

**THE RELATIONSHIP BETWEEN WORKING CAPITAL
MANAGEMENT AND PROFITABILITY OF MANUFACTURING
COMPANIES IN KENYA LISTED ON THE NAIROBI SECURITIES
EXCHANGE**

BY

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DECLARATION

I hereby declare that this research project is my original work; it has not been submitted for examination to any other institution of higher learning for academic purposes.

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Date.....

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

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DEDICATION

To my family

My husband, Jamlick, for his love and dedication

and

Our lovely daughter Lynne for her endurance during the time of this study

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ABSTRACT

The working capital management plays an important role for success or failure of firm in business because of its effect on firm's profitability as well on liquidity. One requirement of a firm is to maintain equilibrium between liquidity and profitability while tending to its daily operations. However, many manufacturing companies are faced with an uphill task of determining the optimal working policy which in turn gives the firm a competitive edge in the market. Thus, the objective of the study was to establish the relationship between the working capital management and the profitability of manufacturing companies in Kenya. A sample of 9 firms listed in the Nairobi Securities Exchange (NSE) for the period of 3 years from 2009 – 2011 was used. Different explanatory variables of working capital management including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio on the Net operating profitability of Kenyan manufacturing firms, Debt ratio, size of the firm (measured in terms of natural logarithm of sales) and financial assets to total assets ratio were used while, Net operating profit was used as dependent variable. Descriptive statistic, Pearson's correlation and multiple regression analysis were used for analysis. The results showed that there was a strong negative relationship between profitability and the following two variables namely account payable and cash conversion cycle. On the other hand a positive relationship was observed between profitability and account receivables and inventory conversion period. This meant that the working capital management variables had significant effect on the profitability of manufacturing firms listed in the Nairobi Securities Exchange. This implies that these firms should focus on reducing the account receivable period. Also firms should strive to have a shorter cash conversion cycle by improving the inventory control process. Therefore, the managers can create positive value for their shareholders by reducing the accounts receivables period, having shorter cash conversion cycle and having longer accounts payable period.

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ABBREVIATIONS AND ACRONYMS

AGOA	African Growth and Opportunity Act
COMESA	Common Markets for Eastern and Southern Africa
EAC	East African Community
EOQ	Economic Order Quantity
NOP	Net Operating Profitability
NOWC	Net Operating Working Capital
NSE	Nairobi Securities Exchange
PWC	PriceWaterhouseCoopers
ROA	Return on Assets
SPSS	Statistical Package for the Social Sciences
SMEs	Small and Medium-sized Enterprises
USA	United States of America
WCM	Working Capital Management

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A firm's working capital refers to Short term Assets and its Short Term Sources of funds. Working Capital management refers to choosing the levels and mix of Short term Assets and Short Term Sources of funds. Pandey (2008) identified two concepts of working capital namely; gross working capital which refers to the firm's investment in current assets and net working capital which refers to the difference between current assets and current liabilities an additional concept of working capital is the Net Operating Working Capital (NOWC) which is defined as operating current assets minus operating current liabilities. The gross working capital concept focuses attention on how to optimize investment in current assets and how current assets should be financed (Pandey, 2008).

Net working capital, this is defined as the difference between the firms current assets and the firms current liabilities. It represents the firms current assets financed with long term funds. This gives an indication of the liquidity position of the firm. Current assets should be sufficiently in excess of current liabilities to constitute a buffer for maturing obligations within the ordinary operating cycle of a business. Working capital management directly affects the liquidity and profitability of a company. Working capital management is important due to many reasons. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment, which is referred to as overcapitalization. Firms that tries to do too much too quickly with too little long-term capital result to overtrading (Raheman & Nasr, 2007).

According to Yadav and Kamath (2009) in their study of Maharashtra's bulk drugs listed companies defines working capital management as the financing, investment, and control of net current assets within the policy guidelines. The management of working capital involves managing inventories, accounts receivable and payable, and cash. Working capital may be regarded as lifeblood of the business and its effective provision can do much to ensure the success of the business, while its inefficient management can lead to the downfall of the

enterprise. It involves the relationship between a firm's short-term assets and its short-term liabilities.

The 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.

Ramachandran & Janakiraman (2009) defined working capital as the flow of ready funds necessary for the working of a concern. It comprises funds invested in current assets, which in the ordinary course of business can be turned into cash within a short period without undergoing diminishing in value and without disruption of the organization.

1.1.1 Composition of Working Capital

Working capital consists of current assets and current liabilities. Current assets consist of; cash in hand and bank, stock of goods, trade debtors, marketable securities, and any prepaid expenses. Current liabilities consist of; trade creditors, creditors for expenses, bank overdraft, bank loans, and other short term liabilities. Decisions relating to working capital and short term financing involve managing the relationship between a firm's short term assets and its short term liabilities. This goes down to managing all individual components that constitute the short term assets and short term liabilities. The objective of working capital management is to ensure the firm is in a position to meet its obligations as and when they fall due and ensure the organization runs smoothly.

1.1.2 Measures of Profitability

Profitability measures are important to all users of financial statements. Profitability ratios show overall efficiency and performance. They are of two main types: margin and return ratios. Ratios that show margins represent a firm's ability to translate sales shillings into profits at various stages of measurement. While ratios showing returns represent the firm's ability to measure overall efficiency in generating returns for its shareholders. Gross profit margin: This ratio shows how well a company controls its inventories and manufacturing its products and how well it's able to pass the cost to the customer, computed as $\text{Gross Profit/Income}$.

Operating profit margin, this is a measure of overall operating efficiency incorporating all the expenses of ordinary, daily business activity, computed as: $\text{Operating profit}/\text{Income}$. Net profit margin this ratio shows how much of each sales shilling shows up as net income after all expenses is paid, computed as: $\text{Profit before tax}/\text{Income}$ Return on assets, this is also referred to as Return on Investment.

It measures the efficiency with which the company is managing its investments in assets and using them to generate profits, computed as $\text{profit before tax}/\text{Total Assets}$

1.1.3 Relationship between Working Capital Management and Profitability

The working capital management plays an important role for success or failure of firm in business of its effect on firm's profitability as well on liquidity. In theory it is expected that a strong positive or negative relationship exists between various components of working capital of a firm and its profitability. By reducing the credit period granted to customers' manager can improve profitability. The less time it takes the customers to pay their bills the more cash is available to replenish the inventory hence the higher the sale realized leading to higher profitability of the firm. Maintaining high levels of inventories help reducing the cost of supplies and protect the firm against price fluctuations as a result of macroeconomic factors. Finally, the firms should strive to delay their payment, observe credit terms so as to take advantage of cash available for their working capital needs.

1.1.4 Manufacturing Companies Listed at the Nairobi Securities Exchange

Kenya has a large manufacturing sector serving both the local market and exports to the East African region. The sector constitutes firms in construction raw materials, chemical manufacturing, food processing, beverages, electronic instrument and controls, electric utilities among others. Improved infrastructure developments ,power supply, increased supply of agricultural products for agro processing, favourable tax reforms and tax incentives, more vigorous export promotion and liberal trade incentives to take advantage of the expanded market outlets through AGOA, COMESA and East African Community (EAC) arrangements, have all resulted in a modest expansion in the sector (Anonymous, 2011).

However, the rising levels of inflation and the slow growth of the economy has continued to inhibit growth in the demand of locally manufactured goods, as consumers opt for cheaper imported products. High costs of production inputs leads to higher prices being charged to the consumers. High prices of locally manufactured products thereby limit their competitiveness in the regional markets and hampering the sector's capacity utilization. With the East African Community in place Kenya's manufacturing sector, the most developed within the region, has greater opportunity for growth due to the enlarged market size, economies of scale, and increased intraregional trade (Anonymous, 2011).

1.2 Research Problem

A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. Manufacturing companies are faced with an uphill task of determining the optimal working capital policy. The optimal level of working capital is determined to a large extent by the methods adopted for the management of current assets and liabilities. It requires continuous management to maintain proper level in various components of working capital i.e. cash receivables, inventory and payables assets. Thus without optimal working capital most of these companies will not have a competitive edge in the market. Shin and Soenen (1998) found out that efficient Working Capital Management (WCM) was very important for creating value for the shareholders.

Management of working capital 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. In conclusion, they found that a strong negative relationship between lengths of firms net trading Cycle and profitability. In addition shorter net trade cycles were associated with higher risk adjusted stock returns.

Dunn and Cheathan (1993) observed that being too liquid is costly yet having too little liquidity is also risky, calling for a need for listed firms to have a tradeoff between liquidity and profitability. The objectivity of a good working capital management policy is to ensure an optimum level of current assets so that the wealth of the shareholders is maximized. Thus, there

is a need to study the role of working capital management policies on profitability on the profitability of companies listed in the Nairobi Securities Exchange. Conventionally, it is evident that if a company desires to take a greater risk of bigger profits and losses, it reduces the size of its working capital. However, this policy is likely to result in a reduction of the sales volume, and therefore profitability.

Hence a company should strike a balance between liquidity and profitability. Rehman (2006) investigated the impact of working capital management on the profitability of 94 Pakistani firms listed at Islamabad Stock Exchange (ISE) for a period of 1999- 2004. He studied the impact of the different variables of working capital management including Average Collection Period, Inventory Turnover in Days, Average Payment Period and Cash Conversion Cycle on the Net Operating Profitability of firms. He concluded that there is a strong negative relationship between above working capital ratios and profitability of firms.

These past reviews suggest that working capital management impacts on the profitability of the firm but there still is ambiguity regarding the appropriate variables that might serve as proxies for working capital management. Therefore, this study intends to investigate the relationship between working capital management as measured by cash conversion cycle and the profitability of Kenyan manufacturing firms listed at NSE. The study of the importance of working capital management, cash conversion cycle as one of its components and its effects on profitability leads to the research question which will be analyzed. Thus, the research question addressed in this study was “Does Working Capital Management Affects Profitability of Kenyan Manufacturing Companies Listed at the NSE?”

1.3 Objective of the Study

To establish the relationship between working capital management and profitability for Kenyan manufacturing companies listed on Nairobi Securities Exchange.

1.4 Value of the Study

By establishing the relationship between working capital management and profitability, this will assist the firms to identify how improvement of working capital management practices can actually impact on the firm's profitability by considering the cash conversion cycle.

Secondly, the study will also to serve to validate previous research findings on relationship of working capital management and profitability by examining manufacturing companies in Kenya thus contributing to the literature.

The findings of this study would also be useful to the Policy makers in giving guidelines that are backed by research findings to institutions charged with the responsibility of managing capital markets in designing appropriate regulatory mechanisms that enhance profitability of listed firms.

The study will seek to add to the body of knowledge in the field of working capital management hence will be useful to scholars in areas of financial management who may want to do a further study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on both theoretical and empirical review of working capital management. The theories and models on working capital will be reviewed in details together with the previous studies done on this subject.

2.2 Theoretical Review

The theoretical review focuses on the various models used mainly in: 1) cash management system for determining optimum cash holdings and 2) inventory management. It also reviews the management of both accounts receivable and accounts payable and accruals.

2.2.1 Models for Determining Optimum Cash Holdings

Cash management systems today efficiently speed up collections and, at the end of the day, sweep excess balances into money market accounts. Cash managers focus on finding the optimal cash-short-term investment mix (Weinraub & Visscher, 1998). The Baumol and Miller- Orr models of cash management attempt to explain how the optimal cash balance can be computed (Terry, 2002).

2.2.1.1 Baumol Model

According to Terry (2002), Baumol Model of cash management provides a formal approach for determining a firm's optimum cash balance under certainty. It considers cash management similar to an inventory management problem. As such, firms attempt to minimize the cost of holding cash and the cost of converting marketable securities to cash. This model makes the following assumption: the firm is able to forecast its cash needs with certainty; the firm's cash payments occur uniformly over a period of time; the opportunity cost of holding cash is known and it does not change over time; and the firm will incur the same transaction cost whenever it converts securities to cash.

The firm incurs a holding cost for keeping the cash balance. It is an opportunity cost; that is, the return foregone on the marketable securities. If the opportunity cost is k , then the firm's holding cost for maintaining an average cash balance is as follows:

$$\text{Holding cost} = k \left(\frac{C}{2} \right)$$

The firm incurs a trading cost whenever it converts its marketable securities to cash. Total number of transactions during the year will be total funds requirement, T , divided by the cash balance, C , i.e., T/C . The per transaction cost is assumed to be constant. If per transaction cost is c , then the total trading cost will be:

$$\text{Trading Cost} = c \left(\frac{T}{C} \right)$$

The total annual cost of the demand for cash will be:

$$\text{Total Cost} = k \left(\frac{C}{2} \right) + c \left(\frac{T}{C} \right)$$

The optimum cash balance, C^* , is obtained when the total cost is minimum. The formula for the optimum cash balance is as follows:

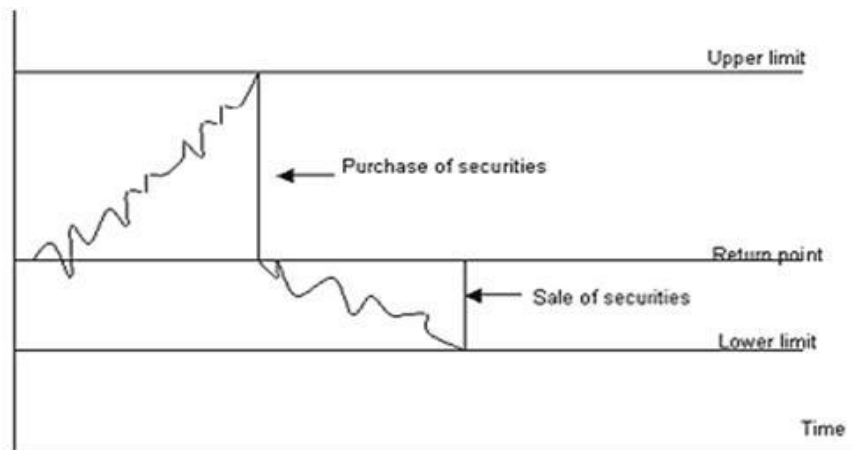
$$C^* = \sqrt{2cT/k}$$

With the increase in the cost per transaction and total funds required, the optimum cash balance will increase. However, with an increase in the opportunity cost, it will decrease.

2.2.1.2 The Miller- Orr Model

A limitation of the Baumol model is that it does not allow cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows. The Miller-Orr model overcomes this shortcoming and allows for daily cash flow variation (Terry, 2002). It assumes that net cash flows are normally distributed with a zero value of mean and standard deviation. The model provides for two control limits- the upper control limit and the lower control limit as well as a return point. If the firm's cash flows fluctuate randomly and hit the upper limit, then it buys sufficient marketable securities to come back to a normal level of cash balance. Similarly, when the firm's cash flows go below the lower limit, it

sells sufficient marketable securities to bring the cash balance back to the marketable level as shown in the diagram below:



Determining the distance between upper and lower control limits (called Z) is as follows: The difference between the upper limit and the lower limit depends on the following factors: the transaction cost (c); the interest rate, (i); and the standard deviation (s) of net cash flows. The formula for determining the distance between upper and lower control limits (called Z) is as follows:

$$\text{Upper Limit} = \text{Lower Limit} + 3Z$$

Return Point = Lower Limit + Z . The net effect is that the firms hold the average cash balance equal to:

$$\text{Average Cash Balance} = \text{Lower Limit} + \frac{4}{3}Z$$

2.2.2 Inventory Management Models

Inventory refers to the stock of pile of the products a firm is offering for sale and the components that make the product (Bolten, 1976). Inventories include raw materials, work in progress and finished goods. The basic concepts relevant to the management of and control of inventory are determination of the type of control required, basic economic order quantity, the order point and the safety stocks. Inventory management consists of two counter balancing parts, to minimize investment in inventory and to meet a demand for the product by efficiently organizing the production and sale operation.

Inventory also provides benefits to the extent that they facilitate smooth functioning of a firm. Only optimal stocks level should be maintained (Brigham & Houston, 2007).

2.2.2.1 ABC System

The ABC system is a widely used classification technique to identify various items of inventory for purposes of inventory control. This technique is based on the assumption that firm should not exercise the same degree of control on all item of inventory. It should rather keep more rigorous control on items that are costly or the slowest turning, while items that are less expensive should be given less control effort maintained (Brigham & Houston, 2007).

2.2.2.2 Economic Order Quantity (EOQ) Model

The EOQ may be defined as that level of inventory order that minimizes the total cost associated with inventory management. EOQ aims at setting up the ordering and carrying cost at minimal level, The EOQ model assumes that: the demand for a product is constant over the year, that each new order is delivered in full when the inventory reaches zero, there is a fixed cost charged for each order placed, regardless of the number of units ordered, there is also a holding or storage cost for each unit held in storage (Lewin and Kirkpatrick, 1975).

2.2.3 Receivables Management

Accounts Receivable represents money owed by creditors to the firm on the sale of products on credit. Most firms seek to sell goods on credit so as to improve their sales volume. The payment from the creditors is expected to be received within certain time limit and the payment mode and terms are specified. It is generally expected that a high percentage of invoices will be paid on time and over 90% within 30 days of due date (Beneda *et al.*, 2008).

Receivables management begins with a credit policy, but a monitoring system is also important. Corrective action is often needed and the only way to know whether the situation is getting out of hand is having a good receivables control system.

Investment in accounts receivables will depend heavily on the volume of credit sales and the collection period. One common payment term is *Net 30*, which means that payment is due at the end of 30 days from the date of invoice. The debtor is free to pay before the due date; most

business entities offer a discount for early payment. Terry (2008), asserts that an aging schedule is part of receivables management process that lists all outstanding accounts balances and their credit limits i.e., net 30, net 60, net 90 and above. The critical task of managing credit risk is to balance the need for credit sales and the profit earned, against the perceived risk of extending credit to a customer (Beneda *et al.*, 2008).

A firm following a lenient credit policy sells on credit to customers on very liberal terms and standards. In contrast, firms following a stringent credit policy are guided by credit worthiness of customers. It's used as a marketing strategy to expand sales.

2.2.4 Accounts Payable and Accruals Management

McLaney (2009) defines accounts payable as money owed for goods and services purchased on credit by the business. It is part of the cash conversion cycle. Accounts payable is the largest single category of operating current liabilities, representing about 40% of the current liabilities of the average non financial corporation (Brigham & Houston, 2007). The period or average time taken to actually settle the payables is known as the payables deferral period or accounts payable turnover and can be calculated as follows:

Average accounts payable * 365

Annual credit purchases

The main aim of managing trade payables is to shorten the cash conversion cycle. This can be done by taking longer time to repay the creditors. In doing this credit terms should be adhered to and the firm should ensure its relationship with creditors is not strained.

Accruals are expenses that remain unpaid after their payment due dates have reached. They improve the liquidity position of the firm as the cash can be used to meet other urgent payments. Accruals increase automatically or spontaneously as firms operations expand. However a firm cannot ordinarily control its accruals, since most of the payments are determined by economic forces and industry custom. Thus firms use all the accruals they can but they have little control over the levels of these accounts.

2.3 Empirical Evidence of Working Capital Management

Lazaridis and Tryfonidis (2006) investigated the relationship between corporate profitability and working capital management using listed companies on the Athens Stock Exchange. They discovered that a statistically significant relationship existed between firm's profitability and the cash conversion cycle.

They concluded that businesses can create profits for their companies by handling correctly the cash conversion cycle keeping each component of the cash conversion cycle (that is accounts receivable, accounts payable, and inventory) to an optimum level.

Mathuva (2009) examined the influence of working capital management components on corporate profitability on 30 firms listed on the Nairobi securities exchange for the period of 1993 -2008. He found highly significant positive relationships between (inventory conversion period, average payment period) and profitability. A highly significant negative relationship between accounts collection period and profitability was also reported.

Rehman (2006) investigated the impact of working capital management on the profitability of 94 Pakistani firms listed at Islamabad Stock Exchange (ISE) for a period of 1999-2004. He studied the impact of the different variables of working capital management including Average Collection Period, Inventory Turnover in Days, Average Payment Period and Cash Conversion Cycle on the Net Operating Profitability of firms. He concluded that there is a strong negative relationship between above working capital ratios and profitability of firms

Antony (2006) studied the effects of the relationship between working capital of firms listed at the NSE and the economic activity in Kenya over the last twenty years (1986-2006). The findings revealed that the liquidity of the fifty firms in the study, as measured by the current and quick ratios, increased slightly during economic expansion and decreased during economic slowdowns. He further concluded that the liquidity positions reacted differently to various economic indicators such as inflation and lending rates. For example, with lending rates, the study revealed that rates indeed did affect the amount of working capital for the firms and this further showed that during times of economic contraction, working capital positions of firms improved.

Filbeck and Krueger (2005) highlighted the importance of efficient working capital management by analyzing the working capital management policies of 32 non-financial industries in USA. They concluded that significant differences exist between industries in working capital practices over time. Moreover, these working capital practices, themselves, change significantly within industries over time.

Mogere (2002) studied working capital management among thirty public companies listed at the Nairobi Securities Exchange as at 31st December, 2002. The objective of the study was to determine the effect of the amount of long-term financing of current assets on the profitability of companies. He also sought to establish whether there is any significant relationship between working capital management policy and the profitability of a company as measured by the return on equity. The study also wanted to establish if public companies in different sectors in Kenya follow different working capital management policies.

Simple regression analysis was done to establish the relationship between working capital policy and the return on equity. The results of the analysis showed that the commonly practiced working capital management policy among the public companies in Kenya is the aggressive approach policy. The study's results did not show any significant differences between the working capital management policies across the five sectors. Further, the research findings showed that there were no significant differences in return on equity among companies that practice different working capital management policies.

Due to the high cost of long term funds, most companies tend to use short term funds which often carry minimal cost. He established the average cost of long term funds to be above 20% over the research period (Mogere, 2002).

Under the maturity matching concept, one would have expected that the companies that require heavy investment in current assets to use more long term financing but this was not the case. The other source of long term funds namely the owners' equity, might also not have been attractive to the companies because of the costs for instance, floatation cost associated with raising such funds besides the annual dividend expectations from the shareholders (Mogere, 2002).

Abel (2008) examined the impact of working capital management on cash holdings of small and medium-sized manufacturing enterprises in Sweden. The aim of the study was to theoretically derive significant factors related to working capital management which have influence on the cash level of SMEs and test these in large sample of Swedish manufacturing SMEs. The theoretical framework of the study was consisted of treaties of motives for holding cash, working capital management and cash level. He studied 13,287 Swedish manufacturing SMEs of legal form 'Aktienbolag'. The results were that cash holdings are negatively related to the presence of cash substitutes, namely inventory and accounts receivable. Furthermore, it confirmed that working capital management efficiency, measured by the cash conversion cycle, is positively related to cash levels.

Loo M.A (2007) examined liquidity management approaches and their effect on profitability of commercial banks in Kenya. The study found that banks with relatively tight liquidity were more profitable and vice versa. He concluded that, commercial banks in their lending activities extend credit only for short period and for purposes which resulted in self liquidation of credit.

2.4 Performance Measures

Performance measurement is one of the most important management responsibilities of the chief Operating officer because it subtly affects the way people behave. Owners of the firm want performance measures to be aligned with maximizing shareholders wealth, a goal that is easy to articulate but difficulty to implement. Miller (2007) notes the working capital management policy a firm adopts to balance the trade off of profitability and liquidity is anchored on some fundamental issues of working capital. These measures include return on assets which is an indicator of how profitable a company is relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings. Secondly, return on equity measures a firm's efficiency at generating profits from every unit of shareholders' equity. It shows how well a company uses investment funds to generate earning growth and has been widely used to compare companies in the same industry and finally return on net assets measures the financial performance of a company which takes the use of assets into account. Higher return

on net assets indicates that the company is using its assets and working capital efficiently and effectively.

2.5 Conclusion

The above literature review indicates that there is a relationship between working capital management and profitability of firms. As observed by Samiloglu and Demirgunes, (2008) most of research studies are related with improving models to determine optimal profitability and cash balance, rather than analyzing underlying reasons of relationships between, working capital management practice and profitability. Of the several studies done various variables have been used to study the relationship but it is still not clear which are the appropriate variables to measure this relationship. Thus the present study seeks to establish the relationship between working capital management and profitability in manufacturing firms in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the overall methodology used in the study. It includes research design, population of study, a description of the data, collection method and data analysis approach used.

3.2 Research Design

The study was a survey aimed at assessing the relationship between working capital management and profitability of listed manufacturing companies in Kenya. The survey research was designed to cover the entire population, this mode of research was chosen because the target population was small and all the data was readily available in secondary format. The research survey was appropriate since it offered the researcher dual opportunity of observing and analyzing the historical statistical data of the financial statements of the listed sampled companies.

3.3 Population and Sample

The population used in this study focused on the manufacturing firms in Kenya operating in several major industry groups which were both registered and listed at Nairobi Securities Exchange. This restriction places a limit on the number of manufacturing firms qualifying for the study and was further narrowed down to only firms which had financial data available for the past three years. The period covered by the study extends to three years starting from 2009 to 2011. The reason for adopting this period was that the latest data for the study was available for this duration.

The data has been collected from the financial statements of the sample firms listed at the NSE and had the financial statements available for the period 2009 – 2011. Thus the study was based on a sample of 9 listed manufacturing companies. Some of the manufacturing firms were not included in the sample due to lack of information for the certain period.

3.4 Data Collection

The study was based on secondary data which was obtained from the respective company's financial statements. The data considered included the company financial statements for the last three financial years (i.e. 2009 -2011).

3.5 Data Analysis

The data collected was analyzed using both descriptive and quantitative techniques. Descriptive analysis helped describe relevant aspects of phenomena of cash conversion cycle and provided detailed information about each relevant variable. The coefficient of correlation between the selected ratios and net operating profit ratio (NOP) was computed. The correlation analysis enabled the study to determine the ratios to use as the explanatory variables while net operating profit was used as the dependent variable. Correlation analysis was done in order to establish the strength of the relationship that is the degree of association between the selected variables and the net operating profit. Finding whether or not there was correlation between the selected ratios and net operating profit was very useful as it provided the first step of linking the variables together. Only when the association between the variables was established that further analysis of the data was undertaken.

In order to understand the relationship between working capital and profitability, a linear multiple regression model was used. Coefficient of multiple regressions was then computed. Multiple regression analysis enabled making of a better prediction about the behavior of the dependent variable. Coefficient of multiple regressions was computed to establish the proportion of variation in net operating profit that was explained by the chosen variables. SPSS software was used for the analysis of the different variables in this study.

3.5.1 Model Specifications

This study used panel data regression analysis of cross-sectional and time series data. Pooled regression type of panel data analysis was used. The pooled regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section

firm data and time series data are pooled together in single column assuming that there was no significant cross section or temporal effects.

The general form of the model was:

$$NOP_{it} = \beta_0 + \sum_{all}^n \beta_i X_{it} + \varepsilon$$

NOP_{it} : Net Operating Profitability of firm i at time t; i = 1, 2... 9 firms.

β_0 : The intercept of equation

β_i : Coefficients of X_{it} variables

X_{it} : The different independent variables for working capital Management of firm i at time t

t : Time = 1, 2,3 years.

ε : The error term

Specifically, when we converted the above general least squares model into our specified variables it becomes:

$$NOP_{it} = \beta_0 + \beta_1 (ACP_{it}) + \beta_2 (ITID_{it}) + \beta_3 (APP_{it}) + \beta_4 (CCC_{it}) + \beta_5 (CR_{it}) \\ + \beta_6 (DR_{it}) + \beta_7 (LOS_{it}) + \beta_8 (FATA_{it}) + \varepsilon$$

Where:

NOP : Net Operating Profitability

ACP : Average Collection Period

ITID	: Inventory Turnover in Days'
APP	: Average Payment Period
CCC	: Cash Conversion Cycle
CR	: Current Ratio
DR	: Debt Ratio
LOS	: Natural logarithm of Sales
FATA	: Financial Assets to Total Assets
ε	: The error term.

These variables are defined as in Appendix 1.

F test of goodness of fit was used to test the explanatory power of the model. The model will have no explanatory power if NOP was unrelated to any of the explanatory variables and thus, the null hypothesis was that all the coefficients β_0, \dots, β_k are zero i.e.

$$H_0 : \beta_0 = \dots = \beta_k = 0$$

The alternative hypothesis is that at least one of these β coefficients is different from zero. The t test was also used to test the explanatory power of individual variables, while, the Durbin-Watson statistic was used to detect the presence of autocorrelation in the residual from regression analysis.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter shows findings of the study and discusses these findings in length. The study targeted nine manufacturing firms listed in Nairobi Securities Exchange for a period of three years from 2009 to 2011. Section 4.2 gives the descriptive analysis; section 4.3 provides the quantitative analyses while section 4.4 is the discussion of the findings.

4.2 Descriptive Analysis

The descriptive statistics for 9 manufacturing firms listed in Nairobi Securities Exchange for a period of three years from 2009 to 2011 was represented in Table 4.1. The average of number of days' accounts receivable was 69 days with standard deviation of 60 days. Minimum time taken by a company to collect cash from customers was 5 days while the maximum time taken was 210 days.

The mean value of net operating profitability was 6.73% of total assets, and standard deviation was 11.10%. This meant that value of the profitability can deviate from mean to both sides by 11.10%. The maximum and minimum value for the net operating profitability for a company in a year was 24.01% and -12.83% respectively.

Table 4.1 Descriptive Statistics for Listed Manufacturing Companies

Descriptive Statistics				
	Minimum	Maximum	Mean	Std. Deviation
Natural Logarithm of Sales	14.1339	17.6198	16.3037	1.1905
Net Operating Profit Ratio	-12.83	24.01	6.73	11.10
Average Collection Period	5.6387	210.6826	69.6137	60.2133
Inventory Turnover in Days	32.6314	6806.2562	976.6989	2036.1081
Average Payment Period	99.8173	1150.3954	543.6333	376.5247
Debt Ratio	0.0000	102.2401	32.8366	39.8515
Current Ratio	89.3357	254.0913	162.2071	51.1909
Financial Assets to Total Assets	0.2810	0.7971	0.5456	0.1854
Cash Conversion Cycle	-1107.710	6737.2794	502.6794	2251.8958

Source: Research Findings

The cash conversion cycle used as a proxy to check the efficiency in managing working capital averaged 502 days with a standard deviation of 2251 days. It took an average of 976 days for a firm to sell inventory with standard deviation of 2036 days. Here, maximum time taken by a company was 6806 days, which is a very long time period to convert inventory into sales. The reason behind this is that manufacturing companies in the country, store inventory longer since the production process tends to lengthens days in inventory. Firms wait an average of 543 days to pay their purchases with standard deviation of 376 days. The minimum and maximum days taken by a company to pay their purchases were 99 days and 1150 days respectively. To check the size of the firm and its relationship with profitability, natural logarithm of sales was used as a control variable. The mean value of log of sales was 16.30, while the standard deviation was 1.19. The maximum value of log of sales for a company in a year was 17.61 while, the minimum value was 14.13.

To assess the liquidity of the companies, a traditional measure of liquidity (current ratio) was used. The average current ratio for the Kenyan manufacturing firms listed in Nairobi Securities Exchange was 162.2 with a standard deviation of 51.19. The highest current ratio for a company in a particular year was 254.09 times, and the minimum ratio for a company in a year was 89.33.

To check the debt financing and its relationship with the profitability the debt ratio (obtained by dividing the total debt of the company by the total assets) was used as a control variable. The results of descriptive statistics (Table 4.1) show that the average debt ratio for the Kenyan manufacturing firms listed in Nairobi Securities Exchange was 32.8% with a standard deviation of 39.8%. The maximum debt financing used by a company was 102.24% while, the minimum was 0.00.

To check the ratio of fixed financial assets to the total assets of Kenyan manufacturing firms listed in Nairobi Securities Exchange, the financial assets to total assets ratio was used as a control variable. The mean value for this ratio was 0.54 with a standard deviation of 0.18 while, the maximum and minimum portion of assets in the form of financial assets for a particular company was 0.79 and 0.28 respectively.

4.3 Quantitative Analysis

4.3.1 Pearson's Correlation Coefficient Analysis

Pearson's Correlation coefficient was used in the data analysis to show the relationship between variables such as those between working capital management and profitability (Table 4.2).

The results of correlation analysis between the average collection period and net operating profitability showed a negative coefficient of -0.54 , with p -value of (0.01) . The result was highly significant at $\alpha = 5\%$. The inventory turnover in days and the net operating profitability also indicated the same type of result. The correlation coefficient was -0.95 and a p value of (0.000) . This again showed that the result was highly significant at $\alpha = 1\%$.

Correlation results among the payable turnover in days or average payment period also indicated the same trend. Here again, the coefficient was negative and highly significant i.e. -0.664 and ($p < 0.01$) respectively.

The cash conversion cycle had a negative coefficient of -0.90 and the p value of (0.001) , and was significant at $\alpha = 1\%$ while, the current ratio had a significant negative relationship with profitability (measured by net operating profitability). The coefficient was -0.74 with a p -value of (0.01) . It was significant at $\alpha = 1\%$. There was a positive significant association that existed between net operating profit ratio and natural logarithm of sales (the measures of size). The coefficient was positive 0.553 ; with p -value of (0.04) . The result was highly significant at $\alpha = 5\%$.

Pearson's correlation (Table 4.2) also displayed a significant positive relationship between the average collection period and cash conversion cycle with the correlation coefficient of 0.62 and the p -value of (0.004) . This ratio was highly significant at $\alpha = 5\%$

There was also a positive relationship between Inventory turnover in days and the cash conversion cycle with a correlation coefficient of 0.989 , while the p -value was (0.000) which showed that it was highly significant at $\alpha = 1\%$. The average payment period and cash conversion cycle had a negative relationship. The coefficient was -0.643 , the p -value was (0.013) , and was significant at $\alpha = 5\%$.

Table 4.2 Pearson's Correlations Coefficient Analysis

		Natural Logarithm of Sales	Net Operating Profit Ratio	Average Collection Period	Inventory Turnover in Days	Average Payment Period	Debt Ratio	Current Ratio	Financial Assets to Total Assets	Cash Conversion Cycle
Natural Logarithm of Sales	Pearson Correlation	1	.553(*)	0.263	-.780(**)	.648(*)	-0.017	0.057	-.581(*)	-.806(**)
	Sig. (2-tailed)		0.04	0.364	0.001	0.012	0.955	0.848	0.029	0
Net Operating Profit Ratio	Pearson Correlation	.553(*)	1	-0.54(*)	-0.95(**)	-.664(**)	-.631(*)	-0.74(**)	-0.61(*)	-0.90(**)
	Sig. (2-tailed)	0.04		0.0103	0.00	0.01	0.015	0.01	0.007	0.001
Average Collection Period	Pearson Correlation	0.263	-0.54(*)	1	-0.112	-0.074	.850(**)	-0.378	-0.218	.62(*)
	Sig. (2-tailed)	0.364	0.0103		0.704	0.8	0	0.183	0.453	0.004
Inventory Turnover in Days	Pearson Correlation	-.780(**)	-0.95(**)	-0.112	1	-0.524	0.083	-0.188	.601(*)	.989(**)
	Sig. (2-tailed)	0.001	0.00	0.704		0.054	0.779	0.519	0.023	0
Average Payment Period	Pearson Correlation	.648(*)	-.664(**)	-0.074	-0.524	1	-0.191	-0.257	-.667(**)	-.643(*)
	Sig. (2-tailed)	0.012	0.01	0.8	0.054		0.512	0.375	0.009	0.013
Debt Ratio	Pearson Correlation	-0.017	-.631(*)	.850(**)	0.083	-0.191	1	-0.489	-0.147	0.13
	Sig. (2-tailed)	0.955	0.015	0	0.779	0.512		0.076	0.617	0.659
Current Ratio	Pearson Correlation	0.057	-0.74(**)	-0.378	-0.188	-0.257	-0.489	1	0.09	-0.137
	Sig. (2-tailed)	0.848	0.01	0.183	0.519	0.375	0.076		0.759	0.64
Financial Assets to Total Assets	Pearson Correlation	-.581(*)	-0.61(*)	-0.218	.601(*)	-.667(**)	-0.147	0.09	1	.649(*)
	Sig. (2-tailed)	0.029	0.007	0.453	0.023	0.009	0.617	0.759		0.012
Cash Conversion Cycle	Pearson Correlation	-.806(**)	-0.90(**)	.62(*)	.989(**)	-.643(*)	0.13	-0.137	.649(*)	1
	Sig. (2-tailed)	0	0.001	0.004	0	0.013	0.659	0.64	0.012	

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

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

Source: Research Findings

4.3.2 Regression Analysis

One of the shortcomings of Pearson correlations is that they do not allow identifying causes from consequences. Hence, regression analysis was used to investigate the impact of working capital management on corporate profitability. The determinants of corporate profitability were estimated with a fixed effects model. Fixed effects estimated assumes firm specific intercepts, which captured the effects of those variables that were particular to each firm and that were constant over time.

The model used was:

$$\begin{aligned} NOP\ it = & \beta_0 + \beta_1 (ACP\ it) + \beta_2 (ITID\ it) + \beta_3 (APP\ it) + \beta_4 (CCC\ it) + \beta_5 (CR\ it) \\ & + \beta_6 (DR\ it) + \beta_7 (LOS\ it) + \beta_8 (FATA\ it) + \varepsilon \end{aligned}$$

Where:

NOP	: Net Operating Profitability
ACP	: Average Collection Period
ITID	: Inventory Turnover in Days'
APP	: Average Payment Period
CCC	: Cash Conversion Cycle
CR	: Current Ratio
DR	: Debt Ratio
LOS	: Natural logarithm of Sales
FATA	: Financial Assets to Total Assets
ε	: The error term.
β_0	: a constant, the value of NOP when the independent variables are at zero

All regression models were tested for multicollinearity (Table 4.3). All predictors had a variance inflation factor of less than 5.7, which totally indicated that there was absence of multicollinearity between the predictors in the regression models. All variables however, showed a positive tolerance, hence each contributed to the model.

The β_0 is a constant, where the regression line intercepts the y axis; representing the amount of dependent ROA when all the independent variables are zero and it was -114.4 from the analysis.

From the data in Table 4.3, our model was as follows:

$$NOP = -114.419 + 8.177LOS - 0.06ACP + 0.007APP - 0.13DR - 0.042CR - 3.372FATA + 0.003CCC$$

Table 4.3 Multiple Regression Analysis Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-114.419	44.363		-2.579	.0042		
	Natural Logarithm of Sales	8.177	2.911	.877	2.809	.0031	.210	4.763
	Average Collection Period	-.060	.062	-.326	-.965	.00372	.180	5.561
	Average Payment Period	.007	.009	.225	.713	.00502	.205	4.871
	Debt Ratio	-.130	.095	-.465	-1.358	.00223	.174	5.743
	Current Ratio	-.042	.048	-.193	-.864	.00421	.411	2.430
	Financial Assets to Total Assets	-3.372	14.415	-.056	-.234	.00823	.353	2.831
	Cash Conversion Cycle	.003	.001	.512	1.844	.00115	.265	3.776

Source: Research Findings

The adjusted R^2 , also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables and was 0.734 (Table 4.4). This meant that 73.4% of the variance in NOP was explained uniquely or jointly by the independent variables in the model.

From result of SPSS, the model was fit with F statistics 6.127 and the p-value of 0.021. It was significant at $p= 0.05$. This indicated that the independent variables positively explained the variation in NOP and therefore, we rejected the null hypothesis.

The Durbin-Watson statistics is a statistic that indicates the likelihood that the deviation values for the regression have a first order auto regression component. This value was 2.204 meaning that there was no serial correlation.

Table 4.4 Regression Model Summary Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.937	.877	.734	5.72578934061867	.877	6.127	7	6	.021	2.204

Source: Research Findings

4.4 Interpretation of Findings

If efficient working capital management increases profitability, one should expect a negative relationship between the measures of working capital management and profitability variable. There was a negative relationship between gross profitability on the one hand and the variables of working capital management on the other hand. This was consistent with the view that the time lag between expenditure for purchases of raw material and the collection of sales of finished goods can be too long, and that decreasing this time lag increases profitability.

The results of correlation analysis between the average collection period and net operating profitability showed a negative relationship which revealed that if the average collection period increased, it had a negative impact on the profitability i.e. profitability decreased. Correlation results between inventory turnover in days and the net operating profitability also indicated the same type of result meaning that if the firm took more time in selling inventory, it adversely affected its profitability. Correlation results among the payable turnover in days or average payment period also indicated the same trend. This result indicated that the less profitable firms wait longer to pay their bills. The cash conversion cycle which is a comprehensive measure of working capital management also had a negative correlation.

This meant that if the firm was able to decrease this time period known as cash conversion cycle, it could increase its profitability on the other hand. Thus, from the above results it can be concluded that if the firm was able to reduce these time periods, then the firm would be efficient in managing working capital. Similar observation was reported earlier by Garcia-Teruel and Martinez-Solano (2007) wherein they found that manufacturing industry has longer CCC than retail/wholesale industry.

The firms with shorter CCC are more likely to be more profitable than the firms with longer CCC because the firm may not need external financing, which results in incurring less borrowing cost. Hence, the profitability increases.

Current ratio is a traditional measure of checking liquidity of the firm. In this analysis the current ratio had a significant negative relationship with profitability (measured by net operating profitability).

This indicated that the two objectives of liquidity and profitability had inverse relationships. Therefore, there is a need for manufacturing firms listed in the Nairobi Securities Exchange to maintain a balance or tradeoff between these two measures.

There was a positive significant association that existed between net operating profit ratio and natural logarithm of sales (the measures of size). This in turn indicated a positive relationship between size and profitability. It showed that as size of the firm increased, its profitability also increased.

A negative relationship between number of days' accounts payable and profitability was observed which was consistent with the view that less profitable firms wait longer to pay their bills. In this case, profitability affected the account payables policy and vice versa. An alternative explanation for a negative relationship between the number of days' accounts payable and profitability could be that manufacturing firms listed in the Nairobi Securities Exchange wait too long to pay their accounts payable. Thus, speeding up payments to suppliers might increase profitability because firms often receive a substantial discount for prompt payment.

The results also displayed a significant positive relationship between the average collection period and cash conversion cycle which was highly significant at $\alpha = 5\%$ and meant that, if a firm takes more time to collect cash against the credit sales it will increase its operating or cash conversion cycle.

The same kind of relationship was observed between Inventory turnover in days and the cash conversion cycle which showed that if the firm takes more time to sell inventory it will lead to increased cash conversion cycle as well.

The average payment period and cash conversion cycle had a negative relationship. This revealed that if firms took more time to pay their purchases than the time for collection and selling inventory, then the cash conversion cycle would be reduced.

These relationships between Cash conversion cycle, Average collection period, Average payment period and Inventory turnover in days with the profitability of companies had significant effect on the profitability of company.

The results of correlation analysis indicated that as far as manufacturing firms listed in the Nairobi Securities Exchange are concerned, the working capital management was highly significant and strongly affected their profitability.

In the regression analysis the variance inflation factor (VIF) or the tolerances of the explanatory variables was used to detect whether one predictor had a strong linear association with the remaining predictors. VIF measured how much of the variance of an estimated regression coefficient increased if your predictor were correlated (multicollinearity). The largest VIF among all predictors was often used as an indicator of multicollinearity. Tolerance was the proportion of a variable's variance not accounted for by other independent variables in the model. A variable with very low tolerance contributed little information to a model, and thus could have caused computational problem. All variables however, showed a positive tolerance, hence each contributed to the model.

The findings of this study showed that working capital management affected profitability of the firm e.g. if a firm can effectively manage its working capital; it can lead to increased profitability. The liquidity and profitability moved in opposite direction and, there was a need to maintain a trade-off between these two objectives of the firm. It was further interpreted that if the firm increases its debt financing, it will lead to reduced profitability of the firm in terms of financial cost. The size of the firm had a direct positive relationship with profitability of the firm and if the size (measured in terms of log of sales) increases, it leads to increased profitability of the firm.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the study, conclusion, limitations and recommendations for further research.

5.2 Summary

Most of the Kenyan manufacturing firms had large amounts of cash invested in working capital. Therefore, the way in which working capital was managed had a significant impact on profitability of those firms. The study found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of manufacturing firms listed on Nairobi Securities exchange. The negative relationship between accounts payable and profitability was consistent with the view that less profitable firms wait longer to pay their bills. If firms properly manage their cash, account receivables and inventories in a proper way, then the profitability of the firm is expected to increase.

5.3 Conclusions

Working capital management is highly important in firms as it is used to generate further returns for the stakeholders; however, it has attracted less attention of researchers and practitioners. When working capital is managed improperly, allocating more than enough of it will render management non-efficient and reduce the benefits of short term investments. On the other hand, if working capital is too low, the company may miss a lot of profitable investment opportunities or suffer short term liquidity crisis, leading to degradation of company credit, as it cannot respond effectively to temporary capital requirements. Therefore, the firms need to strike a balance between meeting unforeseen capital requirements and avoiding non-efficient management of working capital. Based on the key findings from this study, the following conclusions can be derived:

The managers can create value for their shareholders by reducing the number of days' accounts receivable and by increasing their inventories to a reasonable level.

Firms can also take long to pay their creditors in as far as they do not strain their relationship with these creditors. The conclusions were in confirmation with earlier reports by (Deloof, 2003), (Eljelly, 2004), (Shin and Soenen, 1998) who found a strong negative relationship between the measures of working capital management including the average collection period, inventory turnover in days, average payment period and cash conversion cycle with corporate profitability.

Firms are also capable of gaining sustainable competitive advantage by means of effective and efficient utilization of the resources of the organization through a careful reduction of cash conversion cycle to its minimum. In so doing, their profitability will ultimately increase.

5.4 Recommendations for Policy

The findings indicated that working capital management, particularly managing cash and account receivables was important for the purpose of increasing sales and decreasing operating costs. Working capital has an important role for value creation. It is particularly important for the purpose of increasing sales by managing trade receivables. Thus, based on the findings, firms should focus on reducing the accounts receivable period.

Firms should strive to have a shorter cash conversion cycle because this means that the organization will be more efficient in managing the cash flow. This can be achieved by reducing the amount of time that the goods are held in inventory by improving the inventory control process or by having the suppliers deliver raw materials exactly when they are needed in the production process. Secondly, the firm needs to collect accounts receivables more quickly, this can be enhanced by improving the efficiency of the collection processes, offering discounts and charging interest on overdue accounts. Finally the firm should pay its own bills slowly by utilizing the credit periods offered by the suppliers and at the same time observe the credit terms.

5.5 Limitations of the Study

Though this study addresses the relationship between working capital and profitability of manufacturing companies in Kenya and identified reducing the number of days' accounts

receivable to a reasonable minimum as a critical driver, it should be evaluated in light of the following limitations:

Firstly, we have used a small sample of firms. This shortens the time needed to collect data and minimizes the cost of the study but assumes that the selected firms are representative of all the companies. Moreover, A. Baumann Ltd was excluded from the sample because it was not in operation by the time of this study.

Secondly, the study covered relatively a short period of time. This was occasioned by constraints of data availability.

Thirdly, the study relied heavily on the financial statements of listed firms and also on ratio analysis and there are inherent limitations of using financial statements.

Finally, our case research is limited to the case of Kenya manufacturing firms; because of this limitation it is not possible to extend our findings and conclusions to situations in other developing countries. Similar research could be made in other countries in order to have the possibility of comparison.

5.6 Suggestions for Further Research

There is much to be done about working capital in Kenya in future. The researcher suggests that further research be conducted on the same topic with different companies such as companies that are in other sectors such as education, agriculture, tourism among others. Alternatively, future research may also consider extending the number of years of the study on the same topic.

The scope for further research may be extended to the individual working capital components including cash, marketable securities, and receivables. Also further research can be undertaken on the effect of changes in the components of working capital on profitability of companies.

It would also be of interest to study the impact of information technology on working capital and subsequently on the profitability of firms. This study suggests that further research be conducted on the same topic extending the years of the sample.

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APPENDICES

Appendix 1: Independent explanatory variable – Financial Ratios

Variable Name	Definition
NOP	NOP is $(\text{Operating Income} + \text{depreciation}) / (\text{Total Assets} - \text{Financial Assets})$
ACP	Average Collection Period is $(\text{Accounts Receivables} * 365) / \text{Sales}$
ITID	Inventory Turnover in Days is $(\text{Stocks} * 365) / \text{Cost of Sales}$
APP	Average Payment Period is $(\text{Accounts Payable} * 365) / \text{Cost of Sales}$
CCC	Cash Conversion Cycle is $(\text{ITID} + \text{ACP} - \text{APP})$
CR	Current Ratio is $\text{Current Assets} / \text{Current Liabilities}$
DR	Debt Ratio is $\text{Total Debt} / \text{Total Assets}$
LOS	LOS is the natural logarithm of sales
FATA	Financial Assets to Total Assets

Appendix 2: Listed Manufacturing Companies in Kenya

S/No	Name	Year of Establishment	Year of Listing at NSE
1	A. Baumann & Co	1973	2001
2	BOC Kenya Ltd	1967	2006
3	British American Tobacco Kenya	1948	1959
4	Carbacid Investment Ltd	1922	1972
5	East Africa Breweries Ltd	1908	1971
6	Eveready East Africa Ltd	1952	1969
7	Kenyan Orchards	1926	1948
8	Mumias Sugar Company	1961	1972
9	Unga Group Ltd	1940	1969

Source: Hisanet Africa 2012

Appendix 3: Summarized data of the Sampled Manufacturing Companies in Kenya

COMPANY NAME	YEAR	LOS	NOP	ACP	ITID	APP	DR (%)	CR (%)	FATA	CCC
Mumias Sugar co.	2009	16.2839	0.1364	8.2050	34.4804	1150.3954	13.6350	135.6217	0.2918	-1107.7100
Mumias Sugar co.	2010	16.5639	0.1007	5.6387	32.6314	981.2126	11.9585	199.8705	0.3543	-942.9425
Mumias Sugar co.	2011	16.5752	0.1224	89.2805	42.0375	620.3484	2.6321	219.8629	0.2810	-489.0304
Eveready East Africa	2009	14.3134	0.0172	49.5039	6806.2562	118.4807	36.3569	150.5661	0.7971	6737.2794
Eveready East Africa	2010	14.3072	0.0053	54.4029	4323.4091	121.9183	36.7783	141.0512	0.7889	4255.8938
Eveready East Africa	2011	14.1339	-0.0902	48.2050	1434.9914	155.2328	43.1168	111.5394	0.7198	1327.9636
Kenyan Orchards	2009	16.9251	-0.1283	210.6826	252.5484	612.3157	102.2401	114.8023	0.4936	-149.0848
Kenyan Orchards	2010	16.9594	0.0242	167.8219	226.2310	519.2813	101.3072	129.1394	0.4405	-125.2285
Kenyan Orchards	2011	17.1074	0.0265	130.1522	173.6498	435.5185	100.1225	154.3273	0.3891	-131.7165
Eabl	2009	17.3538	0.2401	44.1385	82.1789	834.0341	0.0000	169.0862	0.6350	-707.7167
Eabl	2010	17.4522	0.2328	53.7756	64.7361	1024.9138	0.0000	149.3996	0.6529	-906.4021
Eabl	2011	17.6198	0.2008	57.4477	70.3326	805.5084	11.4542	89.3357	0.4051	-677.7281
Unga Group Ltd	2010	16.2600	0.0205	25.2376	69.3638	99.8173	0.1107	254.0913	0.6745	-5.2159
Unga Group Ltd	2011	16.3968	0.0334	30.1003	60.9386	131.8893	0.0000	252.2053	0.7151	-40.8505

Source: NSE 2012