ANALYSIS OF EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF MANUFACTURING COMPANIES: A CASE STUDY OF LISTED MANUFACTURING COMPANIES ON NAIROBI SECURITIES EXCHANGE

BY

STEPHEN KIRWA KIMELI

GMB/NE/0552/05/10

A Research Project Submitted to the School of Business in Partial Fulfillment of the Requirements for the Award of a Master of Business Administration Degree (Finance Option) of Kabarak University.

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DECLARATION AND RECOMMENDATION

Declaration

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

Signature_________________________________________ Date_______________

Stephen Kirwa Kimeli

GMB/NE/0552/05/10

Recommendation

We confirm that this Project has been submitted for examination with our approval as the University Supervisors.

Signature_________________________________________ Date_______________

Prof. Peter Kibas
School of Business
Kabarakan University

Signature_________________________________________ Date_______________

Dr. Paul Muoki Nzioki
School of Business
Kabarakan University
DEDICATION

This research work is dedicated to my loving wife Dorcas and sons Benson and Brian.
ACKNOWLEDGEMENT

This research work would not have been successful without the contribution of many different people. I wish to profoundly thank my Supervisors, Prof. Peter Kibas and Dr. Paul Muoki Nzioki for their steadfast support, guidance and encouragement during the entire research period. My gratitude goes to all my lecturers who successfully took me through the course units and in the same breadth provided advice that proved invaluable in achieving my goals.

Special thanks are extended to my loving wife Dorcas, and my sons Benson and Brian, for their endurance, unfailing support, continued encouragement, and understanding. I am also grateful to my parents and other members of my family for their encouragement and support.

My appreciation also extends to the Chief Principal Moi High School Kabarak Mr. Henry Kiplangat for his support and encouragement.

To all the numerous people whom I have not mentioned individually, I say thank you for your invaluable support and may God bless you.
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 utilized a diagnostic research design and targeted the 9 listed manufacturing firms trading on the Nairobi Securities Exchange. However, the study covered 6 of the targeted manufacturing companies, 3 were either not trading or had in complete records at the time of the study. Data was obtained from document analysis of consolidated financial reports of years ending December: 2006, 2007, 2008, 2009 and 2010. 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.

**Key words:** Working Capital Management; Profitability; Average Collection Period; Average Payment Period; Cash Conversion Cycle, Inventory Turnover in Days.
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<table>
<thead>
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<th>Description</th>
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<tr>
<td>ACP</td>
<td>Average Collection Period</td>
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<td>APP</td>
<td>Average payment period</td>
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<td>CCC</td>
<td>Cash conversion cycle</td>
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<tr>
<td>CR</td>
<td>Current Ratio</td>
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<td>DR</td>
<td>Debt Ratio</td>
</tr>
<tr>
<td>FATA</td>
<td>Financial Assets to Total Assets</td>
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<tr>
<td>GOP</td>
<td>Gross Operating Profit</td>
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<tr>
<td>ITID</td>
<td>Inventory turnover in days</td>
</tr>
<tr>
<td>JIT</td>
<td>Just-in-Time</td>
</tr>
<tr>
<td>LOP</td>
<td>Logarithm of Profit</td>
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<tr>
<td>LOS</td>
<td>Logarithm of Sales</td>
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<td>NSE</td>
<td>Nairobi Securities Exchange</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>WCM</td>
<td>Working Capital Management</td>
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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The term working capital has several meanings in business and economic development finance. In accounting and financial statement analysis, working capital is 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

There must be a balance between current assets and current liabilities so as to eliminate the risk of inability to meet short term obligations on one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). 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). Taken together, decisions on the level of different working capital components become frequent, repetitive, and time consuming.

Working Capital Management is a very sensitive area in the field of financial management (Joshi, 1994). It involves the decision of the amount and composition of current assets and the financing of these assets. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinarily within a year and such temporary investment as may be readily converted into cash upon need.

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 sales) and financial assets to total assets ratio were used as control variables.

1.2 Problem statement

The efficient management of working capital is very vital for a business survival. This is premised on the fact that having too much capital signifies inefficiency where as too little cash in hand signifies that the survival of the business is shaky. Most business organizations do not hold the right amount of stocks, debtors and cash. Due to this reason the firm is unable to meet its maturing short term obligations and its upcoming operational needs. Lack of adequate working capital also means that a firm is unable to undertake expansion projects and increase its sales, therefore limiting the growth and profitability of the business. Majority of listed manufacturing firms have exhibited dwindling returns as well as poor stock performance in the last five years. However, the extent to which working capital management affects profitability of these firms is not well known. It is on this premise that this study analyzed the relationship between working capital management and the firm’s gross operating profit.

1.3 Purpose of the study

The purpose of the study was to analyze the effects of working capital management on profitability of listed manufacturing firms trading on the Nairobi Securities Exchange.

1.4 Objectives of the study

1.4.1 General objective

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

The study was guided by the following specific objectives:

1. To analyze the relationship between average collection period and profitability of listed manufacturing firms.

2. To assess the relationship between inventories turnover in days and profitability of listed manufacturing firms.

3. To establish the relationship between average payment period and profitability of listed manufacturing firms.

4. To evaluate the relationship between cash conversion cycle and profitability of listed manufacturing firms.

1.5 Research Hypotheses

The following hypotheses were tested at \( \alpha = 0.05 \).

\( H_0_1 \): There is no statistically significant relationship between average collection period and profitability of listed manufacturing firms.

\( H_0_2 \): There is no statistically significant relationship between inventory turnover in days and profitability of listed manufacturing firms.

\( H_0_3 \): There is no statistically significant relationship between average payment period and profitability of listed manufacturing firms.

\( H_0_4 \): There is no statistically significant relationship between cash conversion cycle and profitability of listed manufacturing firms.

1.6 Significance of the Study

The study’s findings may 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 may 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 may 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 recommended 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.

1.7 Scope of the Study

The study focused on the components of WCM, namely average collection period; average payment period; inventory turnover in days and cash conversion cycle and their effects on gross operating profit. The study was limited to the 9 manufacturing companies trading on the Nairobi Securities Exchange and the consolidated financial records from the year 2006 to 2010.

1.8 Limitations and Delimitations of the Study

The first limitation of the study was that three out of the nine companies targeted by the study were either not trading or had incomplete records at the time of the study. It was therefore not possible to obtain their consolidated financial reports for the period covered by the study, thus the findings of the study may not be generalized to these companies. Secondly, the financial managers of some of the companies studied were not willing to provide all the financial records that formed the main data sources for the study. This limitation was overcome by sourcing the missing information from the archives of the Nairobi Stock Exchange where the companies were listed, since the firms are public entities whose transactions are records must be made available to the public.
1.9 Definition of Significant Terms Used in the Study

The following terms assumed the stated meanings in the context of the study:

**Average collection period (ACP):** refers to the average time required for changing the company’s receivables into cash. It is calculated as:

\[
ACP = \frac{Receivable \; accounts \times 365}{Sales}
\]

**Average payment period (APP):** refers to the average number of days a company takes to pay off credit purchases. Average Payment Period is calculated as:

\[
APP = \frac{Payable \; accounts \times 365}{Cost \; of \; goods \; sold}
\]

**Cash conversion cycle (CCC):** The sum of days of sales outstanding (average collection period) and days of sales in inventory less days of payables outstanding (Keown *et al.*, 2003). It is calculated as:

\[
\begin{align*}
Cash \; Conversion \; Cycle &= \frac{Days \; of \; Sales \; outstanding}{Cash} + \frac{Days \; of \; Sales \; Inventory}{Conversion} - \frac{Days \; of \; Payables \; outstanding}{Cycle}
\end{align*}
\]

**Inventory turnover in days (ITID):** is the average required time to change the materials into the product and then sell the goods. It is calculated as:

\[
ITID = \frac{Inventory \times 365}{Cost \; of \; goods \; sold}
\]

**Working capital:** Working capital, also known as net working capital or NWC, is calculated as current assets minus current liabilities. The major components of working capital are accounts receivable, inventories, cash and cash equivalents and accounts payable.
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 Literature

Working capital management involves the relationship between a firms short term assets and its short term liabilities (Pandey, 2005). 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 (Padachi, 2007). The management of working capital involves the management of inventories, accounts receivable and payable and cash. Working capital refers to current assets and in particular Cash, Debtors and Stocks (Manasseh, 2001). The objectives of working capital management include: To set the optimal level of cash, debtors and stocks to be maintained by a firm, to reduce the long term costs associated with working capital financing, to maintain the liquidity of the firm so that it can be able to meet its financial obligations as and when they fall due.

2.2.1 Management of Inventories

In a manufacturing concern inventory consist of three components: - raw material, work in progress and finished goods. The holding of excessive stocks will lead to tied up capital in stocks while the holding of inadequate stock may lead to stock out costs e.g. lost profitability and goodwill from customers. A firm therefore needs to set an optimal level of stock to hold. To set the optimal amount of stock to hold and order, the Economic Order Quantity (E.O.Q) model will be used (Ford, 1913; Erlenkotter, 1990).
This model operates under the following assumptions: - The annual demand for raw materials and the subsequent usage is known and is constant, there are no quantity discounts associated with bulk purchases, there are no stock out costs i.e. every time the firm runs out of stock there is instantaneous replenishment without lead time, the ordering cost per order is known and will remain constant throughout the year. Ordering cost may consist of telephone charges, transport charges to the warehouse, insurance on transit, handling cost of the goods etc. the holding or carrying cost per unit is known and it remains constant. The holding cost may consist of security expenses, insurance of stock in the warehouse, rent charges etc.

Instead of the conventional inventory management system where the firm maintains a stock of materials in the warehouse, a firm can also adopt a Just in time (J.I.T) purchasing system. It refers to inventory management system where raw materials are only purchased when they are needed for production. Under this system, the company or the firm do not maintain stock of raw materials. The objective of the system includes:- To eliminate inventory storage cost; to eliminate raw material wastage due to obsolesce, theft and pilferage; and finally to eliminate other inventory handling costs e.g. insurance of inventory stock, costs of maintaining a store keeper etc.

2.2.2 Management of Cash

Cash held in the most liquid form is a non-earning asset (Pandey, 2005). This is because cash in hand cannot generate interest. However, the firm requires holding an optimal cash balance since excessive cash means foregone interest income and inadequate cash means difficulty in implementing operating activities of an enterprise. Inadequate cash will also mean that the firm cannot meet its short term maturing financial obligations as and when they fall due. Any idle cash held by a firm should be converted into an earning form so that it can generate interest income. This is achieved though buying or investing in short term marketable securities or investing the idle cash in short term lending.
2.2.3 Management of Accounts Receivable

According to Maas Dava (2008), the management of debtors is implemented through the formulation of sound credit policies. Debtors arise out of credit sales and the amount of debtors at any point in time is influenced by two factors: - The credit period granted to the debtors and the amount of credit sales

\[
\text{Debtors} = \frac{\text{Credit period} \times \text{Annual Credit sales}}{365 \text{ days}}
\]

2.3 Working Capital and Profitability

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).

Defective cash management will lead high costs associated with holding cash, financial distress and lost investment income due hold cash in a non earning form. Examples of financial distress costs include interest costs, debt restructuring costs and legal costs. Likewise these costs will reduce the amounts of profits made by a firm.
2.4 Empirical literature

2.4.1 Average collection period and profitability

Samiloglu and Demirguenes (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 affect 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 sales, and profitability had a positive relationship.

Padachi (2006) examined the trends in working capital management and its impact on firms performance. The results proved that a high investment in inventories and receivables is associated with lower profitability. Further, he showed that inventory days and cash conversion cycle had positive relation with profitability. On the other hand, account receivables days and account payables days correlated negatively with profitability. In another study, Dong and tyh-tay-su (2010) documented a study to find out the relationship between working capital management and profitability. They considered gross operating profitability as a dependent variable and account receivable ratio in number of days, account payable ratio in number of days, inventory turnover ratio in number of days, and cash conversion cycle are independent variables. Size of the firms, debt ratio and fixed assets to total assets are control variables. They found that there is a negative relationship between account receivable in number of days and inventory in number of days and profitability. But there is positive relationship between account payable in number of days and profitability.
2.4.2 Inventories turnover in days and profitability

The significance of working capital management efficiency is irrefutable. Business success heavily depends on the ability of the financial managers to effectively manage receivables, inventory, and payables (Filbeck and Krueger, 2005). Firms can decrease their financing costs and raise the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Garcia-Teruel and Martinez-Solano (2007) collected a panel of 8,872 small to medium-sized enterprises (SMEs) from Spain and tested the effects of working capital management on SME profitability using the panel data methodology. The results demonstrated that managers could create value by reducing their inventories and the number of days for which their accounts are outstanding.

Large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying (Deloof & Jegers, 1996). Another component of working capital is accounts payable. Delaying payments to suppliers allows a firm to assess the quality of bought products, and can be an inexpensive and flexible source of financing for the firm. On the other hand, late payment of invoices can be very costly if the firm is offered a discount for early payment.

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. Deloof (2003) established that most firms had a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of those firms. Using correlation and regression tests he found a significant negative relationship between gross operating income and the
number of days accounts receivable, inventories and accounts payable of Belgian firms. On the basis of these results he suggested that managers could create value for their shareholders by reducing the number of days' accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

2.4.3 Average payment period and profitability

Rahman and Mohamed (2007) studied the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability of Pakistani firms. They found that as the cash conversion cycle increases, it leads to decreasing profitability of the firm and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level. Falope and Ajilore (2009) utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They 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 fifty Nigerian firms listed on the Nigerian Stock Exchange. Mathuva (2009) established that there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

In Christopher and Kamalevalli’s (2011) study, the independent variables used were current ratio, quick ratio, inventory turnover ratio, working capital turnover ratio, debtor’s turnover ratio, ratio of current asset to total asset, ratio of current asset to operating income, comprehensive liquidity index, net liquid balance size and leverage and growth while dependent variable (profitability) was measured in terms of return on investment (ROI). From multiple regression analysis, negative association with ROI was established in current ratio, cash turnover ratio, current asset to operating income and leverage. On the other hand, positive association with ROI is in quick ratio, debtor’s turnover ratio, current asset to total asset and growth rate. In another study,
Gameson (2007) analyzed impact of working capital management upon the performance of firms in Telecom industry. The variables used were, days sales outstanding, number of days for payment to vendors, average days inventory held, cash conversion efficiency, revenue to total assets, revenue to total sales, etc. Findings revealed negative & insignificant relationship between profitability and daily working capital requirement in the said industry.

2.4.4 Cash conversion cycle and profitability

Eljelly (2004) elucidated that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The relation between profitability and liquidity was examined, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. The size variable was found to have significant effect on profitability at the industry level. Garcia-Teruel and Martinez-Solano (2007) also established that shortening the cash conversion cycle improves the firm's profitability.

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.

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.

In other study by Lyroudi and Lazaridis (2000), 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.

A popular measure of Working Capital Management (WCM) is the cash conversion cycle, i.e. the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer this time lag, the larger the investment in working capital (Deloof, 2003). A longer cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers. This discussion of the importance of working capital management, its different components and its effects on profitability leads us to the problem statement which the researcher will be analyzing.

Singh and Pandey (2008) had an attempt to study the working capital components and the impact of working capital management on profitability of Hindalco Industries Limited for period from 1990 to 2007. Results of the study showed that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio had statistically significant impact on the profitability of Hindalco Industries Limited.
Hayajneh (2011), carrying out a study on the impact of working capital efficiency on profitability of Jordanian Manufacturing firms analyzed the panel data through descriptive statistics, Pearson correlation coefficients, ordinary least squares (OLS) and two stage least squares (2SLS) regressions model. The results of study found a negative significance relationship between profitability and the average receivable collection period, average conversion inventory period and average payment period, and also the cash conversion cycle which expresses the efficiency of working capital. This study revealed a positive significance between the size of the firm, growth of sales and current ratio from this side and profitability from other side. Finally, financial leverage correlated negatively with profitability.

Lazaridis and Tryfonidis (2006) have 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.

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 create value if they adopt a conservative approach towards working capital investment and working capital financing policies.

applied co-relational and non-experimental research design and measured the variables as; (independent) number of days account receivable, number of days account payables, cash conversion cycle; (dependent) gross operating profit; (control variables) firm size, financial debt ratio and fixed financial asset ratio. Their study indicated a negative relationship between profitability and average days of account receivable and a positive relationship between cash conversion cycle and profitability. Based on these findings, they suggest that managers can create value for their shareholders by reducing the debtor’s collection period. Furthermore, less profitable firms will pursue a decrease of their debtors in an attempt to reduce their cash conversion cycle. Hence, they concluded that profitability can be enhanced if firms can efficiently manage their working capital.

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 and Gaps in Literature Review

Working capital management entails the management of the most liquid resources of a firm with a view to maintain the firm’s liquidity, enhance profitability and promote business growth. Working capital management concentrates on the management of inventories, cash and cash equivalents and accounts receivable. The proper management of these items is critical to the success of an organization.

The management of inventories is aimed at determining the optimal level of stocks an organization should hold. It ensures that the organization is holding the right quantity of inventories at the right time and in the right location. Proper management of inventories is meant to check on costs associated with holding incorrect quantity of stocks which includes damages to stocks, high capital tied up in stocks, stock holding costs and lost goodwill and profitability associated with being out of stocks.
The management of cash on the other hand is aimed at determining the optimal level of cash an organization should hold so that it can be able to meet its day to day operating expenses, meet its short term financial obligations, ensure that funds are available to ensure investments in expansion projects and that excess cash balances not immediately required for use are invested in income generating activities i.e. money market instruments. Cash should not be left idle in the bank accounts. This is because cash balance in the bank is a non earning asset. This cash should be converted into an earning asset by either investing in short term marketable securities or investing for business growth. Inadequate or excessive cash balance has negative impact on the operations of the firm. Inadequate balances causes financial distress to a firm leading high cost of finance, inability to meet profit targets and inability to undertake expansion projects which limits the overall performance. Excessive cash balances on the other hand leads to lost profitability due to forgone investment income that would have been earned if the idle cash were invested.

Accounts receivable management refers to the determination of the optimal level of debtors an organization should hold. It involves a cost benefit analysis of selling on credit. It involves evaluating the credit policies of an organization with a view of selecting and implementing a policy that yields the maximum benefits to a firm. A firm selling on credit terms increases it turnover therefore increases it profits, however there are costs associated with the credit sales. A trade off should therefore be made between the benefits of credit sales and the cost associates with such credit sales. An organization should carry out a cost benefit analysis of either selling in cash or on credit. Such a decision can only be done after evaluating the credit policy of the firm. Any policy adopted should be the one which leads to a lower cost associated with credit sales.

High level of debtors has high incidence of bad debts and debt administration costs. Low level of debtors on the other hand implies low level of sales therefore low profitability. Debtor’s management policy impacts on the firm’s profitability, liquidity, growth and the level of operating and financial risk of an organization. A problem
therefore arises as to what should be the optimal level of debtors and the credit policy that an organization should adopt in order to reap maximum benefits.

2.6 Conceptual framework

Working capital management calls for the effective management of working capital which is critical to the survival of and profitability of any business organization. Working capital refers to investments in short term assets commonly referred to current assets (Non fixed assets). Non fixed assets are essential for the day to day running of a business. Working capital management focuses on the management of such current assets like debtors or account receivables, inventories and cash and cash equivalents. Good working capital management is enhanced by well management of current assets of the organisation. This ensures that there is adequate working capital to finance the daily operations of the firm, the company meets its financial obligations as and when they fall due and that there is enough capital for investments to promote business growth. When a firm has adequate cash for meet its day to day operations and its financial obligations without difficulty then the level of operating risk and financial risk is minimised. Figure 1 shows the conceptual framework showing how the variables depend on each other.
Figure 1: Conceptual Framework of the Relationship Between Working Capital Management Company’s Profitability

Source: Researcher’s Own Conceptualization
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

The study adopted the diagnostic research design. The study was concerned with the effects of working capital components on profitability. It aimed at identifying the impact of working capital components, that is, the Average collection period (ACP); Inventory turnover in days (ITID); Average payment period (APP) and Cash conversion cycle (CCC) on profitability. Diagnostic research tries to determine the association of the subject matter with something else (Kothari, 2004). The design enabled the researcher to identify the relationship that existed between the independent variables and the dependent variable. Examining data for the study required panel data analysis to find out the relationships that existed among the variables under study over a given period (Huang et. al, 2008).

3.3 Population of the Study

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 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 A).

At the time of the study, three (3) of the nine targeted manufacturing companies had 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 six (6) companies actively trading on the NSE. The data was obtained from document analysis of consolidated financial reports of years ending December: 2006, 2007, 2008, 2009 and 2010 of the 6 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 were cost effective and contained the required information.

3.4 Data Collection Procedures.

Approval letter was first obtained from the School of Business of Kabarak University. Permission to collect relevant data from the finance managers was then secured from the General Managers of the firms covered by the study. The researcher then secured appointments with the finance managers of the respective firms on separate days, to collect data from the financial records of the companies for the stated financial periods.

3.5 Data Analysis and Presentation

The data collected was analyzed using multiple regression and correlation 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. To test the hypotheses of the study, the following 4 models were used to analyze the relationship between the variables:

The First Model: the first hypothesis test model; the relation between Average collection period and profitability:

\[ Y_{it} = a + \beta_1(ACP)_{it} + \beta_2(LOS)_{it} + \beta_3(CR)_{it} + \beta_4(DR)_{it} + \beta_5(FATA)_{it} + e \]

The Second Model: the second hypothesis test model; the relation between Average payment period and profitability

\[ Y_{it} = a + \beta_1(APP)_{it} + \beta_2(LOS)_{it} + \beta_3(CR)_{it} + \beta_4(DR)_{it} + \beta_5(FATA)_{it} + e \]
The Third Model: the third hypothesis test model; the relation between Inventory turnover in days (ITID) and profitability:

\[ Y_{it} = a + \beta_1(\text{ITID})_{it} + \beta_2(\text{LOS})_{it} + \beta_3(\text{CR})_{it} + \beta_4(\text{DR})_{it} + \beta_5(\text{FATA})_{it} + e \]

The Fourth Model: the fourth hypothesis test model; the relation between Cash Conversion Cycle and profitability:

\[ Y_{it} = a + \beta_1(\text{CCC})_{it} + \beta_2(\text{LOS})_{it} + \beta_3(\text{CR})_{it} + \beta_4(\text{DR})_{it} + \beta_5(\text{FATA})_{it} + e \]

Where:

- \(a\) = Constant term for the independent variables
- \(Y\) = Gross Operating Profit (Profitability)
- \(ACP\) = Average Collection Period
- \(CR\) = Current Ratio
- \(LOS\) = the size of the company
- \(DR\) = Debt Ratio
- \(FATA\) = Financial Assets to Total Assets
- \(ITID\) = Inventory Turnover in Days
- \(APP\) = Average Payment Period
- \(CCC\) = Cash Conversion Cycle
- \(e\) = the error term
- \(\beta\) = Regression model coefficient
Control variables:

**Liquidity (CR):** The companies with more Liquidity have more profitability, so Liquidity variable was used as control variable in order to make its effect on profitability neutral. Current ratio was used as Liquidity criterion.

\[
CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

**The Company Size (LOS):** The companies which have more sales naturally have more profitability too. So the company size variable was used to control the effect of this. The company size is: natural logarithm (sale).

**Financial Assets (FATA):** Financial assets are bought for profitability purposes, and so they affect profitability. Therefore this variable was used as control variable in order to make its effect neutral on the company profitability. Long term and short term investments in deposits, stock and bills of exchange of the companies are considered as financial assets.

\[
\text{FATA} = \frac{\text{Financial Assets}}{\text{Total Assets}}
\]

**Debt Ratio (DR):** used as proxy for Leverage and is calculated by dividing Total Debt by Total Assets:

\[
\text{DR} = \frac{\text{Total Debt}}{\text{Total Assets}}
\]
CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

The purpose of this study was to analyze the relationship between working capital management and company profitability. The purpose of this Chapter therefore, is to test the null hypotheses defined in Chapter one. The chapter begins by testing the correlations between the variables under study. To determine the effect of working capital management on profitability, regression models have been made.

4.2 Correlations Between the Variables

Table 4.1

Correlation Matrix for the Variables

<table>
<thead>
<tr>
<th></th>
<th>ACP</th>
<th>APP</th>
<th>ITID</th>
<th>CCC</th>
<th>CR</th>
<th>LOS</th>
<th>DR</th>
<th>FATA</th>
<th>LOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APP</td>
<td>0.1854</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.3267)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITID</td>
<td>0.3299</td>
<td>0.4358*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0750)</td>
<td>(0.016)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCC</td>
<td>-0.1447</td>
<td>-0.6453**</td>
<td>0.3380</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.4454)</td>
<td>(0.0001)</td>
<td>(0.0677)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>0.5911**</td>
<td>-0.1185</td>
<td>-0.3506</td>
<td>0.0239</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.5328)</td>
<td>(0.0575)</td>
<td>(0.9003)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>-0.3673*</td>
<td>0.4367*</td>
<td>0.0742</td>
<td>-0.5641**</td>
<td>-0.7531**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0459)</td>
<td>(0.0158)</td>
<td>(0.6969)</td>
<td>(0.0012)</td>
<td>(0.0000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-0.0051</td>
<td>(-0.0146)</td>
<td>0.6136**</td>
<td>-0.3415</td>
<td>-0.8113**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.9830)</td>
<td>(0.9514)</td>
<td>(0.0040)</td>
<td>(0.0003)</td>
<td>(0.1406)</td>
<td>(0.0000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FATA</td>
<td>0.5492*</td>
<td>0.3663</td>
<td>0.0039</td>
<td>-0.2892</td>
<td>0.6854**</td>
<td>-0.3991</td>
<td>-0.0640</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0183)</td>
<td>(0.1349)</td>
<td>(0.9877)</td>
<td>(0.2445)</td>
<td>(0.0017)</td>
<td>(0.1009)</td>
<td>(0.8701)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOP</td>
<td>0.2018</td>
<td>0.6726**</td>
<td>-0.0844</td>
<td>-0.7662**</td>
<td>-0.3429</td>
<td>0.7602**</td>
<td>-0.4528*</td>
<td>0.0251</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.2850)</td>
<td>(0.0000)</td>
<td>(0.6575)</td>
<td>(0.0000)</td>
<td>(0.0636)</td>
<td>(0.0000)</td>
<td>(0.0450)</td>
<td>(0.9211)</td>
<td></td>
</tr>
</tbody>
</table>

Asterix * and ** indicate significance levels at 5% and 1% respectively; Values in parentheses are the P-Values.

From the table, the relationship between profitability and components of working capital is discernable. The table shows that operating profit (LOP) is positively
correlated with average payment period (APP), company size (LOS), average collection period (ACP) and financial/total asset ratio (FATA), though the correlations with ACP and FATA are statistically insignificant. This means if firms delay their payments they will earn less profits. The strong positive correlation between LOP and LOS confirms that gross profits are directly proportional to company size; that as firm size increases, so do their sales, translating to higher profits. On the other hand, inventory turnover in days (ITID), cash conversion cycle (CCC) credit ratio (CR) and debt ratio (DR) are negatively correlated with LOP which shows that any increase in any of these factors will reduce operating profit of firms. However, the correlations between ITID and CR and LOP are statistically insignificant. The matrix also reveals significant correlations between the predictor variables which could result to multicollinearity, thus have serious ramifications on these parameters’ effects on the dependent variable, that is, gross operating profit.

4.3 Regression Models

The previous section shows that some components of working capital correlate with company profitability. This section determines how much of each of the variables of working capital impact profitability. To estimate the research models, pooled ordinary least squares (OLS) method is used. As control variables, Liquidity (CR); Company Size (Natural logarithm of sales (LOS) and Financial Assets/Total Assets ratio (FATA) are used while the Debt Ratio (DR) is used to proxy for leverage. To avoid the effects of multicollinearity due to the strong negative correlations between LOS and CR and DR and LOS, stepwise remodeling is done by separately entering the variables in different models.

4.3.1 Effect of Average Collection Period on Profitability

To test the first regression model, the study hypothesized that there would be no statistically significant relationship between average collection period (ACP) and profitability. Table 4.2 presents the results of the first regression model.
Table 4.2
Regression Results for the Effect of Average Collection Period on Profitability

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable (Gross Operating Profit)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DR Dropped</td>
<td>FATA Dropped</td>
<td>CR Dropped</td>
<td>FULL Model</td>
<td></td>
</tr>
<tr>
<td>ACP</td>
<td>.0590535</td>
<td>.042204</td>
<td>.0959543</td>
<td>.096503</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.28)***</td>
<td>(3.77)***</td>
<td>(11.01)***</td>
<td>(7.86)***</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>1.579755</td>
<td>1.562349</td>
<td>.202916</td>
<td>.136686</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.18)***</td>
<td>(2.93)***</td>
<td>(0.38)</td>
<td>(0.13)</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>.0462364</td>
<td>.1458221</td>
<td>-</td>
<td>.0492927</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.21)</td>
<td>(0.31)</td>
<td></td>
<td>(0.08)</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-</td>
<td>1.89165</td>
<td>-8.241398</td>
<td>-8.164119</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.55)</td>
<td>(-3.15)***</td>
<td>(-2.57)**</td>
<td></td>
</tr>
<tr>
<td>FATA</td>
<td>1.569174</td>
<td>-</td>
<td>21.41342</td>
<td>21.1669</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.41)</td>
<td></td>
<td>(3.80)***</td>
<td>(3.80)***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.75)*</td>
<td>(-1.54)</td>
<td>(0.470)</td>
<td>(0.44)</td>
<td></td>
</tr>
</tbody>
</table>

The z-statistics are in parentheses; Asterix *, ** and *** indicate significance levels of 10%, 5%, and 1% respectively.

Multiple regression analysis was conducted using ACP as a predictor of Operating Profit (profitability) and LOS, CR, DR and FATA as controls. The results show that an increase in average collection period (ACP) increases the gross operating profit (LOP). The values in column D show that if ACP increases by 1, gross operating would increase by 0.097. Among the control variables, the effect of company size (LOS) on the gross operating profit (LOP) only becomes significant when DR and FATA are dropped separately while the effects of FATA and DR are separately insignificant in the absence of each other as shown in columns A and B respectively, otherwise significant where an increase of 1 in DR decreases LOP by 8.164 while an a similar increase in FATA would increase LOP by 21.167. The results indicate that ACP has a positive relationship with LOP. Therefore, the null hypothesis (H0) is rejected.

These findings mean that firms early in collecting their receivables earn higher profits as compared to firms recovering receivables late. The findings are in agreement with Ghosh and Maji (2003) who analyzed the relationship between working capital...
management efficiency and earnings before interest and taxes (EBIT) and found an inverse relationship between collection period and EBIT, indicating that credit facility increases sales of firm which ultimately increases profitability. However, the findings contradict Hyder, Niaz, Falahuddin & Ghulam (2007) who investigated the dependence of profitability on working capital management of manufacturing firms listed on respective stock exchanges in Asia including China, Japan, India, Pakistan, Bangladesh, Iran and Korea and established a significant negative relationship between receivable period and firm’s profitability. Raheman and Nasr (2007) also established that most of the firms invest huge amount of cash in their working capital, thus profitability was inversely related to receivable collection period.

4.3.2 Effect of Inventories Turnover in Days on Profitability

To test the second regression model, the study hypothesized that there would be no statistically significant relationship between Inventories Turnover in Days (ITID) and profitability. Tables 4.3 present the results of the second regression model.

Table 4.3

Regression Results for the Effect of Inventories Turnover in Days on Profitability

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable (Gross Operating Profit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>ITID</td>
<td></td>
</tr>
<tr>
<td>DR Dropped</td>
<td>0.0050837</td>
</tr>
<tr>
<td>(0.87)</td>
<td>(-0.35)</td>
</tr>
<tr>
<td>LOS</td>
<td>2.228911</td>
</tr>
<tr>
<td>(2.62)**</td>
<td>(3.88)**</td>
</tr>
<tr>
<td>CR</td>
<td>0.5702273</td>
</tr>
<tr>
<td>(1.55)</td>
<td>(-0.04)</td>
</tr>
<tr>
<td>DR</td>
<td>-</td>
</tr>
<tr>
<td>(1.89)</td>
<td>(1.93)*</td>
</tr>
<tr>
<td>FATA</td>
<td>-3.728866</td>
</tr>
<tr>
<td>(-0.55)</td>
<td>(1.88)*</td>
</tr>
<tr>
<td>(-1.63)</td>
<td>(-2.31)**</td>
</tr>
</tbody>
</table>

The z-statistics are in parentheses; Asterix *, ** and *** indicate significance levels of 10%, 5%, and 1% respectively.
The results of the regression analysis conducted using ITID as a predictor of Operating Profit and LOS, CR, DR and FATA as controls show that ITID has an insignificant effect on gross operating profit (LOP). The values in column C show that ITID only impacts on LOP when CR is dropped. In this case, a unitary increase in ITID increases LOP by 0.25. On the other hand, company size positively affects LOP where an increase in LOS by 1 increases LOP by 5.37. CR, DR and FATA have insignificant impacts on LOP. Since ITID only impacts LOP in the absence of FATA, the null hypothesis ($H_0$) was therefore accepted.

This means that inventory turnover in days had statistically insignificant effect on gross operating profits of the assessed firms. Holding inventories incurs costs to the firm, such as the funds which are tied up in inventories, cannot have the interest earnings. Instead, storage and insurance costs have to be paid, furthermore, spoilage, damage and loss of goods lead to the costs to firms. The findings were consistent with those of Roumiantsev and Netessine (2005b) 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. Roumiantsev and Netessine (2007) also report that the relationship both between days of work in process inventory and ROS and between days of finished goods inventory and ROS is statistically insignificant. However, they contradict the findings of Chen et al. (2005, 2007) who reported that firms with abnormally high inventories have abnormally poor long-term stock returns and Gaur et al. (2005) who equally reported that inventory turnover for retailing firms is positively associated with both capital intensity and sales surprise, and is negatively associated with gross margins. Hyder et al. (2007); Raheman and Nasr (2007) have also reported a negative relationship between Inventory period and profitability. A limitation that could explain the variation in the findings is the fact that different manufacturing firms report different types of inventories. Use of total inventories without regard to the type may therefore explain the variation.
4.3.3 Effect of Average Payment Period on Profitability

To test the third regression model, the study hypothesized that there would be no statistical significant relationship between average payment period (APP) and profitability. Tables 4.4 present the results of the third regression model.

Table 4.4
Regression Results for the Effect of Average Payment Period on Profitability

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable (Gross Operating Profit)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>APP Dropped</td>
<td>DR Dropped</td>
<td>FATA Dropped</td>
<td>CR Dropped</td>
<td>FULL Model</td>
</tr>
<tr>
<td>APP</td>
<td>.0115163</td>
<td>.0153429</td>
<td>.0189322</td>
<td>.0189824</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.89)***</td>
<td>(2.58)**</td>
<td>(4.96)***</td>
<td>(3.43)***</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>1.778297</td>
<td>2.272046</td>
<td>3.500821</td>
<td>3.481045</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.61)***</td>
<td>(4.25)***</td>
<td>(4.04)***</td>
<td>(2.10)**</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>.4875201</td>
<td>1.551299</td>
<td>-</td>
<td>.0204783</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.72)*</td>
<td>(2.00)**</td>
<td>(0.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-</td>
<td>7.551746</td>
<td>4.693913</td>
<td>4.754879</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.13)**</td>
<td>(1.11)</td>
<td>(0.75)</td>
<td></td>
</tr>
<tr>
<td>FATA</td>
<td>-6.695494</td>
<td>-</td>
<td>24.42538</td>
<td>24.33543</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.23)</td>
<td></td>
<td>(2.83)***</td>
<td>(2.09)**</td>
<td></td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-16.37986</td>
<td>-26.87986</td>
<td>-45.11853</td>
<td>-44.83961</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.45)</td>
<td>(-3.02)***</td>
<td>(-3.26)***</td>
<td>(-1.83)*</td>
<td></td>
</tr>
</tbody>
</table>

The z-statistics are in parentheses; Asterix *, ** and *** indicate significance levels of 10%, 5%, and 1% respectively.

Multiple regression analysis was conducted using APP as a predictor of Operating Profit and LOS, CR, DR and FATA as controls. The results in Table 4.4 show that an increase in average payment period (APP) leads to an increase in gross operating profit (LOP). The values in column D show that if APP increases by 1, gross operating would increase by 0.019. On the other hand, if LOS increases by 1, then LOP would increase by 3.481 while a unit increase in FATA would translate to 24.335 in LOP. DR and CR do not significantly predict LOP. However, all the other independent variables significantly predict LOP when FATA is dropped (column B) while only DR remains
insignificant in the absence of CR (column C). Conversely, only APP, LOS and CR significantly predict LOP when DR is dropped.

Based on the foregoing findings, the null hypothesis (H0) is rejected. Firms with longer payment period/delay their payment period earn higher profits as compared to firms with shorter payment period. Lazaridis and Tryfonidis (2005) found that there was positive relationship between payment period and profitability; this means profitable firms delay their payments. Ramachandran and Janakirama (2006), in their analysis of the relationship between working capital management efficiency and earnings before interest and taxes (EBIT) also found that there was a positive relation between Payable Period and EBIT, indicating that profitable firms delay their payables. In contrast, Falope and Ajilore (2009) found a significant negative relationship between net operating profit and the average payment period, implying that companies with short payment period. The inverse relationship could be explained by the discounts enjoyed by the firms by paying the suppliers in time, thus reducing the cost of production.

**4.3.4 Effect of Cash Conversion Cycle on Profitability**

To test the fourth regression model, the study hypothesized that there would be no statistically significant relationship between Cash Conversion Cycle (CCC) and profitability. Tables 4.5 present the results of the fourth regression model.

The results of the regression analysis conducted using CCC as a predictor of Operating Profit and LOS, CR, DR and FATA as controls indicate that an increase in cash conversion cycle leads to a drop in the gross operating profit. Column D in Table 4.4 shows that if CCC increased by 1, gross operating profits would drop by 0.078. With regard to the control variables, a unit increase in company size (LOS) increases gross operating profit (LOP) by 3.32 while similar increases in DR and FATA would decreases LOP by 7.76 and 27.32 respectively. Almost similar effects would be observed if CR was dropped as indicated by the results in column C. On the contrary, whereas CR has an insignificant impact on LOP, all the other variables become insignificant in the absence of DR as shown in column A. The regression results
indicate that CCC has a significant negative relationship with operating profit; that as CCC increases, profitability decreases. This means that firms with high cash conversion cycle earn low profits as compared to firms with low cash conversion cycle. Therefore the null hypothesis (H0) was rejected.

Table 4.5
Regression Results for the Effect of Cash Conversion Cycle on Profitability

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>DR Dropped</th>
<th>FATA Dropped</th>
<th>CR Dropped</th>
<th>FULL Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>-.0116302</td>
<td>-.0228936</td>
<td>-.0771765</td>
<td>-.0779092</td>
</tr>
<tr>
<td></td>
<td>(-1.42)</td>
<td>(-2.35)**</td>
<td>(-32.43)***</td>
<td>(-23.87)***</td>
</tr>
<tr>
<td>LOS</td>
<td>1.579699</td>
<td>1.71806</td>
<td>3.400816</td>
<td>3.319662</td>
</tr>
<tr>
<td></td>
<td>(1.79)*</td>
<td>(2.56)**</td>
<td>(23.83)***</td>
<td>(12.69)***</td>
</tr>
<tr>
<td>CR</td>
<td>0.3727155</td>
<td>0.6032469</td>
<td>-</td>
<td>0.0835289</td>
</tr>
<tr>
<td></td>
<td>(1.07)</td>
<td>(1.01)</td>
<td>(0.39)</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-</td>
<td>10.12978</td>
<td>-7.896266</td>
<td>-7.758174</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.71)***</td>
<td>(-8.88)***</td>
<td>(-7.31)***</td>
</tr>
<tr>
<td>FATA</td>
<td>-3.044518</td>
<td>-</td>
<td>-26.4497</td>
<td>-27.32498</td>
</tr>
<tr>
<td></td>
<td>(-0.49)</td>
<td></td>
<td>(-16.45)***</td>
<td>(-9.52)***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-11.62606</td>
<td>-14.18994</td>
<td>-35.70964</td>
<td>-34.48782</td>
</tr>
<tr>
<td></td>
<td>(-0.78)</td>
<td>(-1.25)</td>
<td>(-15.45)***</td>
<td>(-8.51)***</td>
</tr>
</tbody>
</table>

The z-statistics are in parentheses; Asterix *, ** and *** indicate significance levels of 10%, 5%, and 1% respectively.

The findings above concur 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. Ramachandran and Janakirama (2006) established a negative relationship between EBIT and CCC. Nobanee (2009); Chaterjee (2010); Nobanee et al (2010); Akgun and Meltem (2010) and Rezazade and Heidarian (2010) have all reported a negative relationship between CCC’s components with profitability. One of the effective ways for shortening CCC is to shorten the period of receivable accounts, delaying the payment of payable accounts and inventories. By shortening
CCC, firm profitability improves. The longer the cash conversion cycle, the more the firm must invest in working capital, while the shorter cash conversion cycle, the less funds are tied up in the working capital. Corporate liquidity is influenced by the cash cycle because cash cycle measures the average amount of time that cash is tied up in operations process. Therefore, a firm with a short cash cycle is expected to have higher levels of cash and marketable securities, all else being equal.
CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to analyze the effects of working capital management on profitability of listed manufacturing firms trading on the Nairobi Securities Exchange. This chapter is therefore a summary of the findings from the analysis of data, conclusions and recommendations based on the findings of the research study. The chapter also provides suggestions for further research in the field of working capital management.

5.2 Summary of the Findings

The summary of the findings of the research study are discussed under this section as per the objective areas.

The study established that an increase in average collection period led to an increase in gross operating profit. In the specified regression model, a unit increase in ACP would lead to an increase in gross operating by 0.097 indicating that ACP had a positive relationship with LOP. 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.

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 (2005b) 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 established that an increase in average payment period led to an increase in gross operating profit. If APP increases by 1, gross operating would increase by 0.019 indicating that APP was positively related with gross operating profit. These findings agreed with Lazaridis and Tryfonidis (2005) and Ramachandran and Janakirama (2006) who also found that there was positive relationship between payment period and profitability, meaning that profitable firms delay their payments. However, the findings contrasted those of Falope and Ajilore (2009) found a significant negative relationship between net operating profit and the average payment period, implying that companies with short payment period. The inverse relationship could be explained by the discounts enjoyed by the firms by paying the suppliers in time, thus reducing the cost of production.

The study also established that that an increase in cash conversion cycle led to a drop in the gross operating profit, indicating a negative relationship between the two variables. A unit increase in translated to a drop 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 Reza Zade and Heidarian (2010) all of whom had earlier reported a negative relationship between CCC’s components with profitability.

5.3 Conclusions

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 it 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

Managers should focus on reducing cash conversion cycles and try to collect receivables as soon as possible because it is better to receive inflows sooner than later. Managers should reduce inventory periods and try to delay payables because it will provide them opportunities to invest in different profitable areas thus increasing the firms’ profitability.

### 5.5 Suggestions for Further Studies

The following are some of the areas that further research may be focused:

1. Similar study done on the same topic with different companies over an extended sample period of financial years.

2. A study undertaken on the impact of external factors on working capital management in manufacturing companies.

3. Similar study with an extended scope to cover other components of working capital management including cash and marketable securities.
REFERENCES


### Appendices

**Appendix I: Listed Manufacturing Companies**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>COMPANY</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A. Bauman &amp; Co. Ltd</td>
<td>Not Trading</td>
</tr>
<tr>
<td>2</td>
<td>Carbacid Investment Ltd</td>
<td>Trading</td>
</tr>
<tr>
<td>3</td>
<td>Kenya Orchards Ltd</td>
<td>Not Trading</td>
</tr>
<tr>
<td>4</td>
<td>B.O.C Kenya Ltd</td>
<td>In complete records</td>
</tr>
<tr>
<td>5</td>
<td>East Africa Breweries Ltd</td>
<td>Trading</td>
</tr>
<tr>
<td>6</td>
<td>Mumias Sugar Company Ltd</td>
<td>Trading</td>
</tr>
<tr>
<td>7</td>
<td>British America Tobacco Kenya Ltd</td>
<td>Trading</td>
</tr>
<tr>
<td>8</td>
<td>Eveready East Africa Ltd</td>
<td>Trading</td>
</tr>
<tr>
<td>9</td>
<td>Unga Group Ltd</td>
<td>Trading</td>
</tr>
</tbody>
</table>