and the other with all employees from the accounts/finance department. From the strata with employees in the accounts/finance department, the researcher sampled cashiers, inventory managers, accountants, and internal auditors. Respondents were then sampled from each of these categories. Table 3.1 presents the stratification of the population and the sample size chosen. The companies from which secondary data was collected were chosen by census method since the study's interest was to analyze all the listed energy companies.

3.5 Sample Size

According to Akoto *et al.* (2013), when using panel data methods to find relationship of variables, a researcher must adopt data from a series of years. They argue that when the data are spread to a large period, they offer better results that can be used to predict future happenings to great certainty. Though researchers like Bartlett, Kotrlik, and Higgins (2001) recommend that at least 10 observations be used particularly when doing a regression analysis, this study only used 7 observations from each company, as most of the target companies were not listed earlier than 2007. As such, given the scope of this study (studying listed energy firms), the researcher only found it sound to analyze statements from 2007 to 2013 using panel method.

Concerning the size of participants, Mugenda and Mugenda (2003) argue that a sample of 10% to 30% is adequate for studying particularly when dealing with large samples. Using this rule of thumb, this study adopted a sample size of 30% from the target population of 118 participants. Given the fact that secondary data formed the main tool of analysis in this study, and that primary data only acted to substantiate as well as provide responses that cannot be read from financial statements, the researcher considered this sample adequate to offer generalizable results. As such, the study targeted 36 respondents who were distributed as indicated in the table 3.1.

Table 3.1: Stratification of Population and Sample Size

Strata	Substrata	Company	Population	Sample size	% sample
Senior management		KenolKobil	8	2	30
		Total Kenya	6	2	30
		KenGen	10	3	30
		KenyaPower	10	3	30
Employees from Accounts/Finance department	Cashiers/inventory managers	KenolKobil	5	1	30
		TotalKenya	3	1	30
		KenGen	6	2	30
		KenyaPower	10	3	30
		TotalKenya	4	1	30
		KenGen	8	2	30
		KenyaPower	12	4	30
Accountants	KenolKobil	5	2	30	
	TotalKenya	5	2	30	
	KenGen	10	3	30	
	KenyaPower	4	1	30	
Internal auditors	KenolKobil	3	1	30	
	TotalKenya	1	1	100	
	KenGen	4	1	30	
	KenyaPower	4	1	30	
Total			118	36	30

3.6 Data Collection Instruments and Procedures

Several researchers argue that exploratory studies are synonymous with qualitative data collection methods like focus group, literature review and in-depth interviews (Brown &

Suiter, 2012). However, according to Rubin and Babbie (2009), exploratory studies can either be qualitative or quantitative or both. Considering this, the researcher was left with the decision to choose the method of data collection to use.

This study collected primary and secondary data. Primary data concerned sampling managers and accountants of target companies to interrogate them on questions linking working capital management and profitability. The study used a structured questionnaire to collect primary data. A questionnaire, when structured, offers high validity, is cheap to administer particularly when the researcher does not have to be present for the respondents to answer the questions, and can be used to collect data from a large number of respondents effectively (Brown & Suiter, 2012; Rubin & Babbie, 2009). Since the researcher targeted all listed energy companies in Kenya that together have a significant number of managers and employees to be sampled, the questionnaire was most appropriate way of collecting data.

However, questionnaires are limited in the fact that respondents who do not know how to read and write are unable to address them without help. Structured questionnaires may also limit respondents who want to give in-depth elaborate answers. This study overcame these limitations by targeting respondents who are literate and able to address the study's questionnaire. Additionally, the questionnaire had options where respondents would offer additional explanations. The researcher delivered the questionnaires physically and respondents were allowed to choose the best method they would use to return the answered questionnaire; this enhanced the return rate, as the respondents used their most convenient and flexible method.

Before the collection of primary process, the researcher sought authorization from the target companies. Thereafter, the researcher conducted a small education forum to the target population by delivering relevant material on the research being done, its purpose, the respondents' role, and the ethical considerations to be considered. In the case of primary data, the researcher then delivered the questionnaires for data collection.

Secondary data was collected by panel method where a series of data from the annual

financial statements of the target companies was reviewed. The time series observed was from 2007 to 2013 while the sources of data were energy companies (KPLC, Total Kenya, KenolKobil, and KenGen). Of interest to the researcher were the annual income statement and the balance sheets of the targeted companies. These financial statements presented the companies' revenue, inventories, cost of sales, net profit, accounts payables and accounts receivables which were used to calculate average inventory, inventory turnover ratio, CCC, APD and ARD that were regressed against net profit.

3.7 Data Analysis

This study used a combination of descriptive and inferential (regression) analysis methods. Descriptive statistics were used to analyze primary data as well as offer descriptions of the secondary data while inferential statistics were used to analyze the secondary data with respect to enabling the researcher make conclusions as to how profitability related to working capital management in the energy industry. The descriptive statistics used were measures of central tendencies, frequencies, and percentages while panel regression method was the inference used.

Secondary data was sorted and cleaned by eliminating observations that had negative values in the cost of goods sold, revenue, assets, accounts receivables, accounts payables, and observations with missing data similar to what Mathuva (2010); Deloof (2003) did. Before choosing which model to use in analyzing the data, the researcher conducted a test for heteroskedasticity to establish whether the data suffered from any such errors or autocorrelation. The results collected are as shown in table 3.2. It should be noted that heteroskedasticity and serial autorelation are common issues in panel data, hence, the need for the test (Greene, 2008).

Table 3.2: Test for Heteroskedasticity

```
. xtgls xprofit dso dpo ccc inventratio, panels(heteroskedastic) corr(independent)
```

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares

Panels: heteroskedastic

Correlation: no autocorrelation

Estimated covariances	=	4	Number of obs	=	28
Estimated autocorrelations	=	0	Number of groups	=	4
Estimated coefficients	=	5	Time periods	=	7
			Wald chi2(4)	=	62.74
			Prob > chi2	=	0.0000

There was no serial autocorrelation in the data but panels suffered from heteroskedasticity. This was solved by use of robust standard errors.

Most common methods of analyzing panel data are fixed effects and random effects as opposed to pooled ordinary least square method. The choice of which method is relevant to analyze given data depends on the assumptions made as well as the errors the data suffers from. Most researchers who have investigated the relationship of WCM and profit have used pooled OLS regression with the main justification being that OLS offers the researcher the chance to investigate how control factors affect the relationship (Akoto *et al.*, 2013; Jagongo and Makori, 2013; Gakure *et al.*, 2012; Nzioki *et al.*, 2013). Others like Mathuva (2010) have used a combination of OLS and fixed effects models to take care of the errors and assumptions arising as well as include interveners in the relationship. Others like Zawaira and Mutenheri (2014) just used random effects model but treated intervening variables as part of the main variables while performing the regression; though they used backward elimination to remove some variables that showed weird behavior.

As such, this study was tempted to use the OLS regression as the study is similar to those done using that method. However, the researcher was prompted to investigate whether pooled OLS regression could give the desired estimates in this study's case. An investigation into these models established that OLS is very efficient when investigating a relationship that has interveners playing a significant role. OLS models also offer the researcher a chance to capture variations emerging through time or space simultaneously. The drawbacks of OLS are that it involves a formula for getting the standard errors that overstates the precision gains resulting into understated standard errors hence inflated t-statistic. Additionally, errors in pooled OLS tend to correlate across firms. As such, errors in one firm may influence another and given that energy firms are different based on the nature of products they deal with, such errors can affect the estimates the study makes (Cameron & Trivedi, 2005). Inflation of t-statistic affects the significance (p-value) of a variable. To avoid such errors, Greene (2008) recommends the use of fixed effects or random effects model, which this study will favor.

This study assumed the independence of individual unobserved heterogeneity of regressors and aimed to approximate consistently all variables, together with the coefficients of time-invariant regressors. Given the different lines of business among the energy companies under study (for instance, KPLC sells electricity while Total Kenya sells petroleum products), the variation across entities is assumed random and not related to the predictors in the model. As such, using random effects is most suited to the study than fixed effects or pooled OLS. The study also discriminates against fixed effects owed to the fact that fixed effects model is efficient to produce acceptable estimates when the data being analyzed suffers from correlation issues (Bellouma, 2011). Otherwise, random model is efficient than fixed model as it uses generalized least squares (Greene, 2008). Additionally, conducting a Hausman's test on the data reveals that the use of a random effects model is acceptable-see table 3.3. The Hausman's test results showed $P > \chi^2 = 0.4983$, which, according to Torres-Reyna (n.d.), requires the study to use random effects.

Table 3.3: Hausman Test

. hausman Fixed Random

	Coefficients			
	(b) Fixed	(B) Random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
dso	-19.95226	-37.52729	17.57503	18.25498
dpo	29.10123	56.04552	-26.94429	16.07425
ccc	15.64848	33.00999	-17.3615	18.46837
inventratio	65.5275	65.70481	-.1773105	17.15136

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 3.37
 Prob>chi2 = 0.4983
 (V_b-V_B is not positive definite)

The choice of random effects in this study is not weird, as other similar researches have used it as well. Garcia-Teruel and Martinez-Solano (2007); Bellouma (2011); Wamugo *et al.* (2014); Zawaira and Mutenheri (2014) and Vallalnathan and Joriye (2013) used random effects because, more than the other models, it gave efficient estimations for the relationship between working capital and profit, as it uses the GLS effects.

Torres-Reyna (n.d.) presents a random effects model as:

$$Y_{it} = \alpha + X_{it}'\beta + u_{it} + \varepsilon_{it}$$

Where Y is the independent variable, ‘ α ’ is the intercept, ‘X’ is the independent variable, ‘ β ’ is the coefficient of the independent variable, ‘u’ is the error between entities while ‘ ε ’ is the error within entities. ‘i’ and ‘t’ are the ‘ID’ specific (e.g. company) and the time specific terms respectively (p. 25).

Substituting the variables of this study to this model leads to:

$$P_{it} = \alpha + \text{ARD}_{it}'\beta_1 + \text{APD}_{it}'\beta_2 + \text{CCC}_{it}'\beta_3 + \text{ITR}_{it}'\beta_4 + u_{it} + \varepsilon_{it}$$

Where P is the net profit recorded by the companies

α is the intercept

ARD (also known as days sales outstanding), APD (also known as days payables outstanding), CCC and ITR are the independent variables

$\beta_1 - \beta_4$ are the coefficient of respective independent variables

' u ' is the error between groups while ' ε ' is the error within groups.

' i ' is the firm under study (Id variable) and ' t ' is the time (year) the observation is recorded (time variable)

To estimate how intervening variables affect the relationship, the interveners were directly included into the model and the following models created:

$$P_{it} = \alpha + \text{ITR}_{it}'\beta_4 + \text{Size}'\beta_5 + \text{Levratio}'\beta_6 + \text{SalesGrow}'\beta_7 + u_{it} + \varepsilon_{it}$$

$$P_{it} = \alpha + \text{CCC}_{it}'\beta_3 + \text{Size}'\beta_5 + \text{Levratio}'\beta_6 + \text{SalesGrow}'\beta_7 + u_{it} + \varepsilon_{it}$$

$$P_{it} = \alpha + \text{APD}_{it}'\beta_2 + \text{Size}'\beta_5 + \text{Levratio}'\beta_6 + \text{SalesGrow}'\beta_7 + u_{it} + \varepsilon_{it}$$

$$P_{it} = \alpha + \text{ARD}_{it}'\beta_1 + \text{Size}'\beta_5 + \text{Levratio}'\beta_6 + \text{SalesGrow}'\beta_7 + u_{it} + \varepsilon_{it}$$

Where size is the size of the company measured by the logarithm of the total assets; Levratio is the firm leverage ratio calculated by dividing long-term and short-term loans by total assets; and salesgrow is the growth in sales measured by dividing the change in sales by the current sales.

3.8 Research Quality

To ensure the questionnaire measured valid data that was reliable, the researcher conducted a pilot study. A test sample of 15 staff from the target population (who were

not part of the actual sample size) were selected for the pilot study. This pilot sample was divided into two groups. A pilot study was done on these respondents at different times to establish whether the instrument was reliable and valid. Inconsistencies were corrected before the instrument was taken for the actual study. Additionally, closed ended questions were adopted to enhance content validity and research permission letters and company logos used to enhance face validity. To ensure the quality of the panel data, only audited accounts were used since these accounts are verified and counterchecked by a credible internationally recognized audit firm.

3.9 Ethical Considerations

The researcher handled and used the data collected with confidentiality and care it deserved. The data collected from financial statements was not altered to meet any hidden interests. The researcher ensured that confidentiality of the participants' responses and their identity was maintained. The researcher also facilitated informed consent of what the research was about and what was expected from respondents. Additionally, researchers were given the liberty of participating or leaving the study whenever possible. However, exiting from the study required one to notify the researcher so that their replacement can be sourced. Finally, the researcher ensured they cause no harm to the respondents.

3.10 Conclusion

This chapter has presented the research design and research methods the researcher used to conduct the study. The chapter also presented and justified the targeted population, and the ethical considerations the researcher kept.

CHAPTER FOUR

RESULTS, ANALYSIS, AND DISCUSSIONS

4.1 Introduction

This chapter presents the results collected by the researcher, the analysis of the results and the discussions associated with those results. The organisation of the results is such that findings of data collected from secondary sources is presented first then findings of perceptions of target respondents presented to substantiate or complement, where necessary, the outcomes from financial statements. The findings are divided into descriptive and inferential for easy of analysis and presentation.

4.2 Return Rate

In the primary data collection, out of the 36 respondents the study targeted, the researcher was able to collect 18 dully-filled questionnaires for analysis. This represented a return rate of 50%. This return rate was average (50%), hence, acceptable though not good to offer better generalisations. However, the researcher still considered it adequate for analysis for several reasons. First, most of the target respondents within a department performed similar roles, hence, the likelihood of variation of responses concerning the organisation's financial management was estimated to be very low. Secondly, the fact that the main analysis tools were the financial statements, the collected data only acted to substantiate or compliment the practices as perceived by the departmental/organisational actors. Thus, analysing fewer questionnaires would not alter the main direction of analysis.

4.3 Background Information of Respondents

4.3.1 Gender of Respondents

The study investigated the gender of respondents and found the results in table 4.1.

Table 4.1: Respondent's gender

	Frequency	Percent
Male	15	83.3
Female	3	16.7
Total	18	100.0

Majority of respondents (83%) were males while the remainder were females. Though this shows a bias towards the masculine gender, it has little effect to the kind of responses as they (responses) concern factual happenings in the organisation.

4.3.2 Cumulative Experience

The study investigated the cumulative number of years respondents were exposed to how companies managed their working capital. The collected results are as shown in figure 4.1.

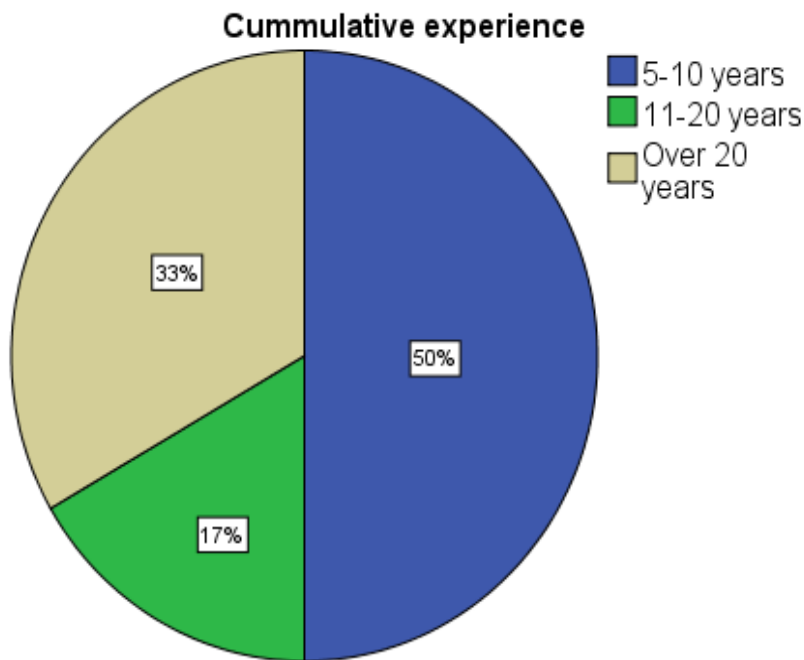


Figure 4.1: Cumulative Experience of Respondents

Majority (50%) of respondents had experience of between 5 and 10 years dealing with working capital management. The remaining 33% had over 20 years experience while

17% had 11-20 years experience. This shows that generally, the respondents targeted by the study were highly experienced in working with working capital thus they could offer better analysis of how it affects profits.

4.3.3 Years Worked in Senior Management Level

The study also sought to know the number of years respondents had worked in senior management to establish extent of exposure to important information about the organisation. The results collected are shown in figure 4.2.

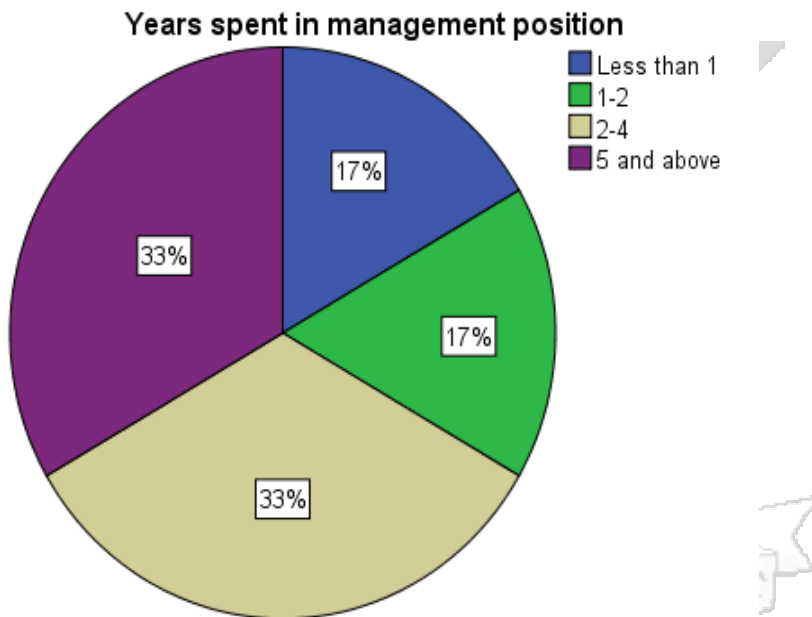


Figure 4.2: Years Spent in Management

Majority (66%) had spent more than two years in management. This means that majority of the respondents were well exposed to information concerning how working capital influenced profits.

4.3.4 Education Level

Concerning education, the results in table 4.2 were collected.

Table 4.2: Education Level

	Frequency	Percent
Degree	9	50.0
Masters	9	50.0
Total	18	100.0

All the respondents had higher education. Fifty-percent of them had masters’ degree while the other 50% had bachelors’ degree. This indicates that majority of the respondents were adequately educated to comprehend the relationship between profits and working capital management in their organization. As such, the responses the researcher collected attracted significant confidence from the users.

4.4 Descriptive Results

The study investigated descriptive statistics of the factors of working capital that affect profitability of energy companies. The following subtopics illustrate the findings.

4.4.1 Inventory Management

Table 4.3: Inventory Management

Variable	Obs	Mean	Std. Dev.	Min	Max
avinventory	28	7.15e+09	5.27e+09	8.69e+08	1.89e+10
dio	28	48.6163	15.86512	8.382938	73.97138
inventratio	28	9.353073	7.450253	4.934341	43.54082

The results in table 4.3 show that the average inventory these companies hold annually is worth Ksh. 7.1 billion, it is estimated that the companies make huge sales of their inventory in one year. Hilton (1994) noted that one of the reasons for keeping inventory is to meet demand. Thus, if the energy companies have an average inventory of Ksh 7.1 billion, it means that the demand for that inventory is similarly high. The days taken to

sell inventory (DIO) is averaged as 48.62 with a deviation of not less than or more than 15.87days. These results show that, on average, listed energy companies take about one and a half months to sell their inventories and, generally, sell their inventories about 9.35 times in one year. This means that demand for energy products is high, making it possible for the energy companies to sell their inventories 9.35 times annually.

To confirm the high activities in inventory among the listed energy companies, the researcher computed data from responses concerning the frequency of inventory budgeting and the frequency of review of inventory levels. The results were as presented in figure 4.3 and 4.4.

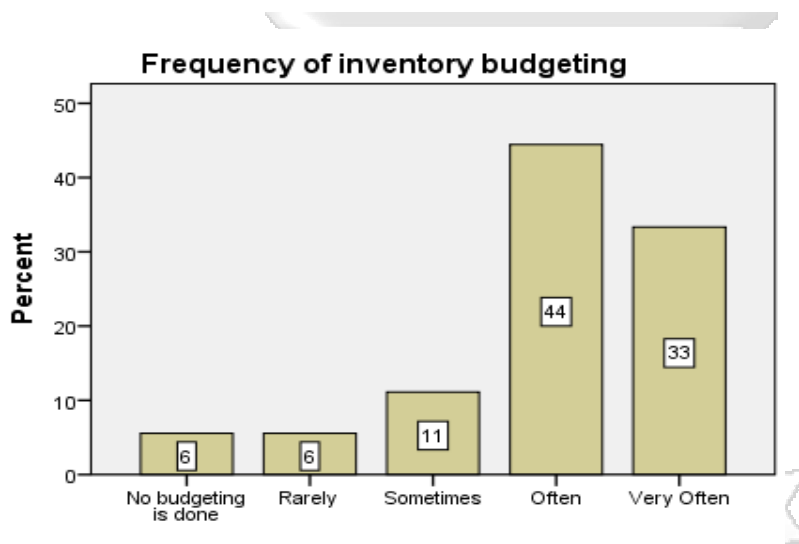


Figure 4.3: Frequency of Inventory Budgeting

As shown in the figure 4.3, the common frequency of budgeting for inventory in these companies was often (44%) or very often (33%). This result is similar to the one presented by Kwame (2007) on most Ghanaian businesses that prepared and reviewed inventory budgets often.

Additionally, the frequency of review of inventory levels was indicated in figure 4.4.

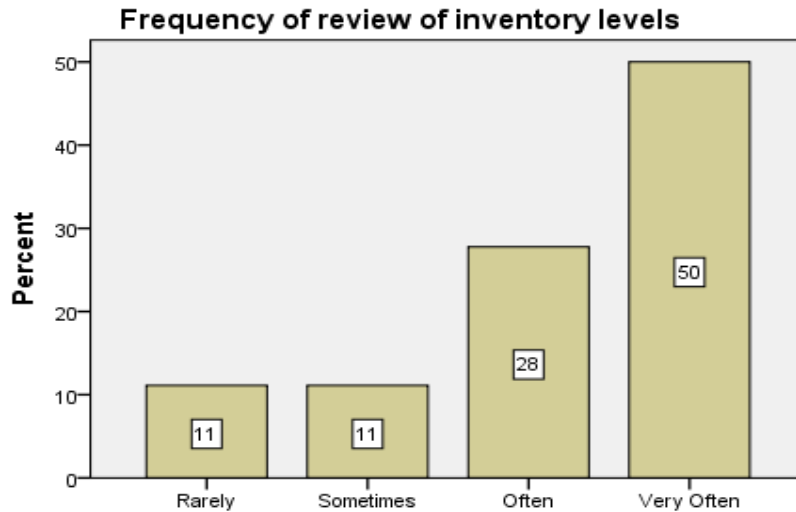


Figure 4.4: Frequency of Review of Inventory Levels

The results in figure 4.4 show frequency of review of inventory levels was very often at 50% and often at 28%. These confirm that indeed the energy companies dealt with high volumes of revenue as the rate of checking them and budgeting for them was often.

Companies aiming to make huge sales must ensure adequate levels of stock/inventory. As such, frequent review and budgeting for inventory is necessary. The fact that listed energy companies in Kenya do these activities often means that the companies make huge or faster sales that require frequent replenishing of available stock. As such, these results concur those of Kwame (2007) and Nyabwanga and Ojera (2012) that enterprises that reviewed their inventory/budgeted for it often ensured a balance between demand and availability of stock.

4.4.2 Cash Conversion Cycle

The researcher also investigated the performance of CCC among the listed energy companies. The collected descriptive results were as presented in table 4.4.

Table 4.4: Cash Conversion Cycle Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ccc	28	1.132978	57.93857	-172.7016	98.59991

The minimum number of days it takes cash to cycle in energy-listed companies is -172.7 days while the maximum time it takes is 98.6 days. This means that sometimes energy companies use their creditors' money to do business and wait for long in order to pay them. However, on a bad day, listed energy companies take more than 98 days to cash in on their sales. The average CCC of 1.133 days means that on average, listed energy companies have a faster cash cycle. It only takes 1.1 days for cash tied up in stock to be released. This means that energy firms, on average, sell their products/receive payment for their products at a faster rate. This can be associated with the kinds of products the companies deal with-energy products. This concurs with the observation made by Filbeck and Krueger (2005) that companies with shorter CCCs have a larger amount of cash flow. The standard deviation of 57.94 shows that though the CCC rate is low, sometimes it can go up or down by 57.94 days.

The study then investigated the activities managers of listed energy companies do to ensure the overall low CCC. The activities are as presented in Figure 4.5, 4.6 and 4.7.

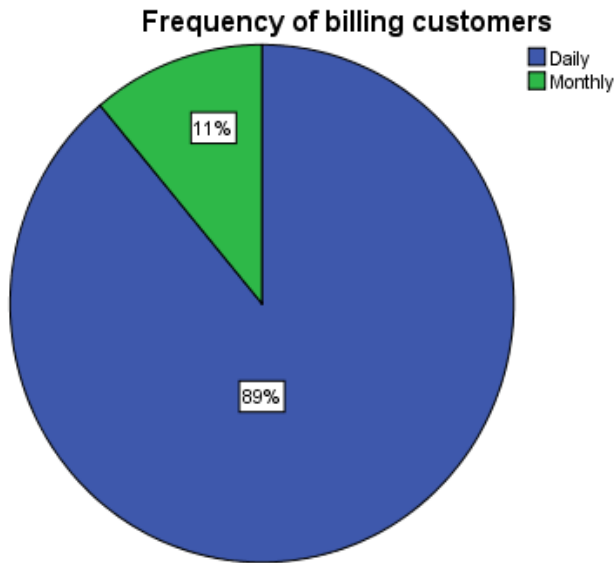


Figure 4.5: Frequency of Billing Customers

Though 11% of customers were billed daily, majority (89%) were billed monthly.

Figure 4.6 shows the maximum incentive time within which customers pay their dues to the listed energy companies.

Maximum incentive time within which customers pay their dues

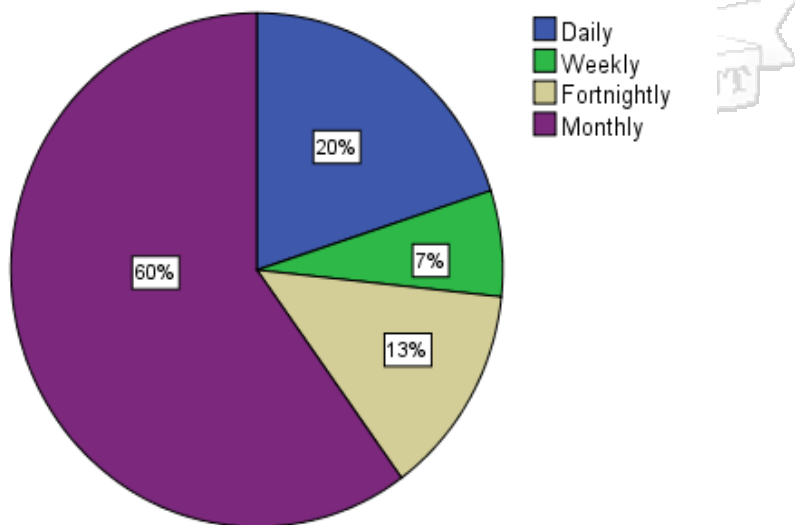


Figure 4.6: Maximum Incentive Time for Customers to Pay their Bills

Majority (60%) of customers were only allowed a grace period of a month, 20% were only allowed a day, 13% were allowed two days and the remaining 7% were allowed a week to pay their bills to listed energy companies.

The results in the two figures (figure 4.5 and figure 4.6) indicate that listed energy companies billed their customers within a month. The customers were also allowed to settle the money they owe the companies within a month as a way of ensuring the low CCC. This concurs with the observation made by Graham and Smart (2012) that one way of reducing the CCC is by billing customers frequently.

Figure 4.7 provides the period it takes listed companies to pay their creditors.

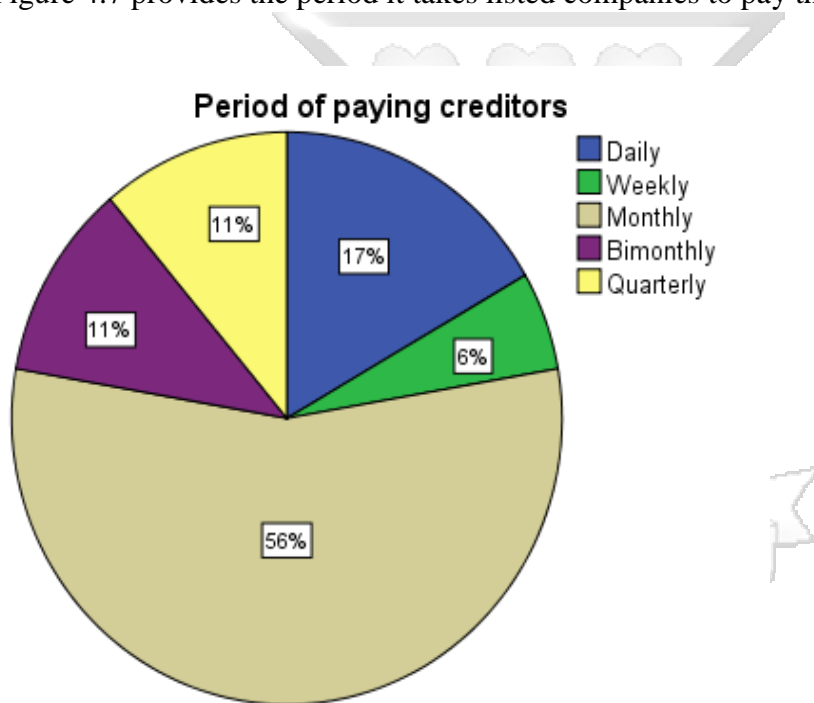


Figure 4.7: Period of Paying Creditors

Majority (56%) of creditors to listed energy firms are paid within a month and 17% are paid on daily basis.

From these results, it is evident that listed energy companies do not appreciate being paid after a month and similarly prefer to settle their creditors' bills within a month. The results, thus, show that listed energy firms in Kenya have a defined cash flow cycle that enhances their liquidity based on the fact that they do not stay with creditors' money

longer than when they receive payment from their products just as was explained in the literature (Appuhami & Ranjith, 2008).

4.4.3 Accounts Payables and Receivables

Table 4.5 presents the results of accounts payable days and accounts receivable days of listed energy companies in Kenya.

Table 4.5: Accounts Payables and Receivables

Variable	Obs	Mean	Std. Dev.	Min	Max
avacctspa>e	28	9.52e+09	5.97e+09	2.40e+09	2.27e+10
avaacctsr>e	28	7.94e+09	4.37e+09	6.29e+08	1.56e+10
dso	28	51.05762	29.8481	14.98311	132.9111
dpo	28	98.54094	71.20058	15.17166	249.6365

The mean accounts payables for the listed companies were Ksh 9.52 billion while the mean accounts receivables was Ksh. 7.94 billion. Thus, on average, the listed energy companies paid more bills than they were paid in the short term. This means that the companies borrowed more to finance their activities rather than just depending on the sales they received. The results also shows that listed energy companies took an average of 51.06 days to collect their outstanding sales while they took 98.54 days to pay their bills. The standard deviations show that DSO and DPO can increase or decrease among companies with 30 days and 71 days respectively. This means that energy companies collect cash from their debtors within short time so that they can re-invest it and take long to release the money they owe their creditors. As such, these companies had more money at their disposal for re-investing to earn more profit. This confirms Akoto *et al.*'s (2013) findings that it is financially better for companies to have a high APD and a low ARD.

4.5 Profitability and Working Capital Management

The study investigated how profitability of listed companies in the energy sector related to Inventory turnover ratio, CCC, AP Days (DPO), and AR days (DSO). The results of the regression outputs were as shown in the following subheadings.

4.5.1 Inventory Turnover and Profitability

Table 4.6: Effect of ITR on profits

```
. xtreg xprofit inventratio size Levratio salesgrowth, re vce(robust)
```

Random-effects GLS regression Number of obs = 28
Group variable: company Number of groups = 4
R-sq: within = 0.0335 Obs per group: min = 7
 between = 0.9190 avg = 7.0
 overall = 0.4763 max = 7
Wald chi2(3) = .
Prob > chi2 = .
corr(u_i, X) = 0 (assumed)
(Std. Err. adjusted for 4 clusters in company)

xprofit	Robust					
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
inventratio	26.21407	35.79585	0.73	0.464	-43.94451	96.37265
size	1896.416	334.9971	5.66	0.000	1239.833	2552.998
Levratio	2675.596	3295.847	0.81	0.417	-3784.144	9135.337
salesgrowth	779.2117	532.3804	1.46	0.143	-264.2347	1822.658
_cons	-46109.47	7723.469	-5.97	0.000	-61247.19	-30971.74

The result on the relationship between ITR and profits as shown in table 4.6 indicate there is no statistical significance between profit and ITR among listed energy firms ($P>|z| = 0.464$). This indicates that the number of times listed energy companies turnover their inventory does not contribute to their profits. This results may be as a result of the fact that some of the biggest energy companies sampled (like KenGen) get paid for what they supply and not necessary what is consumed or sold. As such, since supply is fixed

(or has insignificant variations), the profits do not depend on how much is sold. Additionally, companies like KPLC have a deposit charge for everyone of their consumers which affects profits but are not part of sales. This result is inconsistent with the one presented by Stickney *et al.* (2010) and Mistry (2012) that ITR and profits had a positive statistically significant relationship but consistent with Gondal and Arshad's (2013) findings who found insignificant relationship between profits and ITR.

The result also shows that the size of the company had a positive statistically significant relationship with profits ($p > |z| = 0.000$) and leverage ratio, and sales growth had no statistical significance with profits based on $p > |z| = 0.417$ $p > |z| = 0.143$ respectively. This result indicates that the size of the firm (measured based on the natural logarithm of assets) played a significant role in determining its profits. As such, energy companies with huge assets made high profits.

4.5.2 Cash Conversion Cycle

As to whether cash conversion cycle influences profits in energy companies, the results in table 4.7 were collected.

There is negative statistically significant relationship between cash conversion cycle and profits of listed energy companies ($p > |z| = 0.027$). An increase in profits is caused by a reduction in the number of days it takes energy companies to convert its assets into cash. This result agrees with those presented by Filbeck and Krueger (2005); Jose *et al.* (2003); Mathuva's (2010); Makori and Jagongo (2013); and Nzioki *et al.* (2013) that CCC related inversely but significantly to profitability. This means that when energy companies take shorter time to convert their non-monetary assets into monetary, they become highly liquid, which impact on their profits.

At this point the size of the company are also significantly related to the profits energy companies make based on P-value of $p > |z| = 0.99$. This indicates that profitable firms are those whose size is big based on the assets they own. Sales growth and the leverage ratio did not have any significance at this point.

Table 4.7: Effect of Cash Conversion Cycle

```
. xtreg xprofit ccc size Levratio salesgrowth, re vce(robust)

Random-effects GLS regression           Number of obs   =       28
Group variable: company                 Number of groups =        4

R-sq:  within = 0.0894                   Obs per group:  min =        7
      between = 0.8816                       avg =       7.0
      overall = 0.5270                       max =        7

                                           Wald chi2(3)    =        .
corr(u_i, X) = 0 (assumed)                Prob > chi2     =        .
```

(Std. Err. adjusted for 4 clusters in company)

xprofit	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
ccc	-12.26817	5.54949	-2.21	0.027	-23.14497	-1.391366
size	1204.235	728.9594	1.65	0.099	-224.4988	2632.969
Levratio	3054.598	2222.935	1.37	0.169	-1302.274	7411.47
salesgrowth	573.6651	385.23	1.49	0.136	-181.3719	1328.702
_cons	-28765.88	17427.02	-1.65	0.099	-62922.21	5390.455

4.5.3 Accounts Receivable Days

The effect accounts receivable days of listed energy companies has on profits is also presented in table 4.8.

Table 4.8: Relationship Between Profitability and ARD

```
. xtreg xprofit ard size Levratio salesgrowth, re vce(robust)

Random-effects GLS regression           Number of obs   =       28
Group variable: company                 Number of groups =        4

R-sq:  within = 0.0223                   Obs per group: min =        7
      between = 0.9534                       avg =       7.0
      overall  = 0.4754                       max =        7

                                           Wald chi2(3)    =        .
corr(u_i, X)  = 0 (assumed)              Prob > chi2     =        .

                                           (Std. Err. adjusted for 4 clusters in company)
```

xprofit	Robust					
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ard	7.269067	4.754017	1.53	0.126	-2.048635	16.58677
size	1824.954	378.983	4.82	0.000	1082.161	2567.747
Levratio	1265.634	2145.765	0.59	0.555	-2939.989	5471.256
salesgrowth	894.7025	451.9187	1.98	0.048	-8.958073	1780.447
_cons	-44200.03	8760.194	-5.05	0.000	-61369.7	-27030.37

Accounts receivable days among listed energy companies does not have any significance to the profits the companies make ($p>|z|=0.126$). This result is contrary to what most researchers like Gill *et al.* (2010); Akoto *et al.* (2013); Karaduman *et al.* (2010) and Mathuva's (2010) findings show that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers and profitability. However, the findings concur with those of Zawaira and Mutenheri (2014) who found no significance between ARD and profits of Zimbabwean firms. Probably listed energy companies do not consider accounts receivable days as a determinant of profits hence the results. This could be as a result of most of the purchases of energy products being in cash as well as things like customer deposits for KPLC services which enable the companies make profit without regard of when they receive their accounts due or not. Size and sales growth have statistical significance with profit in this relationship given $p>|z|=0.000$ and $p>|z|=0.048$ respectively. However, the leverage ratio does not affect profitability as there is no significance ($p>|z|=0.555$).

4.6 Conclusion

This chapter has presented the analyses of the collected data. First, the study presented the descriptions of the data in terms of percentages, frequencies, mean, and standard deviations. Thereafter, regression analyses have been presented. All analyses are accompanied with discussions. The analyses were presented according to the study objectives.



CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings the study collected and presented in chapter four. From these findings, the chapter makes conclusions about listed energy companies in Kenya and then recommends relevant policy implementation and areas for further study.

5.2 Summary of Findings

The overall objective of this study was to assess the effect of working capital management on the profitability of public listed energy companies in Kenya. The collected results showed that ITR is not used among listed energy companies as a determinant of profits. Reducing the period it takes a given energy company to convert its non-cash assets into cash enhances profitability. Accounts receivable days, on the other hand, has no effect on the profits of listed energy firms and accounts payable days and net profit have a positive statistically significant relationship.

The first objective of study investigated the role inventory management played on the profitability of public listed energy companies in Kenya. Findings on this objective are divided into two: those concerning how inventory is managed and those that concerns how the management affects profits. On inventory management, the study found that the average inventory listed energy companies in Kenya hold annually is worth Ksh. 7.1 billion. The days taken to sell inventory (DIO) are averaged at 48.62 with a deviation of not less than or more than 15.87days. Average inventory turnover ratio of companies in this industry is 9.35 times a year. Additionally, the study found that in majority of the companies, the frequency of inventory budgeting and review of inventory levels was often or very often. As such, the findings show that inventory management practices listed energy companies do have no effect on the profits. The findings lead to the

acceptance of the null hypothesis that there is no significance between inventory turnover ratio and profits of listed energy firms.

The second objective aimed to establish how cash conversion cycle affects the profitability levels of listed energy companies in Kenya. The findings showed that on average a cash cycle among these companies took 1.133 days. As such, it only took 1.133 days for cash tied up in stock to be released for the companies' use. The study also found this cycle to deviate by 57.94 days indicating that in worst cases the CCC could increase by 57.94 days but in good cases the CCC could drop by 57.94 days. To achieve this low CCC, the companies bill their customers on a monthly basis, allowing customers an incentive period of not more than a month to pay their bills, and pay creditors within a month of taking their goods. The hypothesis that there is no relationship between profits and CCC was rejected as the study found inverse statistically significant relationship between CCC and profits.

Concerning the objective that aimed to establish the effect account receivable days had on net profits of listed energy companies in Kenya, it was found that the companies had a mean accounts receivable days of 51.06 days with a deviation of 30 days. As such, these findings show that on average, listed energy firms took 51 days and some hours to claim their receivables and that this period could be increased or reduced by 30 days, depending on company and customer specific factors. The average annual accounts receivables collected by the firms were worth Ksh. 7.94 billion. Additionally, the findings show that accounts receivable days have no statistically significant relationship with net profit thus, the acceptance of the null.

On the fourth objective that investigated the effect accounts payables had on net profits of listed energy companies, the study found that the mean accounts payables the industry had annually was worth Ksh 9.52 billion, which is higher than the annual average accounts receivables. The listed energy firms paid their accounts due after 98.54 days and this period could increase or reduce by 71 days. Compared to the accounts receivables, the finding indicates that it took listed energy firms longer to pay their debts. The findings also show that at the end of the year, listed energy firms were to pay more than

they were to receive (receivables) indicating that they had held on more of creditors' cash than debtors held the companies' cash. The relationship between accounts payables and profits saw the rejection of the null hypothesis, as there was statistically significant and positive association between APD and profits.

5.3 Conclusions

The study concludes that energy companies sell huge inventories based on their high average ITR. They also keep huge amounts of inventory to meet the high demand just as Hilton (1994) argued. Energy companies often review and budget for their inventory just as Ghanaian businesses do, as was presented (Kwame, 2007). The companies also check and budget for their inventory very often, an indication of the large inventory sales they make. This shows that Kenyan energy companies assume similar frequency of checking and reviewing budgets to that of Ghanaian firms studied by Kwame (2007) and some Kenyan firms studied by Nyabwanga and Ojera (2012). Additionally, the study concludes that listed energy companies in Kenya do not use ITR as a significant determinant of net profit-related decisions, as there is no statistically significant relationship between net profits and ITR ($P > |z| = 0.464$). This disagrees with the conclusions made by Okwo *et al.* (2012); Gondal and Arshad (2013) that managers increased the ITR in order to increase profits.

Listed energy companies in Kenya have implemented shorter CCC to ensure that cash tied up in stock is, on average, realised within the shortest time possible so that they can have more cash to invest as concluded by Filbeck and Krueger (2005). The companies achieve the shorter CCC by allowing customers to pay within a month; the period during which they are billed. As such, these results concur with Graham and Smart's (2012) strategy of billing customers frequently as one way of managing CCC. The companies also take a minimum of a month to settle their creditors. It is also concluded that managers of listed energy companies reduce the number of days taken to convert assets into cash so as to enhance profits ($p > |z| = 0.027$). As such, the study's conclusions concur with those presented by Jose *et al.* (2003) and Lazaridis and Tryfonidis (2006) that CCC is one of the factors managers control by shortening it to enhance profits. The conclusion

also concurs with Mathuva's (2010); Makori and Jagongo (2013) and Nzioki *et al.* (2013) who concluded that Kenyan firms became profitable when they implemented shorter cash conversion cycles.

On average, listed energy companies borrowed more to finance their activities rather than depending on the sales they received. The companies also collect their receivables within 51 days while they took 99 days to pay their creditors (AP). As such, the companies have more money at their disposal for re-investing to earn more profit. This confirms Akoto *et al.*'s (2013) conclusions that it is financially better for companies to have a high APD and a low ARD, as this enhances liquidity, hence, profits. However, as far as the relationship between profits and ARD was concerned, the study concluded that managers of listed energy firms do not consider ARD when making profit-related decisions as there is no significance between ARD and profits ($p > |z| = 0.126$). This conclusion is contradictory to the one presented by Karaduman *et al.* (2010) and Akoto *et al.* (2013) who concluded that firms that made huge profits in their respective cases reduced the time they took to collect their accounts receivable. However, the conclusion is in agreement with the one made by Zawaira and Mutenheri (2014) who on studying Zimbabwean firms found that the companies did not use accounts receivable days to make profit decisions. Referring to conclusions on Kenyan firms, the conclusion this study makes differs with those made by Mathuva (2010) and Makori and Jagongo (2013) that Kenyan firms shortened their accounts receivable periods to enhance their profits.

Contrastingly, it is concluded that listed energy companies in Kenya manage APD by increasing it to attain high net profits. This is based on the positive statistical significance between net profits and APD ($p > |z| = 0.031$). It is also concluded that taking long to pay money owed to creditors allows energy firms have more money at their disposal for possible reinvestment to earn profit. This then enhances net profit. As such, listed energy firms take advantage of any opportunity they have to enhance their liquidity hence profits. This conclusion matches the one made by Karaduman *et al.* (2010) and Lazaridis and Tryfonidis (2006) that managers consulted APD when making profit related decisions. The conclusion is also similar to the one Mathuva's (2010); Makori and Jagongo (2013); Nzioki *et al.* (2013); and Muchiri (2014) made in their studies-that

Kenyan firms increased the number of days they paid their payables so as to enhance their liquidity, hence, their profits.

Concerning the significance of control factors, the study concludes that the size of an energy company (measured by logarithm of sales) and the sales growth are significant controllers of the relationship between WCM and profits. This conclusion concurs partly with the one made by Makori and Jagongo (2013) who found positive relationship between profits and sales growth, and firm size. However, the conclusion that leverage ratio is not an important control factor of net profits disagrees with the other findings by Makori and Jagongo (2013) who established positive relationship between leverage and profits.

5.4 Recommendations

Managers of energy companies should aspire to eliminate the time it takes to convert non-cash assets into cash as this enhances profits. This can be done by introducing services that allow customers to pay in advance-for instance using pre-paid cards to purchase energy products. Additionally, energy firms can talk to their suppliers to facilitate just-in-time delivery of supplies so as to reduce instances of the companies' cash being held up in assets/inventories. Energy companies can also enhance efficiency in the billing and collection of cash from customers by, for instance, reducing bureaucracy to shorten procedures one has to go through before payment is received. Efficiency can also be increased by appropriate billing. Since most corporate companies do monthly accounts balances, energy firms should be billing such customers at the end of the month to make it easier to get paid than when they bill them at the start of the month. Similarly, long term billings should take place just before the end of a financial period rather than at the start of one.

Though managers of listed companies will still make profit even with disregard of the ARD, they should not lose focus of these factors. Overlooking ARD can lead to problems when cash sales reduce, when competition for cash-paying customers is stiffer or when the cost of living goes high that it affects cash sales. Additionally, the fact that managers

make profit without managing ARD means that the companies may even make higher profits if they start monitoring how to use ARD to enhance profits. As such, they (managers) ought to come up with a framework/policy to enable them enhance profits using ARD. This is in respect to the fact that some customers like large corporations may not pay in cash but if they are given a period within which they need to pay, they can become a good source of business for the energy companies.

Energy companies should create better relationships with suppliers so as to make them allow the company an extended duration before they (suppliers) claim their payments from the energy companies. Where possible, the energy companies should create policies that will set a longer time within which creditors can claim their payments. However, care should be taken when setting up the number of days to pay creditors, because long-than tolerated durations can affect the relationship between the companies and their creditors. Additionally, the companies should aspire to welcome more creditors on board since the more of their money they use to do business, the more the profits. This can be achieved by outsourcing all non-core functions of the businesses and taking long to pay those suppliers.

5.5 Recommendations for Further Study

The study has uncovered insignificant relationships between net profit and ARD. Reasons to why this happens are just speculated in this study. As such, the study proposes an investigation that will elaborately uncover the reasons as to why managers of the listed energy companies in Kenya do not use ARD when making profit-related decisions. This study has only covered four components of WCM yet there are many others that affect profitability of energy companies. As such, the study recommends more research into how the other components of WCM affect profits of energy companies and, particularly, listed ones. Additionally, another study can regroup the sample into either petroleum or electricity and establish whether there exist any unique variations.

REFERENCES

- ACCA. (2011). *The Need For and an Understanding of a Conceptual Framework*.
ACCA.
- Afza, T. & Nazir, M. S. (2007). Is it Better to be Aggressive or Conservative in Managing Working Capital. *Journal of Quality and Technology Management*, 3 (2), 11-21.
- Akoto, R. K., Awunyo-Vitor, D. & Angmor, P. L. (2013). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance*, 5 (9), 373-379.
- Allison, P. D. (2009). *Fixed effects regression models: Quantitative applications in the social sciences' series*. Thousand Oaks, CA: SAGE
- Anser, R & Malik, Q. A. (2013). Cash Conversion Cycle and Firms' Profitability – A Study of Listed Manufacturing Companies of Pakistan. *IOSR Journal of Business and Management (IOSR-JBM)*, 8(2), 83-87.
- Appuhami, B. & Ranjith, A. (2008). The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study Across Industries in Thailand. *International Management Review*, 4(1).
- Arnold, G. (2008). *Corporate Financial Management* (4th ed.). Essex: Prentice Hall.
- ASECU. (2013). *Impact of accounts receivable management on the profitability during the financial crisis: Evidence from Serbia*. 9th international ASECU conference on “Systemic economic crisis: Current issues and perspectives.”
- Atrill, P. (2006). *Financial management for decision makers* (4th ed.). New York: Prentice Hall.

- Bagchi, B. & Khamrui, B. (2012). Influence of Working Capital Management on Profitability: A Study on Indian FMCG Companies. *International Journal of Business and Management* 7 (22), 1-10.
- Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50.
- Bellouma, M. (2011). The Impact of Working Capital Management on Profitability: The Case of Small and Medium-Sized Export Companies in Tunisia. *Management international*, 15(3), 71-88.
- Berry, A. & Jarvis, R. (2006). *Accounting in a Business Context*. Andover: Cengage Learning EMEA,
- Brealey, R., Myers, S. & Allen, F. (2006). *Working capital management, corporate finance*. New York: McGraw Hill.
- Brown, T. & Suiter, T. (2012). *MR: A student-tested faculty-approved approach to teaching and learning marketing research*. Mason, OH: South-Western Cengage Learning.
- Cameron, C. A. & Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications*. New York: Cambridge University Press.
- Chambers, D. R., & Lacey, N. L. (2011). *Modern Corporate Finance*. Michigan: Hayden McNeil Publishing.
- Corey, S. C., Campbell, S. N. & Keith, T. J. (2013). Analyzing liquidity using the cash conversion cycle: Method incorporating time complements static measures such as the more common current ratio. *Journal of accountancy*. Retrieved from <http://www.journalofaccountancy.com/Issues/2013/May/20126764.htm>.

- Cote, J. M. & Latham, C.K. (1999). The merchandising ratio: A comprehensive measure of working capital strategy. *Issues Account. Educ.*, 14(2), 255-267.
- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting*, 30(34), 573-587.
- Demirgüç-Kunt, A., & Maksimovic, V. (2001). *Firms as financial intermediaries: Evidence from trade credit data*. Zurich: World Bank Working Paper 2696.
- Dimitrios P. K. (2008). The effect of inventory management on firm performance. *International Journal of Productivity and Performance Management*, 57(5), 355 – 369.
- Dimitrios, P. (2008). The effect of inventory management on firm performance. *International Journal of Productivity and Performance Management*, 57(5).
- Doshi, P. N. (2009). *Management of working capital*. Retrieved from <http://www.caalley.com/art/WorkingCapitalManagement.pdf>.
- Eljelly, A. M. A. (2004). Liquidity-profitability tradeoff: An empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14(2), 48-61.
- Emery, D., Finnerty, J. & Stowe, J. (2004). *Corporate Financial Management*. New Jersey: Pearson Prentice Hall.
- Filbeck, G. & Krueger, T. M. (2003). An Analysis of Working Capital Management Results across Industries. *Mid American Journal of business*, 20(2).
- Filbeck, G., & Krueger, T. M. (2005). An analysis of working capital management results across industries. *American Journal of Business*, 20(2), 11-20.

- Frohlich, M.T. & Westbrook, R. (2002). Demand chain management in manufacturing and services: web-based integration, drivers, and performance. *Journal of Operations Management*, 20(6), 729-45.
- Gaffikin, M. (2007). Accounting Research and Theory: The age of neo-empiricism. *Australasian Accounting Business and Finance Journal*, 1(1), 1-19.
- Gakure, R., Cheluget, K.J. Onyango, J.A, & Keraro, V. (2012). Working capital management and profitability of manufacturing firms listed at the Nairobi stock exchange. *Prime Journal of Business Administration and Management (BAM)*, 2(9), 680-686.
- Garajafary, M. (2012). Studying the Relationship between Working Capital Management and Profitability at Tehran Stock Exchange: A Case Study of Food Industry, *Research Journal of Applied Sciences, Engineering and Technology*, 4(13), 1868-1874
- Garcia-Teruel, P. J & Martinez-Solano, P. (2007). Effects of working capital management on SME profitability, *International Journal of Managerial Finance*, 3(2), 164-177.
- Gay, V. (1992). *Synthesizing Research: A guide for Literature Reviews* (3rd Ed.). London: Sage
- Gentry, J. A., Vaidyanathan, Lee, R., & Wai, H., (1990). A Weighted Cash Conversion Cycle, *Financial Management*, 19(1), 90-99.
- Gill, A., Nahum, B., & Neil, M. (2010). The relationship between working capital management and profitability: evidence from The United States. *Business Economics Journal* 1-9.
- Gondal, M. Y., & Arshad, Z. (2013). Impact of working capital management on profitability: a case of the Pakistan cement industry. *Interdisciplinary Journal of Contemporary Research in Business*, 5(2), 384-390.

- Graham, J., & Smart, S. (2012). *Introduction to corporate finance: what companies do* (3rd ed.). Mason, OH: Cengage Learning.
- Greene, W. (2008). *Econometric analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- Gruen, T., & Corsten, D. (2007). *A Comprehensive Guide to Retail Out-of-Stock Reduction in the Fast Moving Consumer Goods Industry*, Grocery Manufacturers Association (GMA), Food Marketing Institute (FMI), National Association of Chain Drug Stores (NACDS)
- Hart, C. (2003). *Doing a Literature Review: Releasing the Social Science Research Imagination*. London: SAGE publications.
- Hill, M. D., Kelly, G., & Highfield, M. J. (2010). Net operating working capital behaviour: a first look. *Financial Management* 39, 783-805.
- Hillier, D. Ross, S., Westerfield, R., Jaffe, J. & Jordan, B. (2010). *Corporate Finance*. Berkshire: McGraw-Hill.
- Hilton, R. W. (1994). *Management accounting* (2nd ed.). New York: McGraw-Hill.
- Jape, S. S., & Korde, T. (2013). Study of established corporate finance tools and its need in financial decision making of companies, with emphasis on capital budgeting and capital structure (with reference to Mumbai based companies: period-2002-2012). *International Journal of Management and Social Sciences Research (IJMSSR)*, 2(10), 15-18.
- Jordan, R. W. (2003). *Fundamentals of Corporate Finance*, (6th ed.). Hoboken, NJ: McGraw-Hill.
- Jose, M. L., Lancaster, C. & Stevens, J. L. (2003). Corporate Returns and Cash Conversion Cycles. *Journal of Economics and Finance*. 20(1), 33-46.

- Karaduman, H. A., Akbas, H. E., Ozsozgun, A., & Durer, S. (2010). Effects of Working Capital Management on Profitability: The Case of Selected Companies in the Istanbul Stock Exchange (2005-2008). *International Journal of Economics and Finance Studies*, 2(2):47-54.
- Kimeli, S. K. (2012). *Analysis of effects of working capital management on profitability of manufacturing companies: A case study of listed manufacturing companies on Nairobi Securities Exchange (NSE)*. MBA Thesis. Kabarak University.
- Kontus, E. M. (2012). Management of accounts receivable in a company. *Management accounting*, xxii(1), 21-38.
- Kumar, R. (2005). *Research methodology: a step-by-step guide for beginners*, (2nd ed.). London: SAGE Publications, Inc.
- Kwame, K. (2007). *Working capital management practices of small firms in the Ashanti region of Ghana*. Retrieved from <http://www.ssrn.com>
- Lamberg, S. & Valming, S. (2009). *Impact of Liquidity Management on Profitability: A study of the adaptation of liquidity strategies in a financial crisis*. Master thesis Umeå School of Business
- Larsson, C-G. & Hammarlund, L. F. (2005). *Cash Management för företag*, (9th ed.). Student literature, Lund: Student literature.
- Lazaridis, D. I., & Tryfonidis, D. (2006). Relationship between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange. *Journal of Finance Management Analysis*, 19(1), 26-35.
- Maddala, G. S. (2001). *Introduction to Econometrics* (3rd ed.). New York: John Wiley & Sons.
- Makori, D. M. & Jagongo, A. (2013). Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction Firms

- Listed on Nairobi Securities Exchange, Kenya. *International Journal of Accounting and Taxation*, 1(1), 1-14.
- Mathuva, D. (2010). The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms. *Research Journal of Business Management*, 4 (1), 1-11.
- Misati, R. N., Nyamongo, E. M. & Mwangi, I. (2013). Commodity Price Shocks and Inflation in a Net Oil-Importing Economy. *OPEC Energy Review*, 37(2), 125-148.
- Mistry, D. S. (2012). Determinants of profitability in Indian Automotive Industry. *Tecnia Journal of Management Studies*, 7(1), 20-23.
- Muchina S. & Kiano E. (2011). Influence of Working Capital Management on Firms' Profitability: A Case of SMEs in Kenya. *International Business Management*, 5, 279-286.
- Muchiri, R. N. (2014). *The relationship between working capital management and profitability of the Dairy industry in Kenya: a case study of New Kenya Co-operative Creameries Ltd.* MBA Thesis. University of Nairobi.
- Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.
- Nobanee, H. (2009). *Working Capital Management and Firm's Profitability: An Optimal Cash Conversion Cycle*. Retrieved from <http://ssrn.com/abstract=1471230>.
- Nobanee, H., Abdullatif, M. & AlHajjar, M. (2004). *Cash Conversion Cycle and Firm's Performance of Japanese Firms*, Emerald group of publishing limited.
- Nyabwanga, R. N & Ojera, P. (2012). Inventory Management Practices and Business Performance for Small-Scale Enterprises in Kenya. *KJBM*, 4(1).

- Nyabwanga, R.N., Ojera, P., Lumumba, M., Odondo, A.J., & Otieno, S. (2012). Effect of working capital management practices on financial performance: A study of small scale enterprises in Kisii South District, Kenya. *African Journal of Business Management*, 6 (18), 5807-5817.
- Nzioki, P. M., Kimeli, S. K., Abudho, M. R. & Nthiwa, J. M. (2013). Management of working capital and its effect on profitability of manufacturing companies listed on Nairobi securities exchange (NSE), Kenya. *International Journal of Business and Finance Management Research*, 1, 35-42.
- Ofumbia, S. (2012). Working Capital Management, Liquidity and Corporate Profitability among quoted Firms in Nigeria Evidence from the Productive Sector. *International Journal of Academic Research in Accounting, Finance and Management Sciences* 2(1), 80-97.
- Okwo, I. M., Enekwe, C. I., & Ugwunta D. O. (2012). Financial Management as a Determinant of Profitability: a Study of Selected Pharmaceutical Firms in Nigeria. *European Journal of Business and Management*, 4(20), 28-36.
- Omesa, N. W., Maniagi, G. M., Musiega, D., & Makori, G.A. (2013). Working capital management and corporate performance: Special reference to manufacturing firms on Nairobi Securities Exchange. *International Journal of Innovative Research and Development*, 2(9), 177-183.
- Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research Papers*, 2, 45-58.
- Pass, C.L. & Pike, R.H. (1984). An Overview of Working Capital Management and Corporate Financing. *Managerial Finance*, 10(3), 1 - 11.
- Penman, S. H. (2007). *Financial Statement Analysis*, (3rd ed.). Singapore: McGraw Hill,

- Pindado, J. & Bastos, R. (2012). Trade credit during a financial crisis: A panel data analysis. *Journal of Business Research*. doi:10.1016/j.jbusres.2012.03.015.
- Raheman, A., & Nasr, M. (2007). Working capital management and profitability—case of Pakistani firms. *International Review of business research papers*, 3(1), 279-300.
- Rajan, R. & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance*, 50, 1421–1460.
- Rajeev, N. (2008). An Evaluation of Inventory Management and Performance in Indian Machine Tool SMEs: An Exploratory Study. *4th IEEE International Conference on Management of Innovation and Technology, 2008. ICMIT 2008, 21-24 Sept. 2008, Bangkok, Thailand*, 1412-1417.
- Ray, S. (2012). Evaluating the impact of working capital management components on corporate profitability: evidence from Indian manufacturing firms. *International Journal of Economic Practices and Theories*, 2(3), 127-136.
- Rehman, A. (2006). *Working Capital Management and Profitability: Case of Pakistani Firms* (Unpublished Dissertation). COMSATS Institute of Information Technology (CIIT): Islamabad, Pakistan.
- Richards, D. Laughlin, J., (1980). A Cash Conversion Cycle Approach to Liquidity Analysis. *Financial Management*, 9(1), 32-38.
- Romano, P., L. (2011). Techniques in inventory management and control. *Management Accounting*, 68(8), 46.
- Rubin, A. & Babbie, E. (2009). *Essential Research Methods for Social Work*. Belmont, CA: Brooks/Cole Cengage Learning.
- Samiloglo, F., & Demirgüneş, K. (2008). The Effect of Working Capital Management on Firm Profitability: Evidence from Turkey. *The International Journal of Applied Economics and Finance*, 2 (1), 44-50.

- Schilling, G., (1996). Working capital's role in maintaining corporate liquidity. *TMA Journal, September/october*.
- Shah, S. M. & Sana, A. (2006). Impact of Working Capital Management on the Profitability of Oil and Gas Sector of Pakistan. *European Journal of Scientific Research, 15(3)*, 301–307.
- Sharma, A. K. & Kumar, S. (2011). Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India. *Global Business Review, 12(1)*, 159 – 173.
- Shim, J. K., & Siegel, J. G. (1998). *Financial Management* (3rd ed.). Hoboken, NJ: McGraw-Hill.
- Shim, J. K., & Siegel, J. G. (2007). *Financial Management*, (3rd ed.). New York: McGraw Hill.
- Shin, H. H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. *Financial Practice and Education, 8*, 37-45.
- Stevenson, W. J. (2008). *Operations Management* (10th Ed.). New York: McGraw Hill.
- Stickney, C., Weil, R., Schipper, K., & Francis, J. (2010). *Financial Accounting: An Introduction to Concepts, Methods and Uses* (13th ed.). Mason, OH: South-Western Cengage Learning.
- Stock, J. R. & Lambert, D. M. (2001). *Strategic Logistics Management* (4th ed.). New York: McGraw-Hill.
- Sushma, V., & Bhupesh, S. (2007). Effect of Working Capital Management Policies on Corporate Performance an Empirical Study. *Global Business Review, 8* p.267. Retrieved from <http://www.gbr.sagepub.com>.

- Torres-Reyna, O. (n.d.). *Panel Data Analysis: Fixed & Random Effects (using Stata 10.x) (ver. 4.1)*. Retrieved from <http://www.princeton.edu/~otorres/Panel101.pdf>.
- Vallalnathan, N. & Joriye, G. (2013). Impact of Working Capital Management on the Profitability of Cooperative Unions in East Showa, Ethiopia. *Greener Journal of Business and Management Studies*, 3(6), 251-269.
- Velnampy, T. (2005). A Study on Investment Appraisal and Profitability. *Journal of Business Studies*, 2, 23-35.
- Vickery, S. K., Jayaram, J., Droge, C., & Calantone, R. (2003). The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships. *Journal of Operations Management*, 21(5), 523-39.
- Wamugo, L. M., Muathe, S. M. & Kosimbei, G. (2014). Effects of working capital management on performance of non-financial companies listed on the NSE, Kenya. *European Journal of Business and Management*, 6 (11), 195-205.
- William, H., & McAfee, B., (2009). Producing a Healthy Caash Flow for your Business, *Business and Economic Review*, 55(3), 24-25.
- Zawaira, T. And Mutenheri, E. (2014). The association between working capital management and profitability of non-financial companies listed on the Zimbabwe Stock Exchange. *International Journal of Research in Social Sciences*, 3(8), 114-120.
- Zinn, W. & Liu, P. (2008). A comparison of actual and intended consumer behavior in response to retail stockouts.” *Journal of Business Logistics*, 29(2), 141-59.

APPENDICES

Appendix I: Introduction Letter

To: RESPONDENT

From: RESEARCHER

Re: RESPONDING TO THE ATTACHED QUESTIONNAIRE

I am a student at the Strathmore Business School, Strathmore University, pursuing my Masters of Business Administration. In partial fulfillment of the requirements for the award of the degree, I am required to do a study that shows how I use the knowledge I gained to impact society. In relation to this, I am doing a study on the “**The effects of working capital management on profitability of public listed energy companies in Kenya.**” To complete this study I request you help me answer the questionnaire attached whose findings i will use to complete the study. Note that your participation is voluntary and that confidentiality of your identification and information will be adhered to. This study will basically be used for academic purposes and will not be shared with parties whose purpose contradict academic use. Feel free to contact me on the provided contacts in case of anything or clarifications.

Regards,

Januaris, Wangoma, M.

Appendix II: Questionnaire

Section I: Background Information

1. Gender

Male [1]

Female [2]

2. Cumulative experience working in their departments

Less than 5 years [1]

5-10 years [2]

11-20 years [3]

Over 20 years [4]

3. How many years have you worked as a senior level staff?

Less than one [1]

1-2 [2]

2-4 [3]

>5 [4]

4. What is your highest education level?

O-levels [1]

Certificate [2]

Diploma [3]

Higher diploma [4]

Degree [5]

Masters [6]

Phd [7]

Inventory Management

5. The following area is geared toward understanding inventory management and the effectiveness of inventory management practices. On a scale of 1-5 (1-Never, 2-Rarely, 3-Sometimes, 4-Often and 5-Very Often) respond to the following questions appropriately

	Never [1]	Rarely [2]	Someti- mes [3]	Often [4]	Very often [5]
a) Frequency of inventory budgeting					
b) Frequency of review of inventory levels					
c) Frequency of stock monitoring					
d) Frequency of stock out costs of inventory					

6. The following area tries to understand the effectiveness of inventory management techniques used in your firm. Kindly give your opinion on how each has helped in making working capital management effective by strongly agreeing (1), agreeing (2), Neutral (3), disagreeing (4), strongly disagreeing (5).

	Strongly Agree [1]	Agree [2]	Neutra l [3]	Disagr ee [4]	Strongly Disagree [5]
e) Preparation of inventory budgeting has helped in allocating enough funds for buying inventory hence maintaining optimal inventory					
f) There is frequently updated inventory budget hence no less or excess purchase of inventory					

g) Determination of appropriate reorder level of stock					
Others					
h)					
i)					

7. Do the factors on inventory management that you mentioned above affect the profits of the company?

Yes [1]

No [2]

To a small extent [3]

Please explain your answer.

.....

.....

.....

Cash Conversion Cycle

8. This section aims to understand management techniques used by firms to shorten their cash conversion cycle. On a scale of 1- 5 respond appropriately.

	Daily [1]	Weekl y [2]	Fortnightl y [3]	Monthly [4]	Quaternar y [5]
a) Frequency of Billing Customers					
b) Maximum incentive time for customers who pay their dues					

11. Do the factors on account receivable management that you mentioned above affect the profits of the company?

Yes

[1]

No

[2]

To a small extent

[3]

Please explain your answer.

.....

.....

.....

