

**THE EFFECT OF WORKING CAPITAL MANAGEMENT ON  
PROFITABILITY OF MANUFACTURING COMPANIES LISTED AT  
NAIROBI SECURITIES EXCHANGE**

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## DECLARATION

This Research Project is my original work and has not been presented in any other institution for the award of a degree or diploma.

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

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## **DEDICATION**

This academic research project is dedicated to my wife Monica and our children Sam, Juliah and Sammy for their love and for allowing me to spend precious family time pursuing further education.

# TABLE OF CONTENTS

<b>DECLARATION .....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>iii</b>
<b>DEDICATION .....</b>	<b>iv</b>
<b>LIST OF TABLES .....</b>	<b>vii</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>viii</b>
<b>ABSTRACT.....</b>	<b>ix</b>
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1    Background of the Study.....	1
1.1.1    Working Capital Management.....	2
1.1.2    Profitability .....	3
1.1.3    Effect of Working Capital on Profitability .....	4
1.1.4    Manufacturing Companies in Kenya .....	7
1.2    Research Problem.....	7
1.3    Objectives of the Study .....	9
1.4    Value of the Study.....	9
<b>CHAPTER TWO .....</b>	<b>11</b>
<b>LITERATURE REVIEW .....</b>	<b>11</b>
2.1    Introduction .....	11
2.2    Theoretical Review .....	11
2.2.1    Rent Theory of Profit.....	11
2.2.2    Dynamic Theory of Profit.....	12
2.2.3    Uncertainty – Bearing Theory of Profit .....	12
2.2.4    Risk Theory of Profit .....	13
2.2.5    Conservative Plan Theory of Working Capital.....	14
2.2.6    Matching /Hedging Plan Theory of Working Capital.....	14
2.2.7    Aggressive Theory of Working Capital .....	15
2.3    Determinants of Profitability in Manufacturing Firm.....	15
2.4    Empirical Literature Review .....	20
2.5    Summary of Literature Review .....	24

<b>CHAPTER THREE.....</b>	<b>25</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>25</b>
3.1 Introduction .....	25
3.2 Research Design.....	25
3.3 Population.....	25
3.4 Data Collection.....	26
3.5 Data Analysis .....	26
3.5.1 Analytical Model .....	26
3.5.2 Operationalization of the Variables .....	27
3.5.3 Tests of Significance.....	28
<b>CHAPTER FOUR.....</b>	<b>29</b>
<b>DATA ANALYSIS, RESULTS AND DISCUSSIONS.....</b>	<b>29</b>
4.1 Introduction .....	29
4.2 Descriptive Statistics .....	29
4.3 Correlation Analysis.....	34
4.4 Regression Analysis .....	35
4.5 Interpretation of the Findings.....	42
<b>CHAPTER FIVE .....</b>	<b>45</b>
<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS.....</b>	<b>45</b>
5.1 Introduction .....	45
5.2 Summary .....	45
5.3 Conclusion.....	47
5.4 Recommendations for Policy .....	48
5.5 Limitations of the Study.....	50
5.6 Suggestions for Further Research .....	50
<b>REFERENCES.....</b>	<b>52</b>
APPENDICES.....	57
Appendix I: Listed Manufacturing Companies.....	57
Appendix II: Data Collection Form .....	58
Appendix III: Individual Company’s Variables for the Period of Study .....	59

## **LIST OF TABLES**

Table 4.1 Annual Averages of Key Statistics .....	28
Table 4.2 Descriptive Statistics for the Average of Variables .....	30
Table 4.3 Descriptive Statistics for Gross Operating Profit .....	31
Table 4.4 Descriptive Statistics for Average Collection Period .....	32
Table 4.5 Descriptive Statistics for Inventory turnover period.....	33
Table 4.6 Descriptive Statistics for Average Payment Period .....	33
Table 4.7 Correlations Analysis Matrix.....	34
Table 4.8 Regression Model for Accounts Collection Period .....	36
Table 4.9 ANOVA Model for Accounts Collection Period.....	36
Table 4.10 Coefficients for Accounts Collection Period .....	36
Table 4.11 Regression Model for Inventory Turnover Period.....	37
Table 4.12 ANOVA Model for Inventory Turnover Period .....	37
Table 4.13 Coefficients for Inventory Turnover Period .....	38
Table 4.14 Regression Model for Average Payment Period.....	39
Table 4.15 ANOVA for Average Payment Period .....	39
Table 4.16 Coefficients for Average Payment Period .....	39
Table 4.17 Regression Model for Average Payment Period.....	40
Table 4.18 ANOVA for Cash Conversion Cycle.....	41
Table 4.19 Coefficients of Cash Conversion Cycle.....	41

## **LIST OF ABBREVIATIONS**

<b>ACP</b>	-	Average Collection Period
<b>APP</b>	-	Average payment period
<b>CCC</b>	-	Cash conversion cycle
<b>CR</b>	-	Current Ratio
<b>DR</b>	-	Debt Ratio
<b>FATA-</b>		Financial Assets to Total Assets
<b>GOP</b>	-	Gross Operating Profit
<b>ITID</b>	-	Inventory turnover in days
<b>JIT</b>	-	Just-in-Time
<b>LOP</b>	-	Logarithm of Profit
<b>LOS</b>	-	Logarithm of Assets
<b>NSE</b>	-	Nairobi Securities Exchange
<b>ROI</b>	-	Return on Investment
<b>WCM</b>	-	Working Capital Management



## **ABSTRACT**

Working capital management involves the management of the most liquid resources of the firm which includes cash and cash equivalents, Inventories and trade and other receivables. Most firms do not hold the correct amount of working capital and this has been a major obstacle to their overall profitability. The study analyzed the effects of working capital management on the profitability of manufacturing firms listed on the Nairobi Securities Exchange. The study objectives were to; analyze the relationship between average collection period and profitability of listed manufacturing firms, assess the relationship between inventories turnover in days and profitability of listed manufacturing firms, establish the relationship between average payment period and profitability of listed manufacturing firms and to evaluate the relationship between cash conversion cycle and profitability of listed manufacturing firms. The study utilized a descriptive research design and targeted the 9 listed manufacturing firms trading on the Nairobi Securities Exchange. However, the study only covered 7 of the targeted manufacturing companies, 2 were not trading at the time of the study. Data was obtained from document analysis of consolidated financial reports of years ending December: 2009, 2010, 2011, 2012 and 2013. Multiple regression and correlation analyses were carried out on the data to determine the relationships between components of working capital management and the gross operating profit of the firms. The study established that gross operating profit was positively correlated with Average Collection Period and Average Payment Period but negatively correlated with Cash Conversion Cycle. The relationship between Inventory Turnover in Days and gross operating profit was insignificant. Profitability of manufacturing firms depends upon effective working capital management. The study therefore recommended that managers should focus on reducing cash conversion cycles, collect receivables as soon as possible because it is better to receive inflows sooner than later and delay payment of creditors in order to invest the money in short term securities which are profitable.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

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

Working capital management is a very important component of corporate finance because it directly affects the liquidity and profitability of the company. It deals with current assets and current liabilities. Working capital management is important due to many reasons. For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, 2000). Many surveys have indicated that managers spend considerable time on day-to-day problems that involve working capital decisions. One reason for this is that current assets are short-lived investments that are continually being converted into other asset types (Rao, 1989)

With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. Liquidity for the ongoing firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets (Soenen, 1993). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004).

The manufacturing sector is one of the Kenya's most notable contributors to economy. A firm's objective is maximization of profits and shareholders wealth. The study shall therefore focus on the various working capital management practices and their impact on the financial performance of manufacturing companies in Kenya Working capital management is considered to be a very important element to analyze the organizations' performance while conducting day to day operations, by which balance can be maintained between liquidity and profitability. Maintaining liquidity on daily base operation to make sure it is running and meets its commitment is a crucial part required in managing working capital. It is a difficult task for managers to make sure that the business function running in well-organized and advantageous manner. There are chances of inequality of current assets and current liability during this procedure Firm's growth and profitability will be affected if this occurs and firm manger would not be able to manage it efficiently.

### **1.1.1 Working Capital Management**

The term working capital has several meanings in business and economic development finance. In accounting and financial statement analysis, working capital defined as the firm's short-term or current assets and current liabilities. Net working capital represents the excess of current assets over current liabilities and is an indicator of the firm's ability to meet its short-term financial obligations (Brealey & Myers, 2002). Effective working capital management consists of applying the methods which remove the risk and lack of ability in paying short term commitments in one side and prevent over investment in these assets in the other side by planning and controlling current assets and liabilities (Lazaridis & Tryfonidis, 2006).

Working Capital Management is the administration of current assets and current liabilities. It deals with the management of current assets and current liabilities, directly affects the liquidity and profitability of the company (Deloof, 2003; Eljelly, 2004; Raheman and Nasri, 2007; Appuhami, 2008; Christopher and Kamalavalli, 2009; Dash and Ravipati, 2009). Current liquidity crisis has highlighted the significance of working capital management. Management of working capital has profitability and liquidity implications and proposes a familiar front for profitability and liquidity of the company. To reach optimal working capital management firm

manager should control the tradeoff between profitability maximization and liquidity accurately (Raheman & Mohamed, 2007). An optimal working capital management is expected to contribute positively to the creation of firm value (Howorth & Weshead, 2003; Deloof, 2003; Afza & Nazir, 2007). Working capital management is important due to many reasons. For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations Horne and Wachowicz, (2000). Efficient working capital management involves planning and controlling.

According to Harris (2005) Working capital management is a simple and straightforward concept of ensuring the ability of the firm to fund the difference between the short term assets and short term liabilities. Nevertheless, complete mean and approach preferred to cover all its company's activities related to vendors, customer and product, (Hall, 2002). Now a day working capital management has considered as the main central issues in the firms and financial managers are trying to identify the basic drivers and level of working capital management (Lamberson, 1995).

### **1.1.2 Profitability**

Profitability refers to the ability of a business to earn income is called profitability. This ability depends on the effectiveness and efficiency of its operation as well as the resources available to it (Warren and Reeve, 2006). Ross, Westerfield, & Jordan (2010) discussed the three measures as the best known and most widely used of all financial ratios as follow:

#### **Profit margin:**

$$\text{Profit Margin} = \frac{\text{Netincome}}{\text{Sales}}$$

#### **Return on assets (ROA):**

$$\text{ROA} = \frac{\text{Netincome}}{\text{Totalassets}}$$

**Return on equity (ROE):** This is a measure of how the stockholders fared during the year

$$\text{ROE} = \frac{\text{Netincome}}{\text{Totalequity}}$$

Profitability refers to the ability of an enterprise to generate profits from its investments. Working capital management affects profitability in several ways. The management of cash, debtors and stocks affects the level of profits made by an enterprise. The excessive holding of stocks leads to high stock handling costs, deterioration in the value of stocks due to damage and obsolescence, theft or pilferage by employees and wastage. All these are cost to the firm which reduces its profitability. Inadequate stocks also lead to stock out costs and loss of goodwill of the firm, leading to losses or profits. Holding a high level of inventories leads to high capital tied up in stocks. This tied up capital means lost profitability due to forgone interest income which would have been earned if the capital tied up in stocks were invested (Saleemi, 2009)

Debtors' management policy adopted by a firm will also determine the cost of bad debts, debt administration, debt collection costs and the forgone benefits due to cash tied up in debtors. This may also include the cost of discounts which may be given to debtors to induce them to make prompt payments arising out of credit sales. Likewise all these costs will reduce the profitability of the firm (Manasseh, 2001)

### **1.1.3 Effect of Working Capital on Profitability**

The Working Capital Management of a firm in part affects its profitability. The ultimate objective of any firm is to maximize the profit. But, preserving liquidity of the firm is an important objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm (Shin and Soenen, 1998). Therefore, there must be a trade-off between these two objectives of the firms. One objective should not be at cost of the other because both have their importance. If we do not care about profit, we cannot survive for a longer period. On the other hand, if we do not care about liquidity, we may face the problem of insolvency or bankruptcy. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm. Firms may have an optimal level of working capital that maximizes their value (Afza and Nazir, 2009)

Working Capital Management has its effect on liquidity as well as on profitability of the firm. The study analyzed the relationship between different variables of working capital management including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio and the gross operating profit. Debt ratio, size of the

firm (measured in terms of natural logarithm of assets) and financial assets to total assets ratio were used as control variables.

Working capital management efficiency is vital especially for manufacturing firms, where a major part of assets is composed of current assets (Horne and Wachowitz, 2000). It directly affects the profitability and liquidity of firms (Raheman and Nasr, 2007). The profitability liquidity tradeoff is important because if working capital management is not given due considerations then the firms are likely to fail and face bankruptcy (Kargar and Bluementhal, 1994). The significance of working capital management efficiency is irrefutable (Filbeck and Krueger, 2005). Working capital is known as life giving force for any economic unit and its management is considered among the most important function of corporate management. Every organization whether, profit oriented or not, irrespective of size and nature of business, requires necessary amount of working capital. Working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of business (Mukhopadhyay, 2004). Working capital management is one of the most important areas while making the liquidity and profitability comparisons among firms (Eljelly, 2004), involving the decision of the amount and composition of current assets and the financing of these assets.

The management of Working capital is important to the financial health of business of all sizes. Working capital meets the short term financial requirements of a business enterprise. It is a trading capital not retained in the business in a particular form for longer than a year. The money invested in it changes form and substance during the normal course of business operations. The need for maintaining an adequate Working capital can hardly be questioned. Just as the circulation of blood is very important in the human body to maintain life, the flow of funds is very necessary to maintain business. If it becomes weak, the business can hardly prosper and survive. Working capital starvation is generally credited as the major course if not a major course of small business failure in many developed and developing countries (Rafuse, 1996). The success of a firm depends ultimately, on its ability to generate cash receipts in excess of disbursement.

Given these peculiarities efficient management of working capital and more recently good credit management practice is pivotal to the health and performance of the small firm sector, (Peel and Wilson, 1996). The study conducted revealed that 60% enterprises suffer from cash flow problems. From such study there is the need for many industries to improve their return on capital employed (ROCE) by focusing on some critical areas such as cost containment, reducing investment in working capital and improving working capital efficiency.

Based on the information from the above findings, there is a negative relationship between profitability and the cash conversion cycle, inventory receivable days, accounts payable days and accounts receivable days which was used as a measure of working capital management efficacy. Therefore it seems that operational profitability dictates how managers or owners will act in terms of managing the working capital of the firm.

The negative relationship between accounts receivables and firms' profitability suggests that less profitable firms will pursue a decrease of their accounts receivables in an attempt to reduce their cash gap in the cash conversion cycle. Likewise the negative relationship between number of days in inventory and corporate profitability suggests that in the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations. Therefore managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

Padachi (2006) indicate that the profitability and liquidity are the most fundamental concerns in managing working capital. Here, liquidity is directly linked to the ability of a firm to meet short-term obligations. Bagchi and Khamreei (2012) indicate that the WCM is a vital component in financial management. Irrespective of the profit-orientation, size and the nature of business, all firms require an optimum level of WCM. Inefficiency of WCM may lead the firm into a pitfall (Niresh, 2012). Optimal WCM positively contributes to the creation of firm value. On the one hand, cost of liquidity brings a serious problem and stands against profitability (Dong & Su, 2010). On the other hand, a firm cannot survive without sufficient liquidity because the firm may face the problem of insolvency. Therefore, a balance between profitability and liquidity must

always be maintained. Padachi (2006) stated that a well-designed and executed WCM is anticipated to contribute positive value to the firm.

#### **1.1.4 Manufacturing Companies in Kenya**

The manufacturing sub-sector in Kenya constitutes 70 per cent of the industrial sector's contribution to GDP with building, construction, mining and quarrying cumulatively contributing the remaining 30 per cent. The share of the manufacturing sector in GDP has stagnated at about 10 per cent, with the sector's growth during the first Medium Term Plan being a mere 3.16 per cent. The sector is predominantly agro-processing, with manufacture of food, tobacco, beverages and textile accounting for over 34.0 per cent of total sectoral value added. Consequently, the performance of the sector is greatly affected by erratic weather patterns. The sector grew by 3.1 per cent in 2012 compared to 3.4 per cent in 2011. The weak performance is attributed to high costs of production, stiff competition from imported goods, high costs of credit, drought incidences during the first quarter of 2012, and uncertainties due to the 2013 general elections. The influx of counterfeits and volatility in international oil prices also affected the performance of the sector. Although the sector value added improved from Ksh 292.4 billion in 2011 to Ksh 316.7 billion in 2012, the sector's contribution to GDP declined from 9.6 per cent in 2011 to 9.2 per cent in 2012. The number of wage employment in the sector increased from 276,900 employees in 2011 to 277,900 employees in 2012, a mere 0.4 per cent improvement. This unfavourably compares with 3.4 per cent employment growth between 2010 and 2011. The sector's contribution to total wage employment has actually gradually worsened from 13.9 per cent in 2008 to 12.9 per cent in 2012. Kenya's manufacturing is largely agro-based. This contrasts with newly industrialized countries where food manufacture constitutes a small share, with manufacture of chemicals, electronics and machinery constituting over 40 per cent of total value added, (Kenya Economic Report 2013).

#### **1.2 Research Problem**

The management of a firm's liquidity is necessary for all businesses, small, medium or large. When a business does not manage its liquidity well, it will have cash shortages and as a result experience problems paying its obligations when they fall due. Indeed, working capital starvation



has generally been credited as a major cause, if not the main cause of small business failure in many developed and developing countries (Rafuse, 1996). Working capital management is important because of its effect on the firm's profitability and risk, and consequently its value (Smith, 1980). Investments in current assets represent a very significant position of total assets. Working capital management is critical to all firms but particularly to small ones because they do not have access to long term financing yet they must finance the current assets. Additionally, there is risk-return trade off; in that the optimal level calls for a balance between profitability and solvency by minimizing the total costs of liquidity and cost of illiquidity, the working capital management's objectives being enhancing profitability and liquidity (Pandey, 1997).

Efficient management of working capital is vital for the success and survival of the manufacturing sector which needs to be embraced to enhance performance and contribution to economic growth (Padachi, 2006). Management of working capital which aims at maintaining an optimal balance between each of the working capital components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses (Deloof, 2003). A number of studies on the relationship between working capital management and financial performance have been done in Kenya though very little research has been conducted on the manufacturing sector in Kenya. For instance, Mathuva (2010) conducted a study on working capital management components on corporate profitability of Kenyan listed firms in the NSE.

Nyabwanga et al, (2011) conducted a study on the effect of working capital management practices on financial performance of small scale enterprises in Kisii South District, Kenya. Kiilu (2010) conducted a study on working capital management practices among large construction firms in Kenya. Wainaina (2010) studied the relationship between profitability and working capital of small and medium enterprises in Kenya. More studies done in Kenya also include; Mathai (2010) who conducted a study on the relationship between working capital management and profitability of retail supermarkets in Kenya. Mutungi (2010) conducted a study on the relationship between working capital management policies and financial performance of oil marketing firms in Kenya. Given that no study has been done on the relationship between working capital management and firms' performance in the manufacturing sector in Kenya, this

study seeks to bridge the gap by undertaking a study on the same. The question that this study shall seek to answer is; is there a relationship that exists between working capital management practices employed by the firm and financial performance in the listed manufacturing companies in Kenya?

### **1.3 Objectives of the Study**

#### **1.3.1 General Objective**

The general objective of the study is to determine the relationship between working capital management and the profitability of listed manufacturing firms in Nairobi Securities Exchange.

#### **1.3.2 Specific Objectives**

The study will be guided by the following specific objectives:

- i. To analyze the relationship between average collection period and profitability of listed manufacturing firms.
- ii. To assess the relationship between inventories turnover in days and profitability of listed manufacturing firms.
- iii. To establish the relationship between average payment period and profitability of listed manufacturing firms.
- iv. To evaluate the relationship between cash conversion cycle and profitability of listed manufacturing firms.

### **1.4 Value of the Study**

The study's findings will help the manufacturing firms and other companies in general improve on their financial decision making so as to optimize the value of the shareholders and maintain a favorable trade- off between liquidity and profitability. The findings will also be of great benefit to future researchers in the field of working capital management in providing relevant literature in building up the course of study. It will benefit other scholars and students of finance who may use the findings for academic purposes.

With the working capital management playing a major role in financial stability of different firms its efficient utilization is necessary in achieving the goals of financial stability. The study will recommend ways through which working capital can be effectively utilized in financial decision making. This effective utilization in the long run will increase wealth of the shareholders.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a review of the literature on working capital management, which eventually enhances the efficient corporate performance. Working capital management involves the management of the most liquid resources of the firm which includes cash and cash equivalents, inventories and Trade and other receivables with a view to enhance corporate performance.

#### **2.2 Theoretical Review**

Financing of current assets from current liabilities particularly in the form of interest free credit from supplies is a less expensive source of financing than equity or long term debt capital. (Van Vorne 1995). The type of working capital policy operated will be dictated by such factors as the growth rate of the company, its size, nature of its industry and the risk altitude of the firm's management. Pandey &Parera (1997) provided empirical evidence of working capital management policies and practices of the private sector manufacturing companies in Sri Lanka.

Anand (2001) affirmed that an individual company's investment in working capital will be related to the type of industry it operates in and the essential working capital policy each individual company adopts. Working capital investment decisions concern how much firms limited resources should be invested in working capital. Financing decisions relate to how investment in working capital should be financed. What may be considered an optimal level for one industry or line of business may be detrimental to the company either by being too high or too low because of different operating or business characteristics across industries.

##### **2.2.1 Rent Theory of Profit**

This theory is offered by Walker (1897). It states that profit is determined just like the rent of land. He says that as superior grade of land earned more rent then the inferior grade of land, similarly superior entrepreneur earn more than the inferior. Just as the rent is measured from no

rent land in the same way profits of the superior businessman are calculated from the marginal entrepreneur. Profit is not included in the cost of production; it is something extra just like the theory of Ricardo.

Marshall (1901) was of the opinion that there is much difference between the rent of land and entrepreneur's profit. Profit cannot arise only due to the superior ability but there are so many other factors which are responsible for profit. This theory does not throw light on the nature of profit which is more important. It is also stated that profit is not included in cost, in case of land, there is no chance of loss but in case of entrepreneur loss can also be suffered.

### **2.2.2 Dynamic Theory of Profit**

This theory is defined as the difference between selling price and the cost resulting in the changes in demand and supply conditions. Clarke (1902) originated this theory as profit is the surplus over cost. There are changes that cause profits to emerge which include increase in population, changes in taste and preferences, multiplication of wants, capital formation and Technological advancement. This theory gives an artificial definition of profit and wage management, all dynamic changes lead to profit but only unpredictable changes give rise to the profits. This theory does not stress the element of risk involved in the business due to dynamic changes. Knight (1940) has criticized the Clarkian Theory of profit on the ground that it is wrong to attribute all profits to dynamic changes. According to him, there are certain changes which are of a recurring and calculable nature. They can be anticipated and the output can be adjusted according to that. The profits do not arise on those regular changes but on those which are unforeseen or unpredictable. He thus observes that: "It is neither dynamic changes nor any changes as such which cause profits but the divergence of actual conditions from those which have been expected and on the basis of which business arrangements have been made".

### **2.2.3 Uncertainty – Bearing Theory of Profit**

This is the theory of risk, uncertainty and profit. Knight (1940) defines pure profit as the difference between the returns actually realized by the entrepreneur and competitive rate of interesting high gifted securities. According to him, risks are insurable or uninsurable. However,

uncertainty leads to a high reward of profits. This theory does not suit in a monopoly business phenomenon. The uncertainty element cannot be quantified to profits.

According to Knight, profits are the reward of uncertainty-bearing rather than risk-taking which is insurable. The total profits which an entrepreneur receives cannot be attributed solely to the element of uncertainty in a business. He performs other functions also such as coordinating, bargaining, and innovation in the business. So he must be paid for these services also. It is not simply due to uncertainty-bearing that the supply of entrepreneur is restricted. There are other factors also which influence the supply the entrepreneur. For instance, lack of knowledge, lack of capital, opportunity, etc., do restrict the supply of an entrepreneur in a business.

#### **2.2.4 Risk Theory of Profit**

It has been noted that the riskier the industry the higher the profits rate. When an entrepreneur takes the risk of business, he is entitled to receive profits as his rewards as profit is commensurate with risk (Hawley,1893). There is however no functional relationship between risk and profit. Profit is not based on an entrepreneur's ability to undertake risk but rather on his capability of risk avoidance. This theory disregards many other factors attributed to profit and just concentrate on risks. From the previous studies it is evident that researchers used the accounting ratios as a proxy to check the relationship between WCM and profitability.

Thus, according to Hawley, profit is a payment or a reward for the assumption of risks by the entrepreneur. The 'greater the risk, the higher must be the profits. It is because if the return on risky enterprise is at the same level as that obtained from the safe investment, then not a single entrepreneur will invest his capital in a risky enterprise. Profit is a reward for bearing risks in a business. The modern economists believe that there is no doubt that profits contain some remuneration for risk-taking in a business but it is wrong to assume that profits are in their entirety due to the element of risk- The profits can arise on account of better management, better supervision or they may be due to the monopolistic position of the entrepreneur or they may be I due to sheer chance, etc., etc. It is also pointed out that profits are never in proportion to the risk undertaken; it can happen that in a more risky enterprise, the profits may be low and high in a less risky enterprise. There are certain businesses where risks can be more or less accurately

foreseen by statistical evidence, e.g. in insurance, the entrepreneurs who I run these businesses earn profits. This theory fails to explain as to how the profits are earned in such business where the risks can be insured.

### **2.2.5 Conservative Plan Theory of Working Capital**

This theory explains that the cost of financing working capital is equal to the cost of long term fund that is annual average loan multiplied by long term rate of interest Brigham and Gapenski, (1987). Fixed and part of current assets are financed by long term funds as permanent and long term sources are more expensive leading to lower risk return. (Horne and Wachowitz, 1998); Efficiency in working capital is vital especially for production of firms whose assets are current as it directly affects liquidity and profitability of any firm. This theory very much uses the 'plays it safe' philosophy. It attempts to provide sufficient long term financing to cover all anticipated eventualities. The conservative theory implies relatively high investment in current assets in relation to sales, the current assets to sales ratio will be comparatively high and assets and turnover ratio will be low. This approach does not use short term borrowing and may in the long run be more expensive as the available funds may turn out not to be fully utilized in certain periods but interest on those funds not needed still accrue and are paid. Raheman and Bluementhal (1994) firms are required to use accurate measures on working capital even though their profitability may be positive.

### **2.2.6 Matching /Hedging Plan Theory of Working Capital**

This theory indicates that no long term funds are used to finance short term seasonal needs; that is, current assets are equal to current liabilities Pinches (1991). It is a moderate policy that matches assets and liabilities to maturities. Finnerty (1993); Jose et al., (1996) Current acid test and cash ratios are balance sheet measures that cannot provide detailed and accurate working capital and effectiveness. Hedging theory is a risk as it almost full utilization of the firm's capacity to use short term funds and in emergency situations it may be difficult to satisfy short term needs. Firm uses long term sources to finance fixed assets and permanent current assets and short term funds to finance temporary current assets. Richards and Laughlin (1989), Gentry et al. (1990), Schilling (1996) and Boer (1999) have insisted on using ongoing liquidity management.

Ongoing liquidity management refers to the inflows and outflows of cash through the firm as the payment and collection takes place over time.

In hedging approach, a firm needing to have additional inventories for two months will seek short term funds two months to match the inventory purchase. Limited access to short term working capital sources which include bank financing and suppliers' financings provides a hindrance to the hedging approach. Ross et al., (2003) advises that most of the time it is reasonable to study the working capital management approach in relation to application of funds.

### **2.2.7 Aggressive Theory of Working Capital**

The aggressive theory is applied where the firm plans to take high risk and where short term funds are used to a very high degree to finance current and fixed assets Belt (1979). This approach is characterized by low interest rates. However, it's important to note that that the risk associated with short-term debt is higher than long-term debt. This applies mostly to companies/ firms operating in a stable economy and is quite certain about future cash flows. A company with an aggressive working capital policy offers short credit periods to customers, holds minimal inventory and has a small amount of cash in hand. This policy increases the risk of defaulting due to the fact that a company might face lack of resources to meet short-term liabilities but also give a high return as it's associated with high risk.

## **2.3 Determinants of Profitability in Manufacturing Firm**

Profitability has been given considerable importance in the finance and accounting literatures. According to Malik, (2011), Profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth, and, profitability is very important determinant of performance. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Hence, the ultimate goal of a business entity is to earn profit in order to make sure the sustainability of the business in prevailing market conditions. There are several factors that determine firm's profitability some of which include:



### **2.3.1 Working Capital Management**

Various studies identified the determinants of profitability (Velnamby, 2005 & 2005, 2013). Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. The basic goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and upcoming operational expenses. In relation to the relationship between working capital and profitability, there are mixed results from different scholars across the world. In the study conducted by Padachi (2006) on the trend in working capital management and its impact on firm's performance, it was found that high investment in inventories and receivables is associated with lower profitability. A case study conducted by Abdul and Nasir (2007) on working capital management and profitability of Pakistan firms, a strong negative relationship between variables of working capital management and profitability of the firm has been observed. The empirical results found by carpenter and Johnson (1983) revealed that there is a negative relationship between working capital policies and profitability. While Amir and Sana (2006) pointed out a negative relationship between working capital and profitability of the firm, Bradley and Rubach (2002) on trade credit and small business failures suggested that there is a relationship between poor working capital management and organizational failure. Anupchowdhury and Amin (2007) conducted a research on working capital management practiced in pharmaceutical companies listed on share stock exchange. A positive correlation had been found in the mathematical model, between current assets management and financial performance of pharmaceutical firms.

### **2.3.2 Firm Growth**

Trau (1996), Sutton (1997), and Hart (2000) have reviewed the theoretical and empirical literature on firm growth. In the early empirical literature, a number of manufacturing studies find either no relationship or a positive relationship between firm sizes and growth rates. MacMillan and Day (1987) considered that rapid growth could lead to higher profitability based on evidence that new firms become more profitable when they enter markets quickly and on a large scale. On the other hand, Hoy (1992) concluded that the pursuit of high growth may be minimally or even negatively correlated with firm profitability. Keith (1988) examined the

relationship between company characteristics, profitability and growth using accounts data for a sample of 38 small manufacturing firms and his research revealed that size, age, location, and industry group are found to be limited value in explaining profitability. The use of growth as a measure of firm performance is generally based on the belief that growth is a precursor to the attainment of sustainable competitive advantages and profitability (Markman, 2002). In addition, larger firms have higher rates of survival (Aldrich 1986), and may have the benefits of associated economies of scale. While growth has been considered the most important measure in small firms, it has also been argued that financial performance is multidimensional in nature and that measures such as financial performance and growth are different aspects of performance that need to be considered (Wiklund, 1999) However, larger firms are found to grow faster than smaller, and younger firms are found to grow faster than older.

### **2.3.3 Firm Size**

Empirical evidence has given varying results relating to the relationship between firm size and profitability. In this view, Velnampy and Nimalathan (2010) examined about firm size on profitability between Bank of Ceylon and Commercial Bank of Ceylon in Sri Lanka during ten year period from 1997 to 2006 and found that there is a positive relationship between firm size and profitability in Commercial Bank of Ceylon Ltd, but there is no relationship between firm size and profitability in Bank of Ceylon. Demsetz (1973) offers an alternative explanation for the relationship between firm size and profitability, arguing that the greater profits of large firms have little or nothing to do with conventional scale economies. Using Internal Revenue Service data, he observes that large firms earn higher profits in highly concentrated markets while smaller firms earn a normal return. On contrast, Managerial utility maximization thus provides a conceptual framework for a negative relationship between firm size and profitability (Amato and Wilder 1985). Hall and Weiss (1967) who reported that size did tend to be associated with higher profit rates, however, reached the opposite conclusion. While Marcus (1969) found either a weak negative relationship or none at all, Hall and Weiss (1967) observed through their studies a positive association that disappears or reverses itself among the firms with the largest assets.

### **2.3.4 Non-Debt Tax**

In terms of non-debt tax shield, DeAngelo and Masulis (1980) say that non-debt tax shield can be substitutes for the tax benefits of debt financing and a firm with larger non-debt tax shield is expected to use less debt. The study conducted by Shah and Khan (2007) stated that size and tangibility has a positive and significant relationship with Leverage while profitability and non-debt tax shield has significant and negative relationship with leverage.

### **2.3.5 Leverage**

Modigliani and Miller (1958) were the first ones to landmark the topic of capital structure. This theory put forward by Modigliani and Miller (MM) explains the impact of taxation, bankruptcy costs, and agency costs on the determination of an optimal capital structure. Four theoretical approaches can be distinguished namely the irrelevance theory such as Modigliani and Miller (1958) , the tradeoff theory (Bradley et al., 1984), agency cost theory (Jensen and Meckling, 1976) and pecking order theory (Myers and Majluf, 1984). The three conflicting theories of capital structure such as trade-off theory, agency cost theory and pecking order theories have been developed after the establishment of Modigliani and Miller's theory. Whereas the trade-off, signaling, and agency theories expect a positive relationship between profitability and leverage, the pecking order theory predicts a negative one. Most empirical studies observe a negative relationship between leverage and profitability. The Pecking Order Theory of capital structure (Myers 1984) suggested an inverse relationship between leverage and profitability. The findings of Kester (1986), Titman and Wessels (1988), Rajan and Zingales (1995) and Booth et al. (2001), empirically confirm an inverse relation between the leverage ratio and profitability. Lalith (1999) examines the use and determinants of leverage in a cross section of quoted companies in Sri Lanka and stated that profitability is reliably negatively correlated to leverage suggesting that more profitable firms tend to use less leverage. On the other hand, the trade-off, signaling, and agency theories expect a positive relationship between profitability and leverage. The free cash flow theory (Jensen, 1986) suggested that debt reduces the agency cost of free cash flow. This theory implies a positive association between leverage and profitability. In a study carried out by Sangeetha and Sivathaasan (2013), a significant strong and positive relationship

between profitability and leverage ( $r = 0.569$ ,  $P < 0.01$ ) has been found. Frank and Goyal (2004) experienced a positive relationship between profitability and leverage in some models.

### **2.3.6 Volatility**

Firm's volatility is taken as a probability of its bankruptcy (Bauer, 2004) and therefore a proxy for firm's risk. In Kale, Thomas and Ramirez (1991), the risk of bankruptcy is said to be among others, a major determinant of firm's capital structure. Given the study of Hsia, (1981), Huang and Song (2002) opined that any rise in the value of variance of firm's assets least to a corresponding fall in the systematic risk of equity. So the business risk is expected to be positively related to leverage. Between volatility and leverage, Kim-Sorenson (1986) and Huang-Song (2002) confirmed a positive relation but a negative relationship is reported in the studies of Bradley et al., (1984) and Titman and Wessels (1988).

### **2.3.7 Firm's Asset Structure**

By asset structure, we mean the proportion of firms' assets that are tangible. Asset structure of a firm plays a very critical function in determining its capital structure. According to Titman and Wessels (1988) and Harris and Raviv (1991), the degree to which assets of a firm are tangible should result to greater liquidation value for the firm. Also, Bradley, Jarrel and Kim (1984) opined that if firms invest maximally in tangible assets, they stand to have greater financial leverage because they borrow at lower interest rate, if their assets serve as collateral for such loans. Booth, Aivazian, Dmirguc-Kunt and Maksimovic (2001) said: "the more tangible the firms' assets, the greater its ability to issue secured debts and the less information revealed about future profit".

Tens of empirical studies support a positive relationship between asset tangibility and capital structure/leverage of a firm. Bauer (2004) mentioned out of many studies: Rajan and Zingales, 1995; Friend and Lang, 1988 and Titman and Wessels, 1988. Joshua (2008) confirmed this and even included some other ones: Bradley et al., 1984; WedigetaI, .1988; Mackie-Mason, 1990; Shyam-Sunder and Myers, 1999; Hovakimian et al.2004); Kim and Sorensen, (1986). In Huang and Song (2006) study on the Chinese listed firms, they found that both firm's size and asset

tangibility positively affect firm's leverage ratio. However, a study by Myroshnichenko (2004) on the Ukrainian companies, found that among others, negative correlation exists between tangibility and capital structure

## **2.4 Empirical Literature Review**

Shin and Soenen (1998) highlighted that efficient Working Capital Management (WCM) was very important for creating value for the shareholders. The way working capital was managed had a significant impact on both profitability and liquidity. The relationship between the length of Net Trading Cycle, corporate profitability and risk adjusted stock return was examined using correlation and regression analysis, by industry and capital intensity. They found a strong negative relationship between lengths of the firm's net- trading Cycle and its profitability. In addition, shorter net trade cycles were associated with higher risk adjusted stock returns. Samiloglu and Demirgünes (2008) also proved that cash conversion cycle, size and fixed financial assets had no statistically significant effect on profitability.

### **2.4.1 International Evidence**

Lyrودي and Lazaridis (2000), study in food industry in Greece was used to examine the cash conversion cycle as liquidity indicator of the firms and characteristics with its components variable and investigate the implication of C.C.C in terms of profitability. Indebtedness and firm's size indicate that there is a significant positive relationship between C.C.C and net profit margin but had no linear relationship with leverage ratios conversely the debt to equity ratio and a positive one with time interest earned ratio, and finally there is no difference between liquidity ratios of large and small firms.

Ghosh and Maji (2003) in their paper made an attempt to examine the efficiency of working capital management of the Indian cement companies during 1992 - 1993 to 2001 - 2002. For measuring the efficiency of working capital management, performance, utilization, and overall efficiency indices were calculated instead of using some common working capital management ratios. Setting industry norms as target-efficiency levels of the individual firms, this paper also tested the speed of achieving that target level of efficiency by an individual firm during the

period of study. Findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during this period.

Lazaridis and Tryfonidis (2006) investigated relationship between working capital management and corporate profitability of listed companies in the Athens Stock Exchange. A sample of 131 listed companies for period of 2001-2004 was used to examine this relationship. The result from regression analysis indicated that there was a statistical significance between profitability, measured through gross operating profit, and the cash conversion cycle. From those results, they claimed that the managers could create value for shareholders by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

Samiloglu and Demirgünes (2008) analyzed the effect of working capital management on firm profitability in Turkey for period of 1998-2007. Empirical results showed that account receivables period, inventory period and leverage significantly and negatively affects on profitability, while, firm growth significantly and positively. Raheman and Nasr (2007) selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years from 1999-2004 to study the effect of different variables of working capital management on the net operating profitability. From result of study, they showed that there was a negative relationship between variables of working capital management including the average collection period, inventory turnover in days, average collection period, cash conversion cycle and profitability. Besides, they also indicated that size of the firm, measured by natural logarithm of assets, and profitability had a positive relationship.

Afza and Nazir (2009) made an attempt in order to investigate the traditional relationship between working capital management policies and a firm's profitability for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005. The study found significant difference among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could crease value if they adopt a conservative approach towards working capital investment and working capital financing policies.

### **2.4.2 Local Evidence**

In the Kenyan context, Kotut (2003) carried out a study on WCM practices by Kenyan firms using listed firms in Nairobi. It adopted a stratified sampling of the firms listed in the NSE under different sectors. The study concluded that working capital management practices influenced corporate profitability in variant proportions dependent on the sector the firms operated as well their sizes.

Mathuva (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The findings of his study were that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability.

Mutungi (2010) sought to find out the relationship between working capital management and financial performance of oil marketing firms in Kenya registered with the petroleum institute of East Africa within Nairobi and its environs. Her sample consisted of 59 registered oil marketers in Kenya. She noted that working capital management decisions have a huge effect on the company's risk, return and share price. The study concluded that for a company to operate efficiently, receivables and inventory must be tightly monitored and controlled. More fundamental is the effect of having an adequate level of working capital which is very important for the growth and sustainability of a company.

Apuoyo (2010) sought to establish the relationship between working capital management policies and profitability for companies quoted at the Nairobi Securities Exchange. The study focused on the five main investment segments at the NSE represented. A sample of nineteen listed companies was taken. Studies conducted revealed that the working capital needs of a company change over time as does its internal cash generation rate. He further observed that listed firms at the NSE should ensure a good synchronization of both assets and liabilities. The

study illuminated that the financial and investment sector has been able to achieve more scores on the various components of working capital and also noted that a positive relationship existed between the various components and profitability.

Kiilu (2010) conducted a survey on the working capital management practices among large building construction firms in Kenya. The survey revealed that a majority of surveyed firms had a written statement of leading the amount of cash to hold. i.e. both petty cash and cash at bank. The companies that didn't have a written statement said that the cash requirement at a given time determined the amount of cash to hold. One of the main working capital management practices that were observed was the use of cash budgets.

Gakure et al. (2012) analyzed the relationship between working capital management and performance of 15 industrial firms listed at the Nairobi NSE from 2006 to 2010 and for a total 75 firms year observations. They used secondary data from a sample of 18 companies at the NSE. A regression model was used to establish the relationship between the dependent variable and the independent variables. Pearson's correlation and regression analysis were used for the analysis. The results indicated that there is a strong negative relationship between firm's performance and liquidity of the firm. The study found that there is a negative coefficient relationship between accounts collection period, average payment period, inventory holding period and profitability while the cash conversion cycle was found to be positively correlated with profitability. However, the effects of the independent variables except the average payment period were not statistically significant though the overall model was statistically significant.

Omesa et al. (2013) examined the relationships between Working Capital Management and Corporate Performance of industrial firms listed on the Nairobi securities exchange. A sample of 20 companies whose data for 5 years from 2007-2011 was selected. For analysis Principal components analysis (PCA) is used due to its simplicity and its capacity of extracting relevant information from confusing data sets. From the results using PAC and multiple regression, working capital proxies Cash Conversion Cycle (CCC), Average Collection Period (ACP) and control variables Current Liabilities (CLTA), Net Working Capital Turnover Ratio (NSCA) and



Fixed Financial Ratio (FATA) were significant at 95% confidence (p values are  $< 0.05$ ) to performance as measured by Return on Equity (ROE). Further, ACP was found to be negatively related to ROE while CCC, CLATA, NSCA and FATA.

In spite of the touted impact efficient working capital management may have on business profitability, not much has been done in the area of the provision of empirical evidence in support of the claims of working capital management on profitability performance of Kenyan companies. Given this paucity of empirical studies, it is hoped that this study will fill a gap and provide useful support for understanding the determinants of corporate performance in Kenya.

## **2.5 Summary of Literature Review**

Mathuva (2009) studied the impact of working capital management on the performance. He found out that there is a negative relationship between the time when the cash is collected from the customers and the firm's productivity. Secondly, there is a positive relationship between the inventories when they were brought in and the period to which they are sold and the firm's profitability. The third assumption of the research was the association between the average payment period and profitability and found out to be positive ( $p < 0.01$ ). Shin and Soenen (1998), Wang (2002) and Deloof (2003) but corroborate that of Padachi (2006) and Sharma and Kumar (2011) argue in favour of a negative relationship between CCC and firm profitability. They found that a shorter cash conversion cycle results in better profitability. Deloof (2003) added number of day's accounts payable, number of day's accounts receivable and number of day's inventories to the studied measures. Amir Shah and Sana (2006), Garcia-Teruel and Martinez-Solano (2007), Falope and Ajilore (2009), Dong and Su (2010) and Mathuva (2009) All agree that smaller number of days accounts receivable and shorter cash conversion cycle improved liquidity and profitability.

A number of studies have been done relating to working capital management and its effect on profitability but few has exploited on the implication of profitability of manufacturing firms. Therefore this study is aimed at filling the gap on working capital management and its implication on profitability of manufacturing firms listed in NSE in Kenya.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the research design, the target population, data set and sample; data collection procedures data analysis procedure used and the final presentation of the study's findings.

#### **3.2 Research Design**

Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in the procedure. Kothari (2004) observed that research design is a blue print which facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible hence yielding maximum information with minimal expenditure of effort, time and money. The study used a descriptive research design. Descriptive analysis shows the mean, and standard deviation of the different variables of interest in this study. It also presents the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable has achieved.

#### **3.3 Population**

Population refers to all the members of a real or hypothetical set of people, events or objects to which we wish to generalize the results of our research. The population of this study comprised of all the manufacturing companies listed on the Nairobi Securities Exchange (NSE). Listed companies were appropriate for the study since they are public entities operating under strict corporate governance regulations, making their financial and accounting disclosures largely reliable. There are nine (9) listed manufacturing trading on the Nairobi Securities Exchange (Appendix I).

At the time of the study, two (2) (Kenya Orchards and A. Baumann & Co.) of the nine targeted manufacturing companies has been suspended from trading on the NSE. These companies were therefore eliminated from the sample, enabling the study to utilize mainly secondary data from the remaining seven (7) companies actively trading on the NSE. The data was obtained from document analysis of consolidated financial reports of years ending December: 2009 to 2013 of the 7 companies. The use of the secondary data enabled the researcher to collect reliable information from the target population. These reports enabled the researcher to save time in data collection; they are cost effective and contain the required information.

### **3.4 Data Collection**

For the purpose of this study, secondary data was the main source of data. Data on the profitability of the company as well as on the total number of current assets, debts, inventory levels, was sourced from the company's audited financial statements for the years 2009 to 2013.

### **3.5 Data Analysis**

The data collected was analyzed using multivariate regression analysis to establish the relationship between the independent variables of working capital: ACP, APP, ITID and CCC and the dependent variable (Gross Operating Profit). According to Kothari (2004), regression analysis is concerned with the study of how one or more variables affect changes in another variable.

#### **3.5.1 Analytical Model**

The following analytical model was use for the study.

$$Y_{it} = \alpha + \beta_1(ACP)_{it} + \beta_2(LOS)_{it} + \beta_3(CR)_{it} + \beta_4(DR)_{it} + \beta_5(APP)_{it} + \beta_6(ITID)_{it} + \beta_7(CCC)_{it} + e$$

Where:

$Y_{it}$ = Gross Operating Profit (Profitability) of firm i at time t

$\alpha$ = Constant term for the independent variables

$\beta$ = Regression model coefficient

**LOS** =The size of the company

**ACP**= Average Collection Period

**CR**= Current Ratio

**DR** =Debt Ratio

**APP**= Average Payment Period

**ITID** =Inventory Turnover in Days

**CCC**= Cash Conversion Cycle

**e** = the error term

### 3.5.2 Operationalization of the Variables

Variable	Formula	Description	Measure
Gross Operating Profit (GOP)	$\frac{\text{Gross Operating Profit} * 100}{\text{Gross Sales}}$	Firm's Profitability	%
Current Ratio (CR)	$\frac{\text{Current Liabilities}}{\text{Current Assets}}$	Firms Liquidity	%
Company Size (LOS)	Natural logarithm (Assets)	Firms Capital employed	In(Assets)
Debt Ratio (DR)	$\frac{\text{Total Debts}}{\text{Total Assets}}$	Firms Leverage	%
Inventory Turnover (ITID)	$\frac{\text{Inventory}}{\text{Cost of Goods Sold}} * 365$	Firms Efficiency in Inventory Management	Days
Average Collection Period (ACP)	$\frac{\text{Account Receivables} * 365}{\text{Sales}}$	Firms Efficiency in Receivable Management	Days
Average Payment Period (APP)	$\frac{\text{Account Payables} * 365}{\text{Purchases}}$	Firms Creditworthiness	Days
Cash Conversion Cycle (CCC)	(ACP+ITID)-APP	How effectively a Firm is managing its working capital.	Days

**Source: Ross et al. 2008**

### 3.5.3 Tests of Significance

To test for statistical significance in the effect of working capital management on profitability of manufacturing companies listed at Nairobi Securities Exchange F statistic test and  $R^2$  statistic were used. The test of significant was done at the individual company level and then compared for all the companies in the sample. The research study used 95 percent significance level. The 95 percent, a significance of  $p= 0.05$  was used since it is the generally accepted conventional level in social sciences research. This indicates that 95 times out of 100, we can be sure that there is a true or significant correlation between the two variables, and there is only a 5% chance that the relationship does not truly exist.

Analysis of variance (ANOVA) was used to test the impact of independent variables on dependent variable. The ANOVA tests the model's acceptability and how model fits. It shows Regression display information about the variation accounted for by the model and the Residual information about the variation that is not accounted by the model. In ANOVA, if significance value of  $F > 0.05$  then it means that model is not acceptable and variation illustrated by the model is by chance. However, if significance value of  $F < 0.05$  then it means that model is acceptable and variation showed in the model is not just by chance.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter presents the results of the analyzed data that was collected and further discusses the findings. The data was analyzed using both descriptive and quantitative techniques of analysis. Quantitative techniques included correlation and regression models of analysis. The tables and figures on this chapter are derived from the data resultant from the findings of the study. The researcher presents the findings of the study in three sections; descriptive, correlation and regression analysis. The study relied on secondary data only.

#### 4.2 Descriptive Statistics

Descriptive statistics shows the minimum, maximum, mean and standard deviation of the variables of study. These statistics are essential for using all normative and cause-and-effect statistical techniques effectively including hypothesis testing, correlation and regression analysis. This enabled the researcher understand better the trends of the variables of study of listed manufacturing firms for the period of study (2009-2013).

**Table 4.1: Annual Averages of Key Statistics**

Year	GOP	ACP	ITID	APP	LOS	CR	DR	CCC
2009	0.41	63.99	102.53	92.71	19.28	0.78	0.19	64.34
2010	0.36	56.91	102.54	102.88	16.00	0.84	0.12	60.85
2011	0.42	63.90	86.08	68.13	16.16	0.89	0.10	81.85
2012	0.41	59.34	101.78	107.98	18.55	0.82	0.13	53.14
2013	0.38	64.71	106.51	119.91	17.51	0.74	0.08	51.31

**Source: Research Findings**

Table 4.1 shows the annual averages of key statistics for the listed manufacturing firms for the period between 2009 and 2013. Such averages enable the researcher to study the trends of the variables for the period. The annual averages for the 7 firms which were trading during the time of study were the used in descriptive, correlation and regression analysis models.

There are quite huge differences between the accounts collection period, inventory turnover period and accounts payables period among the listed manufacturing firms across the period of study. Regarding accounts collection period, the listed manufacturing firms in Kenya had a maximum period of 65 days to collect debts from customers in 2013 while the same firms took the shortest period of 57 days to do the same in 2010. This may be explained by the differences in commercial policies, competitive pressure or inefficient management among the listed manufacturing firms over the period of five years.

The inventory turnover period for the listed manufacturing firms also varied over the period of study, it took the longest period of 107 days to convert inventories to sales in 2013 and the shortest period of 86 days to do the same in 2011. This could be due to diffusion on the product nature, automation and technology levels used in production processes.

The average payment period for the listed manufacturing firms also varied over the period of study, in 2013 it took the longest period of 120 days for the firms to settle payables from their suppliers while it also took shorter period of 68 days in 2011 to do the same. This is highly influenced by the company's payment policies.

Regarding the gross operating profit, the firms achieved highest gross operating profit at 42 % in 2011 and the least returns of 36 % in 2010. The natural logarithm of assets used as a proxy of firm size however did not change much remaining was maximum at 19.28 in 2009 and lowest at 16 in 2010. Current ratio used as a proxy of firm's liquidity was maximum at 0.9 times in 2011 and minimum at 0.74 times in 2013. Debt ratio the proxy of firm's leverage was maximum at 13 % in 2012 and minimum of 8 % in 2013.

**Table 4.2: Descriptive Statistics for the Averages of Variables**

	N	Minimum	Maximum	Mean	Std. Deviation
GOP	5	0.36	0.42	0.40	0.03
ACP	5	56.91	64.71	61.77	3.45
ITID	5	86.08	106.51	99.89	7.94
APP	5	68.13	119.91	98.32	19.51
LOS	5	13.8	17.8	15.6	1.35
CR	5	0.74	0.89	0.81	0.06
DR	5	0.08	0.19	0.12	0.04
CCC	5	51.31	81.85	62.30	12.18

**Source: Research Findings**

Table 4.2 shows descriptive statistics for the averages of the variables of the listed manufacturing firms in Kenya.

Average collection period (ACP) was used to measure how many days it takes listed manufacturing firms to collect cash from sales. The listed manufacturing firms in Kenya had ACP minimum value of 57 days, maximum period of 65 days, mean of 62 days and a standard deviation of 4 days. The variations could be as a result of differences in commercial policies, competitive pressure or inefficient management among the listed manufacturing firms over the period of five years.

The Inventory turnover period (ITID) was used to measure how quickly inventory flows through the company from purchase to sale. The listed manufacturing firms had a minimum value of 86 days, maximum period of 107 days, mean of 100 days and a standard deviation of 8 days. The variations could be as a result of diffusion on the product nature, automation and technology levels used in production processes.

Average payment period (APP) was used to measure the average number of days it takes Kenyan manufacturing firms to pay its invoices. The listed manufacturing firms had APP minimum value of 68 days, maximum period of 120 days, mean of 98 days and a standard deviation of 20 days. This is highly influenced by the company's payment policies.



Debt ratio was used to measure firm’s leverage among Kenyan listed manufacturing firms. The listed manufacturing firm’s debt ratio had a minimum value 8 %, maximum of 19 %, mean of 12 % and a standard deviation of 4 %. Current ratio was used to measure liquidity of Kenyan firms. The firms had a current ratio minimum of 74 %, maximum of 89%, mean of 81 % and a standard deviation of 6 %.

Firm size for the listed manufacturing firms was represented by natural logarithm of assets; it had a minimum value of 13.8, maximum value of 17.8, mean value of 15.6 and a standard deviation of 1.35. The larger the firm size the more profitable it is, this can be attributed to benefits that comes with economies of scale by expanding company’s production scale while reducing average unit costs of production.

Table 4.3-4.6 shows the annual descriptive statistics for the dependent and explanatory variables for the period of study independently. These statistics enabled the researcher to compare the minimum, maximum, mean and standard deviations for different years.

**Table 4.3: Descriptive Statistics for Gross Operating Profit**

Year	Minimum	Maximum	Mean	Std. Deviation
2009	0.10	0.66	0.41	0.20
2010	0.11	0.67	0.36	0.20
2011	0.12	0.70	0.42	0.21
2012	0.09	0.64	0.41	0.21
2013	0.09	0.61	0.38	0.22

**Source: Research Findings**

Table 4.3 shows the descriptive statistics for Gross Operating Profit (GOP), it reveals that the minimum value of GOP for the five years was 9% in year 2012 and 2013 respectively, 2013 had the lowest value of maximum return at 61 % while 2011 had the highest value of maximum return at 70 %. Mean value was highest in 2011 at 0.42 and lowest in 2010 at 0.36. Standard deviation was lowest in 2009 and 2010 at 0.20 and highest in 2013 at 0.22.

**Table 4.4: Descriptive Statistics for Average Collection Period**

	Minimum	Maximum	Mean	Std. Deviation
2009	29.76	102.96	63.99	32.83
2010	25.24	83.06	56.91	19.93
2011	20.88	106.11	63.90	32.99
2012	24.25	107.65	59.34	27.14
2013	26.78	114.95	64.71	30.04

**Source: Research Findings**

Table 4.4 shows descriptive statistics for average collection period. Listed Kenyan manufacturing firms had highest values of minimum in 2009 at 30 days and lowest in 2011 at 21 days. Maximum was highest in 2013 and 115 and lowest in 2010 at 83 days. All these reflect the number of days within which the firm's collected receivables from customers.

Mean was highest in 2013 at 65 days and lowest in 2010 at 57 days. Standard deviation was highest in 2009 and 2011 at 33 days and lowest in 2010 at 20 days.

**Table 4.5: Descriptive Statistics for Inventory turnover period**

Year	Minimum	Maximum	Mean	Std. Deviation
2009	34.48	153.08	94.01	44.72
2010	32.63	201.99	102.54	56.36
2011	42.04	167.96	86.08	43.97
2012	27.14	204.01	101.78	61.98
2013	33.66	150.83	106.51	42.59

**Source: Research Findings**

Table 4.5 shows inventory turnover period statistics for the listed manufacturing firms in Kenya. The minimum was highest in 2011 at 42 days and lowest in 2012 at 27 days. Maximum was highest in 2012 at 204 days and lowest in 2013 at 151 days. Mean was highest in 2013 at 107 days and lowest in 2011 at 86 Standard deviation was highest in 2012 at 62 days and lowest in 2013 at 43 days. All these represented the period of converting inventory to sales.

**Table 4.6: Descriptive Statistics for Average Payment Period**

Year	Minimum	Maximum	Mean	Std. Deviation
2009	21.88	160.01	92.71	52.16
2010	15.94	185.41	102.88	60.78
2011	18.79	182.06	68.13	55.64
2012	25.64	241.73	107.98	73.15
2013	27.33	254.43	119.91	85.37

**Source: Research Findings**

Table 4.6 shows descriptive statistics for average payment period for the listed manufacturing firms. The minimum was highest in 2013 at 27 days and lowest in 2010 at 16. Maximum was highest in 2013 at 254 days and lowest in 2009 at 160 days. Mean was highest in 2013 at 120 days and lowest in 2011 at 68 days. Standard deviation was highest in 2013 at 85 days and lowest in 2009 at 52 days. These represented the period of settling the supplier's debts.

### 4.3 Correlation Analysis

Spearman's correlation analysis was used to determine the degree of association between the firm's profitability and working capital, the results below were obtained.

**Table 4.7: Correlations Analysis Matrix**

	ACP	ITID	APP	LOS	CR	DR	GOP
ACP	1						
ITID	0.098	1					
APP	0.269	0.248	1				
LOS	0.134	-0.183	-0.004	1			
CR	.496*	-0.04	-0.045	-0.089	1		
DR	0.138	0.299	0.172	0.28	-0.416	1	
GOP	-0.262	-0.217	0.463	0.381	0.125	-0.046	1

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

**Source: Research Findings**

Table 4.7 illustrates the results obtained from the correlation analysis for the listed manufacturing firms for the period of study at  $\alpha = 5\%$ . The result shows negative correlations between gross operating profit with average collection period and inventory turnover period with correlation coefficients of -0.262 and -0.217 at  $\alpha = 5\%$  respectively. This implies that collecting payments from customers within the shortest time possible and reducing the period of ordering raw materials can significantly increase firm's profitability.

The results also indicate a positive correlation between gross operating profit and average payment period with a correlation coefficient of 0.463. This implies that if firm's can delay making payments to their suppliers without affecting its reputation then this can lead to increased profitability. The result shows a positive correlation between firm's profitability and size with a correlation coefficient of 0.381 implying that the larger the firm the higher the profits it could be making thus it's advisable to always increase firm's size. This could be as a result of economies of scale the firm enjoys. Such benefits importantly enhances firm's profitability by expanding company's scale of production while reducing its average production cost per unit. There is a negative correlation between debt ratio and gross operating profit also with a correlation coefficient of -0.046. The debt ratio is used to measure firm's leverage and this implies that the lower the leverage the more profitable a firm is likely to be. The result also shows a positive correlation between the current ratio with the gross operating profit with a correlation coefficient of 0.125. The current ratio is used to measure firm's liquidity and is therefore advised that firms maintain the ratio high in order to result to higher profitability. It is only the current ratio that is highly significant 0.05 in the correlation matrix while the rest of the variables are insignificant.

#### **4.4 Regression Analysis**

A multivariate regression model was used to determine the cause-and-effect relationship between working capital management and gross operating profit. This involved the use of pooled ordinary least squares (OLS) and fixed effect framework. The resultant regression model is as follows;

$$GOP_{it} = \beta_0 + \beta_1 (ACP_{it}) + \beta_2 (ITID_{it}) + \beta_3 (APP_{it}) + \beta_4 (LOS_{it}) + \beta_5 (CR_{it}) + \beta_6 (DR_{it}) + \varepsilon$$

To conduct regression analysis using ordinary least squares the researcher ran three models in which each explanatory variable was alternated while keeping control variables constant. This enabled the researcher to determine the effect of working capital management on firm's profitability through finding the influence of each component on working capital management individually. The study therefore came up with three models for each component of working capital management.

**Table 4.8: Regression Model for Accounts Collection Period**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.613	.376	.154	.22361

**Source: Research Findings**

Table 4.8 brings out the relationship between average collection period and gross operating profit,

$$GOP = \beta_0 + \beta_1 (ACP_{it}) + \beta_2 (LOS_{it}) + \beta_3 (CR_{it}) + \beta_4 (DR_{it}) + \varepsilon$$

Coefficient of multiple determination (adjusted  $R^2$ ) 15.4% which is the percentage of variance explained uniquely or jointly by independent variables. This implies that the percentage of variance explained by average collection period, firm size, current ratio and debt ratio is 15 %. The model also has a standard error estimate of 22 %.

**Table 4.9: ANOVA Model for Accounts Collection Period**

Model		Sum of Squares	Df	Mean Square	f	Sig.
1	Regression	.422	5	.084	1.689	.202
	Residual	.700	14	.050		
	Total	1.122	19			

**Source: Research Findings**

The analysis of variation shows that it is not statistically significant at  $\alpha = 5\%$  since  $0.02 > 0.05$  using F test =1.698.

**Table 4.10: Coefficients for Accounts Collection Period**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.320	.277		1.155	.267
	ACP	-.002	.002	-.369	-1.280	.221
	LOS	.025	.017	-.351	-1.613	.129
	CR	.148	.095	.462	1.570	.139
	DR	.210	.286	.204	.734	.475

**Source: Research Findings**

The results of this model indicate that the coefficient of accounts collection period for the listed manufacturing firms in Kenya is -0.02 at  $\alpha = 5\%$ , this means the relationship between accounts collection period and gross operating profit for the firms is negative. Therefore an increase in collection period leads to decrease in firm's profitability and vice versa. The coefficient of firm size is 0.025; this means that the relationship between gross operating profit and firm size is positive further implying the larger the firm the more profitable it is. In addition, coefficients for current ratio, and debt ratio for the firms are 18 %, and 21% respectively. This implies that an increase for each leads to an increase in gross operating profit. The constant for the model or Y-intercept is 0.32 which the value of dependent variable GOP when independent variables equals to 0. However none of the variables is significant since they all have significances greater than 0.05. T statistic is used to test the significance.

#### **4.4.1 Regression Model for Inventory Turnover Period**

This model shows the relationship between inventory turnover period and gross operating profit

$$GOP = \beta_0 + \beta_1 (ITID_{it}) + \beta_2 (LOS_{it}) + \beta_3 (CR_{it}) + \beta_4 (DR_{it}) + \varepsilon$$

**Table 4.11: Regression Model for Inventory Turnover Period**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.560	.313	.068	.23462

**Source: Research Findings**

Adjusted  $R^2$  also referred to coefficient of multiple determination is 6.8% which is the percentage of variance jointly or uniquely explained by the independent variables. This implied that 7% of variance of the model is explained by inventory turnover period, firm size, current ratio and debt ratio. The model has a standard error estimate of 0.23.

**Table 4.12: ANOVA Model for Inventory Turnover Period**

Model		Sum of Squares	Df	Mean Square	f	Sig.
1	Regression	.352	5	.070	1.278	.327
	Residual	.771	14	.055		
	Total	1.122	19			

**Source: Research Findings**

Inventory turnover period is however not significant at  $\alpha = 5\%$  since  $0.327 > 0.05$ . The F statistic is used to test significance.

**Table 4.13: Coefficients for Inventory Turnover Period**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.276	.307		.900	.383
LOS	.023	.016	-.348	-1.429	.177
CR	.073	.081	.228	.903	.382
DR	-.008	.285	-.008	-.029	.977
ITID	-.018	.001	.110	.452	.658

**Source: Research Findings**

The regression model for inventory turnover period for the listed manufacturing firms results has a coefficient of -.018 which means that there exist a negative relationship between inventory turnover period and gross operating profit; this in turn implies that an increase in inventory turnover period results to an increase in gross operating profit and vice versa. However none of the variables is significant at  $\alpha = 5\%$  since they have significance greater than 0.05. Coefficients for firm size, and current ratio are 0.023, and 7.3 % respectively, this means that their relationship with gross operating profit is negative and further implies that an increase of either will result to an increase in firm's profitability.

Coefficient for debt ratio is -0.008 meaning their relationship is negative which further implies an increase in debt ratio results to a decrease in firm's profitability. The constant for the model (Y intercept) is 0.276 which is the value of gross operating profit when all the independent variables (inventory turnover period, firm size, current ratio and debt ratio) equals to zero. However, none of the variables is significant since all have significance greater than 0.05.

#### 4.4.2 Regression Model for Average Payment Period

This model shows the relationship between average payment period in days and gross operating profit for the listed manufacturing firms.

$$GOP = \beta_0 + \beta_1 (APP_{it}) + \beta_2 (LOS_{it}) + \beta_3 (CR_{it}) + \beta_4 (DR_{it}) + \varepsilon$$

**Table 4.14: Regression Model for Average Payment Period**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.774	.600	.457	.17911

**Source: Research Findings**

Adjusted  $R^2$  (Coefficient of multiple determination) is 45.7 % which is the percentage variance explained uniquely or jointly by the independent variables. This implies that 46 % variance of the model is explained by the average payment period, firm size, current ratio and debt ratio. The model has a standard error estimate of 18 %.



**Table 4.15: ANOVA for Average Payment Period**

Model	Sum of Squares	df	Mean Square	f	Sig.
Regression	.673	5	.135	4.197	.015
Residual	.449	14	.032		
Total	1.122	19			

**Source: Research Findings**

Analysis of variance of the model shows that it is highly significant at  $\alpha = 5\%$  since  $0.015 < 0.05$ . F statistic is used to test significance.

**Table 4.16: Coefficients for Average Payment Period**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.084	.234		.358	.725
LOS	.023	.012	-.332	-1.898	.082
CR	.082	.062	.255	1.330	.205
DR	-.109	.208	-.105	-.523	.609
APP	.002	.000	.567	3.221	.006

**Source: Research Findings**

Regression analysis coefficient for accounts payables period is 0.02 which means that the relationship between gross operating profit and average payables period is positive. This implies that an increase in accounts payables period results an increase in firm's profitability. Coefficients for firm size, and current ratio are 2 %, and 8.2 % respectively, this means that the relationship between gross operating profit and them is positive which in turn implies that increase in them results to increase in firm's profitability and vice versa.

The coefficient for debt ratio is -0.109 which means the relationship between gross operating profit and debt ratio is negative, this implies that an increase in debt ratio results to a decrease in

firm's profitability and vice versa. The Average payment period ratio is highly significant since 0.013 is less than 0.05. All the other variables are insignificant since their significance is greater than 0.05. T statistic is used to test the significance of the model. The constant (Y intercept) of the model is 0.084 which is the value of gross operating profit when all the independent variables equals to zero.

#### 4.4.3 Regression Model for Cash Conversion Cycle

Cash conversion cycle is just conclusive measure of working capital management and should not be part of the model. However in order to understand and compare the effect of cash conversion cycle as comprehensive measure of working capital management on firm's profitability, the researcher introduced this model. It brings out the combined effect of working capital management as opposed to the previous models that were separately done.

$$GOP = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (LOS_{it}) + \beta_3 (CR_{it}) + \beta_4 (DR_{it}) + \varepsilon$$

**Table 4.17: Regression Model for Cash Conversion Cycle**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788	.621	.486	.17432

**Source: Research Findings**

The adjusted  $R^2$  (coefficient of determination) is 48.6 % which is the percentage of variance explained by the independent variables. This implies that 49 % variance of the model's variance is explained by cash conversion cycle, firm size, debt ratio and current ratio. The model has a standard error estimate of 0.17.

**Table 4.18: ANOVA for Cash Conversion Cycle**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.697	5	.139	4.587	.011
	Residual	.425	14	.030		
	Total	1.122	19			

**Source: Research Findings**

Analysis of variance of the model shows that it is highly significant since  $0.011 < 0.05$ . F statistic is used to measure significance.

**Table 4.19: Coefficients for Cash Conversion Cycle**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.229	.218		1.050	.312
	LOS	.028	.014	-.440	-2.451	.031
	CR	.149	.063	.465	2.354	.034
	DR	.173	.201	.168	.859	.405
	CCC	-.002	.000	-.600	-3.425	.004

**Source: Research Findings**

The regression model for cash conversion cycle constant is  $- 0.02$ , this means that the relationship between the cash conversion cycle and gross operating profit is negative. This implies that an increase in cash conversion cycle results to an increase in firm’s profitability and vice versa.

Firm size, current ratio, and debt ratio constants are positive meaning the relationship between them and gross operating profit is positive and that an increase in either results to an increase in firm’s profitability. Firm size and current ratio variables are highly significant since 0.031 and 0.034 significances are less than 0.05. T statistic is used as a measure of significance, the constant (Y intercept) for the model is 0.229 which is the value of gross operating profit when all the independent variables equals to zero.

**4.5 Interpretation of the Findings**

Working capital is considered an essential input towards realization of company profitability. The study found that manufacturing firms’ payable periods were longer than the receivable period. This partly meant that the firms’ acceleration techniques were deficient in mobbing-up receivables to the required profitability levels. In this study, the trade payables period was found to be substantially longer than the receivables period. This meant that the manufacturing companies were accelerating their receivables more than their payables. The regression analysis from the study found a positive relationship between gross operating profit and independent variables under study.

The study found a positive relationship between cash conversion cycle and gross operating profit which means that increase in cash conversion cycle results in increase in firm's profitability also there is a positive relationship between accounts payable period and firms gross operating profit, this implies that an increase in accounts payables period results an increase in firm's profitability. However the relationship between accounts collection period and gross operating profit for the firms is negative, therefore an increase in collection period leads to decrease in firm's profitability and vice versa.

The results of this model indicate that the coefficient of accounts collection period for the listed manufacturing firms in Kenya is -0.02 at  $\alpha = 5\%$ , this means the relationship between accounts collection period and gross operating profit for the firms is negative. Therefore an increase in collection period leads to decrease in firm's profitability and vice versa. The regression model for inventory turnover period for the listed manufacturing firms results has a coefficient of -0.018 which means that there exist a negative relationship between inventory turnover period and gross operating profit; this in turn implies that an increase in inventory turnover period results to an increase in gross operating profit and vice versa. Regression analysis coefficient for accounts payables period is 0.02 which means that the relationship between gross operating profit and average payables period is positive. This implies that an increase in accounts payables period results an increase in firm's profitability. T statistic is used to test the significance of the model. The constant (Y intercept) of the model is 0.084 which is the value of gross operating profit when all the independent variables equals to zero. The regression model for cash conversion cycle constant is - 0.02, this means that the relationship between the cash conversion cycle and gross operating profit is negative. This implies that an increase in cash conversion cycle results to an increase in firm's profitability and vice versa. Firm size, current ratio, and debt ratio constants are positive meaning the relationship between them and gross operating profit is positive and that an increase in either results to an increase in firm's profitability. Firm size and current ratio variables are highly significant since 0.031 and 0.034 significances are less than 0.05. T statistic is used as a measure of significance, the constant (Y intercept) for the model is 0.229 which is the value of gross operating profit when all the independent variables equals to zero.

The adjusted  $R^2$  (coefficient of determination) of the four models (ACP, ITID, APP, and CCC) are 37.6%, 31.3%, 60.0% and 62.1% respectively. This implies that the variability of the variables used in the models causes 37.6% percent of the changes in the average conversion cycle, 31.3% on inventory turnover period, 60.0% on average payment period and 62.1 on cash conversion cycle. The remaining 42.4% changes on average collection period, 68.7% on inventory turnover period, 40% on average payment period and 37.9% on cash conversion cycle reflect the portion which is not explained by the variables included in the models. Moreover, the overall significances of the models when measured by their respective F statistics are 1.69, 1.28, 4.2, and 4.59 with significance values of 0.202, 0.327, 0.15 and 0.11 respectively indicate that the models are well fitted at the 5% significance level. The implication of the above result is that, the increase or decrease in independent variable will significantly and negatively affect profitability of the firms. It means that the shorter the firm's accounts receivable period, the higher will be the profitability and vice versa.

The cash conversion cycle efficiently, means efficient management of accounts receivable period, inventory holding period and accounts payable period. By managing efficiently these three items of the firm (by making short accounts receivable period and inventory holding period and/or making long accounts payable period) managers can control the efficiency of cash conversion cycle and its impact on profitability.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter discusses the findings presented in chapter four with line to the objectives of the study culminating into this discourse and further tries to draw a conclusion from the results obtained.

#### 5.2 Summary

The study sought to establish the effect of working capital management on firm's profitability in Kenya. The study used all the listed manufacturing firms which were trading during the period of the study for five years between 2009 and 2013. All the data required was obtained from the firm's audited financial statements.

The study found out that there exist a negative relationship between average collection period and firm's profitability among the listed manufacturing firms in Kenya. This implies that a decrease in accounts receivables period results to increased profitability and vice versa. This implied that firms early in collecting their receivables earn higher profits as compared to those recovering receivables late. The findings were in agreement with Hyder, Niaz, Falahuddin & Ghulam (2007); and Raheman and Nasr (2007) who reported that profitability was inversely related to receivable collection period, but contradicted Ghosh and Maji (2003) found a positive relationship between collection period and EBIT, indicating that credit facility increases sales of firm which ultimately increases profitability.

There also exist a negative relationship between inventory turnover period and firm's profitability among the listed manufacturing firms in Kenya. This implies that a decrease in inventory turnover period results to increased profitability and vice versa. However there exist a positive relationship between accounts payables period and firm's profitability among the listed

manufacturing firms in Kenya. This implies that an increase in accounts payables period results to a decrease in profitability and vice versa. In summary the shorter the cash conversion cycle the more profitable the listed manufacturing firms are. Inventory turnover in days (ITID) had an insignificant effect on gross operating profit. However, ITID only impacted on LOP when the credit ratio (CR) was dropped from the model in which case a unit increase in ITID increased LOP by 0.25. The findings were consistent with those of Roumiantsev and Netessine (2005) who did not find a relationship between return on assets and inventory levels but instead found that superior earnings are associated with the speed of change/responsiveness in inventory management, but contradicted the findings of Chen et al. (2005, 2007) who reported that firms with abnormally high inventories have abnormally poor long-term stock returns.

Inventory turnover in days (ITID) had an insignificant effect on gross operating profit. However, ITID only impacted on GOP when the credit ratio (CR) was dropped from the model in which case a unit increase in ITID increased GOP by 0.25. The findings were consistent with those of Roumiantsev and Netessine (2005) who did not find a relationship between return on assets and inventory levels but instead found that superior earnings are associated with the speed of change/responsiveness in inventory management, but contradicted the findings of Chen et al. (2005, 2007) who reported that firms with abnormally high inventories have abnormally poor long-term stock returns.

The study also established that that an increase in cash conversion cycle led to a decrease in the gross operating profit, indicating a negative relationship between the two variables. A unit increase in translated to a decrease in gross operating by 0.078. This implied that firms with high cash conversion cycle earn low profits as compared to firms with low cash conversion cycle. The findings concurred with those of Ejelly (2004), who reported that cash conversion cycle is a better measure of liquidity than current ratio and liquidity has a negative relation with profitability. The findings also agreed with those of Ramachandran and Janakirama (2006); Nobanee (2009); Chaterjee (2010); Nobanee et al (2010); Akgun and Meltem (2010) and Rezazade and Heidarian (2010) all of whom had earlier reported a negative relationship between CCC's components with profitability.

### 5.3 Conclusion

Working capital management is important because it affects both profitability and liquidity for a firm, and consequently its value. Management performance would be improved by managing working capital efficiently. Applying panel data analysis including pooled OLS regression and fixed effect estimation we find that cash conversion cycle negatively associated to the gross operating profit (GOP). The results show that managers can improve their performance by managing working capital efficiently. Accounts receivables period and inventory turnover period components of cash conversion cycle have negative relationship with profitability. Accounts payables period elsewhere has a positive relationship with firm's profitability. These results imply that firm's profitability is increased by decreasing accounts receivables period and inventory turnover period. Although finance managers fear for managing accounts payables period might stem from the fact that more controlling the accounts payables period would damage firm's reputation, and consequently decrease profitability.

Usually, the amounts invested in working capital are often too high in proportion to the total assets employed and so it is vital that these funds are used in efficient and effective way. A firm can be very profitable but if this is not translated into cash from operations within the same operating cycle, the firm may have to borrow to support its continued working capital needs. Thus the two objectives of profitability and liquidity must be traded off. Investment in current assets is inevitable to ensure delivery of goods and services to the final consumers and proper management of the same should give the desired impact either on profitability or liquidity. If resources are blocked at different stages of supply chain, this will prolong the cash operating cycle. Although this might increase profitability by raising sales, it may also adversely affect the profitability if costs tied up in working capital exceed the benefits of holding more inventories and granting more trade credit to customers.

Findings of this study indicate that efficient working capital management results to increased firm's profitability. The conclusion of this study was that when efficient working capital management leads to better financial performance, then one should expect a negative relationship between the financial performance and the working capital measures. The study shows that profitability of manufacturing firms depends upon effective working capital



management. Gross operating profit is positively related with average collection period and average payment period. It is therefore profitable to delay payables and invest the money in different profitable ventures/areas. On the other hand firms should collect receivables as soon as possible because it's better to receive inflows sooner than later.

Gross operating profit on the other hand is negatively correlated with the cash conversion cycle. This means that by shortening CCC, firms' profitability improves. The longer the CCC, the more the firm must invest in working capital. The study therefore concludes that there is a relationship between the various components of working capital indicating that effective working capital management has a great impact on profitability.

#### **5.4 Recommendations for Policy**

The study established that efficient working capital management results to increased profitability among the listed manufacturing firms in Kenya. It is expected that finance managers will get a clear understanding of the relationship between individual working capital management components and profitability. Based on the findings the following recommendations are made for each component of working capital.

There exist a negative relationship between average collection period and firm's profitability. This therefore means that a decrease in the period results to increase in profitability and thus firms should try as much as possible to reduce the period for collecting receivables from customers. Firms should however be careful that this does not harm their volume of credit sales which can adversely affect its profitability. The immediate receipt of cash can minimize the time gap between sales inflow and the outflow for raw materials and labor paid for production. However, it is not practical for firms to have all sales paid for in cash due to their trade credit policy or competitor's pressure. Almost all firm's keep some daily receivables in their daily operations. The advantage of reduced receivables is that it results to reduced bad debts through accelerated collections. The firms can reduce cash conversion cycle period so as it can lead the company liquidity higher. A careful reduction of cash conversion cycle period will improve the liquidity of a manufacturing firm and excess cash can be reinvested in the firm. The accounts receivable should be collected soon and they should stretch the payments for better liquidity

position. The manufacturing firms should shorten the debtors' collection period and extend the creditors' payment period so as the firms can have sufficient liquidity to carry out day to day operations.

The relationship between inventory turnover period and firm's profitability is also negative; this implies that a decrease in inventory turnover days results to increased profitability. The inventory turnover period is the number of days required to order raw materials, produce and sell product. Therefore it depends on both production and sales processes. Production time is subject to nature of product, automation level and technology used. Firms therefore must make a trade-off between speed of production, product quality and cost of innovation. Sales process elsewhere depends on product readiness to satisfy customer needs when required. Merits of firms reducing inventories includes reduced warehouse space, reduced obsolescence of products, low depreciation and low deadweight costs associated with inventories such as cash tied up in raw materials or work-in-progress which could be profitably used elsewhere. The study recommends that the longer the accounts payable, the better the profitability this could be due to good name created by suppliers and suppliers will not interrupt supplies to the firm which in turn leads to smooth operation during the year and ends up with better profitability

The relationship between average payables period and firm's profitability is positive, this implies that an increase in average payables period results to an increased profitability. Average payables period is the number of days which the firm is able to delay payment on raw materials to its suppliers. The delay in payment is seen as an internal financing that helps a company to save costs associated with external financing such as bank loan. However a trade-off between the period of delay and damaging of long-term relationship with suppliers must be appropriately set. Firms should maintain its current assets for meeting its short term obligation. The firms should increase their liquidity by shortening their debtors' collection period and cash conversion cycle whereas increasing their creditors' payment period for better liquidity position.

Poor management of working capital means that funds are unnecessarily tied up in idle assets hence reducing liquidity and also reducing the ability to invest in productive assets such as plant

and machinery, so affecting profitability. In order to improve on the working capital management practices of listed manufacturing firms, it is recommended that management should establish a credit control systems preferably with a full-time credit officer and follow credit control policy procedures. Also, the firms must have collection policies to ensure that amounts owing are collected as quickly as possible.

The inventory management of the studied companies was inadequate in terms of inventory conversion cycle, order management, and inventory stocks. Based on this, the study recommends that there should be a proper inventory management system to avoid over-stock and stock-outs. Also, there is need to have a defined model on whose basis orders, buffer stocks, and reorder levels are determined. Companies should also engage in relationship with those suppliers who allow long credit time period and those customers who allow short payment period.

### **5.5 Limitations of the Study**

The period of study was five years which was also too short to observe changes in variables overtime. Some of changes could not be observed then.

The indicator options adopted under each objective area to measure the companies' WCM practices may not be exhaustive. There is thus a propensity of the not measuring variables under study with precision.

Changes in operations efficiency of the listed firms due to technological change, the results obtained may not reflect the same results in the current situations and therefore there is need to carry out study in future to track the progress.

### **5.6 Suggestions for Further Research**

Studies should be done about working capital management in firm from specific sectors so as to be able to generalize the findings.

Other categories of listed institutions also have a section of working capital management and a study should be done on the effect of working capital management on their profitability based on the findings of this study.

Further study on effect of working capital management on profitability should be done with more firms including those not listed and include all the sectors and extend the period of study.

Lastly, future researchers are advised to adopt other sets of WCM indicators to test how respective practices influence the companies' financial performance. This will significantly make contributions towards establishing a comprehensive scholarly opinion relating to corporate finances and WCM modifications.

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## APPENDICES

### Appendix I: Listed Manufacturing Companies

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S. No.	COMPANY	STATUS
1	A. Bauman & Co. Ltd	Not Trading
2	Carbacid Investment Ltd	Trading
3	Kenya Orchards Ltd	Not Trading
4	B.O.C Kenya Ltd	Trading
5	East Africa Breweries Ltd	Trading
6	Mumias Sugar Company Ltd	Trading
7	British America Tobacco Kenya Ltd	Trading
8	Eveready East Africa Ltd	Trading
9	Unga Group Ltd	Trading

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Source; Nairobi Security Exchange Website [www.nse.co.ke/listed-companies/list](http://www.nse.co.ke/listed-companies/list)

## Appendix II: Data Collection Form

Company Name \_\_\_\_\_

<b>Variable</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Sales					
Gross Operating Profit					
Accounts Receivable					
Inventory					
Cost of Sales					
Accounts Payable					
Total Assets					
Current Assets					
Current Liabilities					
Total Debt					

### Appendix III: Individual Company's Variables for the Period of Study

#### 1. B.O.C Kenya Ltd

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	102.96	124.65	152.71	74.90	16.72	0.38	0.04	0.49
2010	83.06	145.34	179.70	48.71	16.22	0.40	0.01	0.49
2011	106.11	109.17	20.09	195.18	13.97	0.52	0.03	0.47
2012	69.73	127.26	241.73	-44.74	15.44	0.48	0.01	0.55
2013	94.98	111.66	254.43	-47.79	17.72	0.45	0.01	0.52

#### 2. East Africa Breweries Ltd

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	44.14	148.45	160.01	-33.7	17.36	0.59	0.67	0.49
2010	51.66	65.91	185.41	-67.89	14.13	0.67	0.14	0.49
2011	57.45	70.34	182.06	-54.28	14.50	1.12	0.08	0.48
2012	53.84	101.35	152.80	2.39	16.68	1.25	0.37	0.47
2013	55.72	86.39	132.74	9.37	16.17	1.43	0.19	0.48

#### 3. Mumias Sugar Company Ltd

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	100.90	34.48	108.67	26.71	14.37	1.36	0.19	0.28
2010	77.76	32.63	87.72	22.67	14.41	2.00	0.14	0.31
2011	89.28	42.04	71.45	59.87	16.96	2.20	0.13	0.34
2012	107.65	55.31	96.62	66.34	16.44	1.25	0.20	0.29
2013	114.95	148.09	207.21	55.83	13.83	1.19	0.11	0.13

**4. Eveready East Africa Ltd**

year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	49.50	153.08	49.69	152.89	16.54	1.51	0.36	0.28
2010	54.40	201.99	97.47	188.92	13.96	1.41	0.38	0.24
2011	50.00	167.96	71.43	146.53	15.67	1.11	0.30	0.20
2012	46.92	204.01	80.81	170.12	17.89	1.26	0.24	0.23
2013	56.94	150.83	49.89	157.88	14.61	0.65	0.15	0.24

**5. British American Tobacco Kenya Ltd**

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	29.76	110.08	95.87	43.97	15.56	1.02	0.06	0.59
2010	43.16	102.59	64.85	80.90	17.82	0.85	0.09	0.20
2011	20.88	102.03	73.35	49.56	14.52	0.77	0.07	0.70
2012	24.25	144.54	117.20	51.60	14.51	0.85	0.05	0.64
2013	26.78	134.39	113.68	47.49	17.13	0.80	0.04	0.61

**6. Carbacid Investments Ltd**

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	90.21	68.13	60.12	98.22	13.81	0.09	0.02	0.66
2010	63.07	99.94	89.04	73.98	15.53	0.17	0.04	0.67
2011	93.51	50.37	39.74	104.14	17.46	0.11	0.09	0.60
2012	73.01	27.14	41.07	59.08	14.23	0.23	0.01	0.60
2013	57.29	33.66	54.06	36.89	14.52	0.10	0.04	0.58

## 7. Unga Group Ltd

Year	ACP	ITID	APP	CCC	LOS	CR	DR	GOP
2009	30.49	78.83	21.88	87.41	14.78	0.54	0.02	0.10
2010	25.24	69.36	15.94	78.66	17.12	0.39	0.05	0.11
2011	30.10	60.64	18.79	71.95	16.65	0.40	0.02	0.12
2012	39.95	52.86	25.64	67.17	13.75	0.42	0.01	0.09
2013	46.30	80.56	27.33	99.53	15.93	0.54	0.02	0.09