

**THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND
FINANCIAL PERFORMANCE OF FIRMS IN THE AGRICULTURAL SECTOR:
THE CASE OF FIRMS IN THE COFFEE INDUSTRY IN KENYA**

BY

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D61/63778/2011

**A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS
ADMINISTRATION DEGREE, SCHOOL OF BUSINESS OF THE UNIVERSITY
OF NAIROBI**

2014

DECLARATION

I hereby declare that this project is my own work and effort and that it has not been submitted anywhere for any award.

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DEDICATION

To my loving husband James and our beautiful children Shana and Shawn for their support, encouragement, patience and most of all love throughout the entire period of my study.

ACKNOWLEDGEMENT

I am heavily indebted to various people and organization without whose material and non material support this research would not have succeeded. I take this opportunity to express my sincere thanks to each of these people and organizations.

The staff of the Jomo Kenyatta Library provided the opportunity to use the facilities especially in the MBA and the Electronic Library section. From these able staff I was able to access not only research reports from earlier MBA research findings but I was able to access scholarly publication from the wider academic sphere.

Much of the direction on at each stage of this research was provided by my supervisor Mr. M. Odipo. He was there to give highly needed guidance right from the formation of the topic to the drafting of the final project. I wish to express my sincere gratitude.

The data of analysis was obtained from firms that are members of KCTA. I wish to thank them for two reasons: first they kept the data I needed for the research and, two, they availed the data to me when I needed them to. With the data I was able to complete this project.

In my literature review I have cited quite a lot of scholarly publication. Some are from earlier research finding from project done by other MBA students. I have used scholarly papers from the wider academia. These are works without which I could not have had a scholarly insight into this research

Finally I would wish to thank my family that provided me with encouragement throughout the period I was conducting this research.

ABSTRACT

The financial performance of any business organization is a very basic and important criterion used to measure the effectiveness and success of the firm's operations. One way in which a firm can gain competitive advantage is through effective management of its working capital. This means the management of Cash Conversion Efficiency, Days of Operating Cycle and Days of Working Capital. This study, therefore, sought to find out the relationship between working capital management and financial performance in firms in the coffee industry in Kenya. This was done through a time series correlation study in which financial performance was the dependent variable and the three components of working capital, namely, Cash Conversion Efficiency, Days of Operating Cycle and Days of Working Capital were the independent variables. The study was a census study targeting all the 40 firms registered by Kenya Coffee Traders Association. Historical quantitative data for the period 2009 to 2013 was used in the research. The data including cash flows from cash flow statements, the annual turnover and EBIT income statements of the firms for the study period were obtained from the finance departments of the firms being studied. Regression was used to determine the relationship between financial performance and each component of working capital. The results show that the constant term of the regression was positive and statistically significantly different from zero. Secondly, the coefficient of cash conversion efficiency was negative and statistically significantly different from zero. The coefficient of days operating capital was positive and statistically significantly different from zero. The coefficient of days working capital was negative and statistically significantly different from zero. The study, therefore, recommends that other than focusing on working capital management only, firms in the coffee industry should single out other factors and incorporate them in their profitability drive; the coffee firms should be less aggressive in changing stocks to sales to make higher profit the; the firms become more aggressive in reducing the time span during which working capital is tied up within the company; and This research recommends that the firms become more aggressive in collection of debts.

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LIST OF ABBREVIATIONS

ADCS	-	Average Daily Credit Sales
AR	-	Accounts Receivable
CBK	-	Central Firms of Kenya
CCE	-	Cash Conversion Efficiency
DOC	-	Days of Operating Cycle
DWC	-	Days of Working Capital
EBIT	-	Earnings Before Interest and Tax
EOQ	-	Economic Order Quality
JIT	-	Just-In-Time
KCTA	-	Kenya Coffee Traders Association
MFIs	-	Micro-Finance Institutions
NCFFOA	-	Net Cash Flow From Operating Activities
NSE	-	Nairobi Securities Exchange
PMS	-	Profit Margin on Sales
ROA	-	Return on Assets
SPSS	-	Statistical Package for Social Sciences
WCM	-	Working Capital Management

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CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Hall, Lotti & Mairesse (2009) recognize that the financial performance of any business organization is a very basic and important criterion used to measure the effectiveness and success of the firm's operations. Financial performance reflects the ability of the firm to operate with commendable success in its competitive environment. Financial performance combines the results of strategy and its execution as well as response of the firm's output to the market. One way in which a firm can gain competitive advantage is through effective management of its working capital.

The financial performance of firms, for instance, always interests the management of firms, investors and academicians. This interest is due to the nature of the agricultural sector for instance. The agricultural sector is becoming more consolidated by the day with changing dynamics concerning the production technology and the ever changing global environment. A management strategy that will have direct impact on the financial performance of these firms will definitely be of interest to the various stakeholders (Peters & Schmiele, 2011).

Garcia-Teruel & Martinez-Solano (2007) admit that firms make decisions to invest in short-term assets and the resources used to finance these decisions usually come with maturities of under one year. These short term financial commitments and financial obligation make a significant share of a firms' balance sheet. These items are therefore, expected to be strong drivers of a firms' liquidity, operating efficiency, riskiness,

financial performance and hence value. In this sense, it is possible to regard working capital as the lifeblood of a firm (Padachi et al, 2008).

However, according to Nazir & Afza (2009) much of the available corporate finance literature has focused on the study of long-term financial decisions involving investments, capital structure, dividends etc despite the importance of the current assets component of total assets. This study is to be conducted with the recognition that current assets need to be carefully analyzed as well and their contribution to financial performance of a firm determined.

1.1.1. Working Capital Management

Trivedi (2010) defined gross working capital, which he equated to working capital, as the firm's investment in its current assets. Gross working capital is the sum of all current assets. The current assets include inventories, trade debtors, loans and advances issued, cash and bank balances, bills receivables and short-term investment.

Working capital is different from net working capital. Guthmann (1953) provided the difference when he defined working capital as the portion of a firm's current assets which are financed from long term funds. This put separation between current assets financed from short-term sources and those financed by long term sources. These current assets financed from long-term sources are referred to as net working capital (Trivedi, 2010). In straight terms, working capital is the excess of current assets over current liabilities.

Raheman & Nasr (2007) deemed working capital management (WCM) an essential tool that is popularly used to measure both the operational and financial efficiency of firms. Working Capital Management is concerned with the problems arising consequent upon

the attempts to manage the Current Assets, Current Liabilities and the interrelationship between them. Working Capital Management refers to the deployment of current assets and current liabilities efficiently. The relationship between financial performance and each of the components of working capital shows the contribution of each of the components to capital. The aim of WCM is to strike the most profit making balance.

These components of WCM include Cash Conversion Efficiency (CCE), Days of Operating Cycle (DOC) and Days of Working Capital (DWC). Cash Conversion Efficiency is simply the Net cash flow from operating activities expressed per unit sales revenue. Days of Operating Cycle (DOC) shows speed at which a firm is able to convert its resources. This measures the number of days that a firm takes to acquire and convert inventories into sellable products and collects cash. Lower values of DOC are desirable. Days of Working Capital (DWC) describe how many days it will take for a company to convert its working capital into revenue (Ali, 2011).

1.1.2. Financial Performance

There are various ways of measuring financial performance. Novy-Marx (2012) argues that financial performance, as measured by the ratio of a firm's gross profits, that is, revenues minus cost of sales, to its assets, is just one of the many measures of the financial performance of any firm. He goes further to posit that there are other measures like book-to-market ratios that can be used to measure financial performance. Indeed, he pronounces that gross profit is the cleanest accounting measure of true financial performance.

In this study, financial performance will be measured by profit margin on sales. Profit margin on sales (PMS) shows how much a firm is making before interest and taxes for each shilling worth of sales. A higher PMS means a more economical use of invested money (Ali, 2011).

Working capital management has been given higher priority by the corporate world as a driver of financial performance. Companies which are effectively using their working capital components are likely to realize higher performance over competitors. This has been found by various researches though the relationship varies from context to context. For instance, the study by Sial & Chaudhry (2012) on a sample of 100 Pakistani manufacturing listed companies on Karachi Stock Exchange for the time period of 10 year from 1999-2008 established such a relationship. The study focused on the effect of different variables of working capital management like the Average collection period, Inventory turnover in days, average payment period and cash conversion cycle on profit. The study found a significantly negative relationship between working capital and financial performance.

Another study that done by Thuvarakan (2013) on 60 manufacturing companies, 20 construction companies and 17 telecommunication companies listed on the London stock exchange for the period of 2006-2011 found that working capital affected financial performance. In the study, financial performance is measured using gross operating income. The independent variables were receivable days payable days, inventory days, cash conversion cycle, debt, and size of the firm. The Pearson's correlation and regression analysis showed that there was no significant relationship between the working capital components and financial performance.

Guru & Staunton (2001) conducted a study in Malaysia confirmed a variety of factors driving financial performance. They divided the factors that determine financial performance into two sets: those that can be controlled by the management and those that are beyond the control of the management. The controllable factors simply touch on funds management, capital management, management of expenses, size and ownership structure.

A study by Vong & Chan (2008) in Macao found that the capital strength of an organization was of paramount importance in influencing its financial performance. They asserted that a well-capitalized organization was low risk. This perception was translated into higher financial performance. On the other hand, poor quality of an organization's assets adversely affected the financial performance since it was perceived as high risk.

A study by Hassan & Bashir (2002) in Islamic organization worldwide indicated that firms performed according to some factors that were beyond the control of management. For instance the macroeconomic environment within which the organizations operated had great effect on financial performance. Factors like financial market structure, taxation, high capital and loan-to-asset ratios affected financial performance. Both implicit and explicit taxes, for instance, negatively affected financial performance and managers had little to do about it.

1.1.3. Relationship between Working Capital Management and Financial Performance

Theory puts a strong link between working capital management and financial performance. The Baumol (1952) model which suggests the management of cash as if it

were an ordinary inventory suggests that effective management of working capital impacts positively on financial performance. The same position is taken by the Miller-Orr (1966) model that even suggested how to calculate optima cash to be held given values of risk and cost of capital.

There seems to be a close connection between working capital and financial performance. According to Scherr (2007) any firm should not keep any unproductive assets and should finance its activities with funds from the cheapest available sources. There is great advantage for a firm if it invests in short-term assets financing them with short-term liabilities. Proper management of working capital plays an important role in maintaining the financial health, including financial performance, of the firm.

Taleb, Zoued & Shubiri (2010) posit that the effective management of working capital is very important. This is because working capital affects financial performance and the liquidity of the firms. Gill (2011) agrees that there should be reached optimal balance between the components of working capital. Striking this balance should be a basic part of the overall corporate strategy to create shareholders' value.

Ali (2011) finds a close relationship between financial performance and each of the three components of working capital management. The study established a positive correlation between improvement in working capital management and financial performance. This shows that profit margin on sales is likely to grow as the values of cash conversion efficiency, days operating cycle and days of working capital reduce.

1.1.4. Kenya's Agricultural Sector

Poulton and Kanyinga (2013) noted that the Kenyan economy remains highly dependent on agriculture as its source both of employment, foreign exchange and food. Immediately after independence, Kenyan agricultural performance was widely regarded as good even by the World Bank (World Bank 1994). Apart from most communities in Kenya being into farming and animal husbandry, the agriculture sector was vibrant because actor of the establishment or maintenance of effective agricultural institutions. These institutions included parastatals and cooperatives.

Despite being a strong producer of tea, coffee, horticultural products, dairy and meat products, as well as producing significant quantities of the main staple food crop maize and sugar for the domestic market, the industry has recently been poorly performing even in regions known for the production of some farm products. This is due to the overall poor growth in agriculture and high inequalities that characterize the rural areas where farming is done (World Bank, 2008).

Agricultural sector has seriously been affected by the political, economic, and weather shocks. In 2008 and 2009, the sector suffered a recession due to the 2007/2008 post-electoral political violence. The international economic recession between 2008 and 2009 led to high input prices particularly fertilizer. In the same time range, there were prolonged droughts. The combination of these factors resulted in a major reduction in agricultural production, which ultimately led to a contraction of 5.4% in the year 2008 down from a growth rate of 2.2% in the previous year (KNBS, 2009).

1.1.5. Kenya's Coffee Industry

Coffee production is on a severe downward trend. Production peaked at just less than 130,000 tons in the year ending October 1988, and fell to 60,000 tons in 2009. The July 1989 suspension of coffee export quotas under the International Coffee Agreement began the slide that continued through 1994 as a result of excess supply on the market. Within Kenya, this was exacerbated by increased input costs due to exchange rate appreciation, and problems within the institutions handling farmers' coffee. Farmers reacted by reducing input use. Coffee Berry Disease, leaf rust, leached soils and inter-cropping reduced production, as did fairly widespread uprooting and neglect of coffee (Argwings-Kodhek, 2010)

High operational costs in the organizations serving farmers helped exacerbate the problems caused by low world prices. In the co-operative sector, poor management and overstaffing of society factories that were pulping well below capacity helped increase the unit costs charged by co-operatives on cherry. The costs of repaying the loans incurred under the World Bank funded factory building, refurbishment and credit; SCIP program also increased co-operative costs and deductions. Problems of excess staff and poor investment decisions also affected the district wide unions. Low capacity utilization, high costs, over-employment and poor investments (e.g. non-performing loans) and also are part of the problem of the major miller KPCU, the Coffee Board and the Coffee Research Foundation. All these relatively inefficient organizations were taking their share of coffee money before it reached the farmer (Karanja and Nyoro, 2002).

The coffee industry needs better information on what it is that various institutions do, what they achieve, what they cost, and whether the same or more important functions can be better or more cheaply performed under different institutional arrangements.

Unfortunately government always seems inclined to side with existing organizations that may have served a useful role in the past but have not, or perhaps cannot, change with the times. This problem afflicts the co-operatives factory societies and unions that were too slow to reduce costs in the face of declining throughput (EPZ, 2005).

A firm operating in this shrinking industry will have to apply careful financial practices that will ensure cost cutting while maximizing revenues. One approach of financial management approach would be the management of the working capital for the firms in this vital but shrinking industry (Condliffe, Kebuchi, Love and, Ruparell, 2008).

1.2. Research Problem

Researchers like Bieniasz & Golas (2011) assert that WCM has strong effect on financial performance so that firms with the shortest working capital cycles obtain the higher rates of financial performance. The position is supported by Bilal, Naveed, & Taliv, (2011) who found that efficient working capital management improved the financial performance of the companies listed on the Karachi Stock Exchange.

However, studies like that done by Makori & Jagongo (2013) on firms listed on the NSE finds mixed results. While the study found a negative relationship between financial performance and the number of day's accounts receivable and cash conversion cycle, it found a positive relationship between financial performance and number of days of inventory and number of day's payable. Another study by Ali (2011) on the Stockholm Stock Exchange showed no significant relationship between working capital management and financial performance. This mixture of results shows clearly that the relationship between working capital management and financial performance is not universal.

Indeed the findings by Nzioki, Kirwa, Abudho & Nthiwa (2013) were different from those of Makori & Jagongo (2013) they found a positive relationship between financial performance and number of days of inventory and number of day's payable, but a relationship with the number of day's accounts receivable and cash conversion cycle. This research focused on firms in the coffee industry in Kenya to establish the effect of working capital management in this industry. This was done by answering the question: what is the effect of working capital management on financial performance in firms in the coffee industry in Kenya?

1.3. Research Objective

To establish the relationship between working capital management and financial performance in firms in the coffee industry in Kenya

1.4. Value of the Study

The findings of this research will be useful to scholars, managers of in firms in the coffee industry in Kenya and government policy makers. To scholars, the study will establish the relationship between working capital management and financial performance in firms in the coffee industry in Kenya. The study will contribute to the scholarly discussion concerning the effectiveness of working capital management as a driver of financial performance in firms in the coffee industry in Kenya. Future researcher will use the findings of this study relevant to researches related to this one.

Managers of the firms in the coffee industry in Kenya will have evidence that will either confirm or refute the policy of using working management as a driver of financial performance. If working capital management will be found to have great effect on

financial performance, then the managements of in firms in the coffee industry in Kenya will have another way of generating profit in these firms. They will therefore want to use working capital management as a means to profit.

Policy makers of the government will also find the results of this research useful. If this research finds that in firms in the coffee industry in Kenya can make profit through working capital management, then the policy designers will put in place policies that will be attractive to investors into the coffee industry so as to spur faster rates of economic growth and development.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the theoretical literature and the empirical literature upon which this research is based. The theories discussed are the Baumol Model, the Miller-Orr Model and the just-in-time Model, in the first section of the chapter. The second section discusses other factors that affect financial performance while the last section discusses other researchers conducted on the relationship between working capital and financial performance in firms in Kenya and in other countries.

2.2 Theoretical Review

2.2.1 Baumol Theory

This model was developed by Baumol in 1952. Baumol (1952) developed the model in which cash was managed like ordinary inventory. The model is based on the Economic Order Quality (EOQ). The main motivation of the model was the determination of the optimal level of cash a business should hold at every given time for efficient operation.

Baumol (1952) assumed that the firm is able to certainly forecast its cash requirements at regular intervals. He also assumed that the firm faced a steady rate of cash outflows and that opportunity cost of holding cash was known and constant over time. Baumol also assumed that each transaction incurs a fixed cost and a variable cost. Basing on the assumption the Baumol suggested that the optimal cash balance would be determined using the formula below:

$$C = \sqrt{\frac{2U \times P}{S}}$$

Where C is the optimal cash balance, U is the cash disbursement in a year, S is the opportunity cost of holding a shilling while P is the fixed cost per transaction.

This model is related to this research because it seems to suggest that the amount of cash and other current assets held depends upon the costs of holding the current assets. This is important because the cost of holding current assets contributes to financial performance.

2.2.2 Miller-Orr Theory

This Miller- Orr Model as the name suggests was posited by Merton Miller and Daniel Orr in 1966 and sought to overcome the weaknesses of the Baumol (1952) model. This model is an extension of the Baumol model to determine the optimal amount of cash in a context of risk. The model tracks inflows and outflows of cash, allows for irregularity in inflows and outflows of cash. Miller & Orr (1966) identified the lowest and the highest amounts of cash held as the trigger points for a change in policy for cash held. The highest amount of cash is the upper limit U , while the lowest amount is the lower limit L .

According to Miller & Orr (1966) the policy of the firm will be to allow the amounts of cash held to wander randomly in between U and L . However, the firm is required to hold an optimal amount of cash C equivalent to one third of $(U - L)$ added to L . If the amount of cash held reaches the upper limit U , the firm disposes of an amount of cash equal to $(U - C)$ by investing the cash into marketable securities bringing back the amount of cash to C . In case the amount of cash drops to the lower limit L , the firm has to generate more cash to the tune of $(C - L)$ in order to replenish the cash held back to the optimal level C .

According to Miller & Orr (1966) the optimal cash to be held is related to the upper limit, the lower limit, the cost per transaction of buying and selling marketable securities, F , and the interest rate per period on marketable securities, R . The main differentiating factor between the Miller-Orr Model and the Baumol Model is that the Miller-Orr Model includes a risk factor captured by the variance of the cash flow per period of accounting. Given the value of L , which is set by the firm, the values of the target cash balance, C , and the upper limit, U , that minimize the total costs of holding cash are found as shown below:

$$C = L + \sqrt[3]{\left(\frac{3}{4} \times F \times \frac{\sigma^2}{R}\right)}$$

while the upper limit, U , is calculated using the formula below:

$$U = 3C - 2L$$

The average cash balance (ACB) is found by the model:

$$ACB = \frac{4C - L}{3}$$

Just like the Baumol (1952) model, the Miller-Orr Model is relevant to this study since it provides a prediction of how much of current assets should be held in a firm to enhance efficient working capital management.

2.2.3 Just-In-Time Theory

Just-In-Time (JIT) is a system of logistics, developed in Japan, in which materials or parts are ordered and delivered just before they are needed. The ordering and delivery components are essential for a well-functioning JIT system. Ordering materials or parts just before they are needed requires a firm to process and convey production orders through a communication system to various units within the firm or suppliers outside the

firm. JIT requires speedy and timely delivery of materials or parts once ordered (Ohno, 1988).

One of the main goals of JIT is to eliminate all inventories in the production process, as inventories are viewed as a source of waste and inefficiency. When this is achieved, two benefits accrue. First, eliminating inventories requires a firm to maintain its ordering and delivery system to meet production orders which means a firm attains a high degree of flexibility in its operations. In risky selling environment, flexibility allows a firm to respond to all fluctuations in demand without being constrained by inventories. Secondly, eliminating inventories reduces a firm's inventory carrying costs. A firm does not have to pay for warehouse space to store its inventory, for example. Reduced inventory carrying costs allow a firm to charge lower prices for its product, thereby increasing demand (Keane and Feinberg, 2007).

This theory is relevant to this study since it directly connects inventories, which are part of working capital to a firm's performance. If firms in the coffee industry could efficiently manage their inventories, they would realize lower costs of warehousing, leading to higher profitability arising from the costs cut by efficient inventory management.

2.3 Empirical Literature Review

Mojtahedzadeh, Tabari & Mosayebi (2011) conducted a research on firms listed on the Tehran Stock Exchange with the aim of establishing relationship between working capital management and corporate financial performance. The research was a time series Multivariate regression analysis of 101 firms for the period between 2004 and 2008. The

findings showed a negative significant relationship between cash conversion cycle, number of days of average payables, number of days of average receivables and corporate financial performance. The relationship between the average period of inventory retention and financial performance was not significant.

Mwaniki (2012) conducted a research on relationship between working capital management policies and financial performance of deposit taking MFIs in Kenya. The aim of the research was to establish relationship between working capital management and financial performance. The research was a descriptive cross-sectional study using data from financial record of the MFIs for the year 2011. The research found a significant relationship between working capital management policies and ROA which was the measure of financial performance. A negative correlation existed between ROA and all the working capital components analyzed, namely, working capital cycle, debtor turnover days, creditor payable days and administration overheads turnover.

Nia, Aluoj, Gezelbash & Amiri (2012) conducted an analytical review of the effect of working capital development on financial performance measures with the objective of finding out how development of working capital management influences on financial performance and liquidity of a firm. The research was a survey through past literature on the relationship between working capital management and financial performance. The study showed that working capital strategies affected financial performance and liquidity.

A study conducted by Makori & Jagongo (2013) on five manufacturing and construction firms listed on the Nairobi Securities Exchange (NSE) with data from 2003 to 2012 with the aim of establishing whether working capital affected financial performance. The

study found a connection between working capital management and financial performance. The study established a negative relationship between financial performance and number of day's accounts receivable and cash conversion cycle. However, there was a positive relationship between financial performance and number of days of inventory and number of day's payable.

Mitau (2013) conducted research that aimed at establishing the effect of working capital management on firm's financial performance in Kenya. The research focused on non-financial institutions listed on the Nairobi Securities Exchange. The study covered a period of five years between 2008 and 2012. The sample of study constituted twenty firms selected from different sectors. The result of study indicated that there existed a negative relationship between accounts receivables period and firm's financial performance and a negative relationship between inventory turnover period and firm's financial performance. However, the relationship between accounts payables period and firm's financial performance is positive. The research concluded that efficient financing and managing of working capital can increase the operating financial performance.

Nzioki et al (2013) conducted a study to establish the effect of working capital management on the financial performance of manufacturing companies listed on Nairobi securities exchange (NSE). The research applied the diagnostic design on nine listed manufacturing companies. Analysis was done using multiple regression and correlation. The results study revealed a positive correlation between gross operating profit and average collection period and also with average payment period. However, financial performance was negatively correlated with cash conversion cycle. The relationship between inventory turnover in days and gross operating profit was insignificant.

2.4 Summary of the Literature Review

As shown in the literature review, there seems to be no agreement among the theories of working capital management and literature review that working capital is a key driver of financial performance. While some studies show strong relationship between working capital management and financial performance, others show no relationship. Further, most of the studies done have dwelt on firms in the manufacturing sector and among firms that are listed. No study has been done to establish the relationship between working capital and financial performance in firms in the agricultural sector in Kenya. This study will seek to establish this relationship by focusing on firms in the agricultural sector in Kenya, specifically those in the coffee industry.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the approach for conducting this research. It is an overall scheme conceived to enable the research in achieving its objectives. The section identifies the procedures and techniques that were used in the collection, processing, and analysis of data. The following subsections are included: research design, target population, sample design, instrumentation, data collection and finally data analysis.

3.2 Research Design

This research was a time series correlation study. According to Webb, Campbell, Schwartz, & Sechrest (1966) a time series study is a descriptive study that is useful when an intervention being studied extends over a considerable time period. This research design furnishes a continuous record of variations in variables studied over an entire period of study.

This research involved the use of time series data across five years between 2009 and 2013. It involved drawing conclusions across the five years. The research also studied the correlation between two sets of variables for the period. The research design for such an analysis is the time series time series correlation design. Such an approach was used by Kimani (2012) who did a study to establish the implication of working capital management on liquidity risk in quoted firms in Kenya.

3.3 Population

All the 40 firms registered by Kenya Coffee Traders Association were studied in this

research. This then made this research a census study. The list of the 40 firms is provided in Appendix I.

3.4 Data Collection

This study used historical quantitative data. The data required was obtained from financial position statements of the companies to be studied. The data consisted of current assets, debts and inventory levels for the period 2009 to 2013. These are the non fixed assets. They were obtained from the financial statements of the companies to be studied

Other data included the cash flows, the annual turnover and EBIT for the period 2009 to 2013. Cash flow values were obtained from the cash flow statements. Annual turnover and EBIT were obtained from the income statements of the firms for the five-year period 2009 to 2013. The financial statements were obtained from the finance departments of the firms being studied.

3.5 Data Analysis

This research required data for variables namely financial performance, Cash Conversion Efficiency (CCE), Days Operating Cycle (DOC) and Days of Working Capital (DWC).

The measure of financial performance was calculated as below:

$$\pi_i = \frac{EBIT_i}{TURNOVER_i}$$

Where π_i is the financial performance measure for firm i ; $EBIT_i$ are the earnings before interest and tax for firm i while $TURNOVER_i$ is the turnover of firm i ($i = 1, 2, 3, \dots 44$).

Cash Conversion Efficiency (CCE) was calculated using the model below:

$$CCE_i = \frac{NCFFOA_i}{SR_i}$$

and

$$NCFFOA_i = EBIT_i - D_i - T_i$$

CCE_i stands for Cash Conversion Efficiency for firm i ; $NCFFOA_i$ stands for net cash flow from operating activities for firm i ; SR_i stands for turnover for firm i while D_i and T_i stand for depreciation and tax respectively.

Days Operating Cycle (DOC) were calculated using the model below:

$$DOC_i = \frac{AR_i}{ADCS_i}$$

Where DOC_i stands for Days Operating Cycle for firm i ; AR_i stands for accounts receivable while $ADCS_i$ stands for average daily credit sales.

Days Working Capital (DWC) were calculated as shown below:

$$DWC_i = DOC_i - DC_i$$

DWC_i is the Days Working Capital for firm i ; DOC_i stands for Days Operating Cycle for firm i ; while DC_i stands for days creditors.

The regression model below was used to assess the relationship between financial performance and the independent variables.

$$\pi_i = \beta_0 + \beta_1(CCE_i) + \beta_2(DOC_i) + \beta_3(DWC_i) + e$$

Where β_0 is the efficiency in financial performance that is independent of cash conversion efficiency, days operating cycle and days of working capital; β_1 , β_2 , and β_3 are the sensitivities of π_i to CCE_i , DOC_i and DWC_i respectively. e is the error term of the regression model.

3.5.1 Significance Tests

The t – tests at 95 % confidence level was used to determine the statistical significance of the constant terms $\beta_0, \beta_1, \beta_2, \beta_3$. The F – test was used to determine whether the regression is of statistical importance at 95 % confidence level. The coefficient of determination, R^2 and the Adjusted R^2 was used to determine how much variation in the dependent variables is explained by variation in the independent variables.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter discusses the findings of the research. The objective of this research was to find out the relationship between working capital management and financial performance of firms in the coffee industry. The chapter, therefore, discusses how the two variables were operationalized. It provides a statistical description of the distribution of the data on the variables and their correlation. Further, the regression analysis findings are presented. The last part of the chapter presents an interpretation of the results.

4.2 Data Presentation

4.2.1 Financial Performance

Financial Performance was the dependent variable of the research. It was the measure for performance and was the response variable for the changes occurring in working capital management. Financial performance was measured by the ratio of annual earnings before interest and tax and the book values of assets from the audited annual financial records of the firms studied divided by. The resulting values are presented in Appendix II.

4.2.2 Cash Conversion Efficiency

Cash conversion efficiency was one of the independent variable used to measure part of working capital management. This variable was measured by subtracting depreciation and tax from earnings before interest and tax and expressing it as a ratio of sales turnover. The values obtained are presented in Appendix III.

4.2.3 Days Operating Cycle

Days Operating Cycle (DOC) was the second independent variable used to measure working capital management. This variable was measured by expressing values in accounts receivable as a fraction of average daily credit sales for each firm whose data was used in the analysis. The resulting ratios are presented in Appendix IV.

4.2.4 Days Working Capital

This variable was the third independent variable used to measure working capital management. For each of the firms in the study, Days Working Capital (DWC) for every firm was calculated as the difference between Days Operating Cycle and days creditors.

4.2.5 Descriptive Analysis

Descriptive statistics of the financial performance and each of the independent variables were calculated to provide a descriptive insight into their nature. The values whose descriptive statistics are provided below are the aggregated values for all the firms for the period between 2009 and 2012. Specifically the mean, the minimum, the Maximum and the standard deviation for each variable were calculated and the findings tabulated in Table 4.1 below. As shown in the table, the average rate of profitability for the firms was 0.1776 with a standard deviation of 0.0096. The highest average return rate was 0.1858 while the minimum was 0.1638.

The average rate of cash conversion efficiency for the firms was 0.0484. The standard deviation was 0.0100. The highest average cash conversion efficiency was 0.0564 while the lowest was 0.0352. The mean rate of days operating capital was 0.9530 with a

standard deviation of 0.2820. The highest average rate was 1.3750 while the lowest was 0.7875. The mean days operating capital was 0.8829 with a standard deviation of 0.2632. the highest average days operating capital was 1.2711 with the minimum as 0.6873.

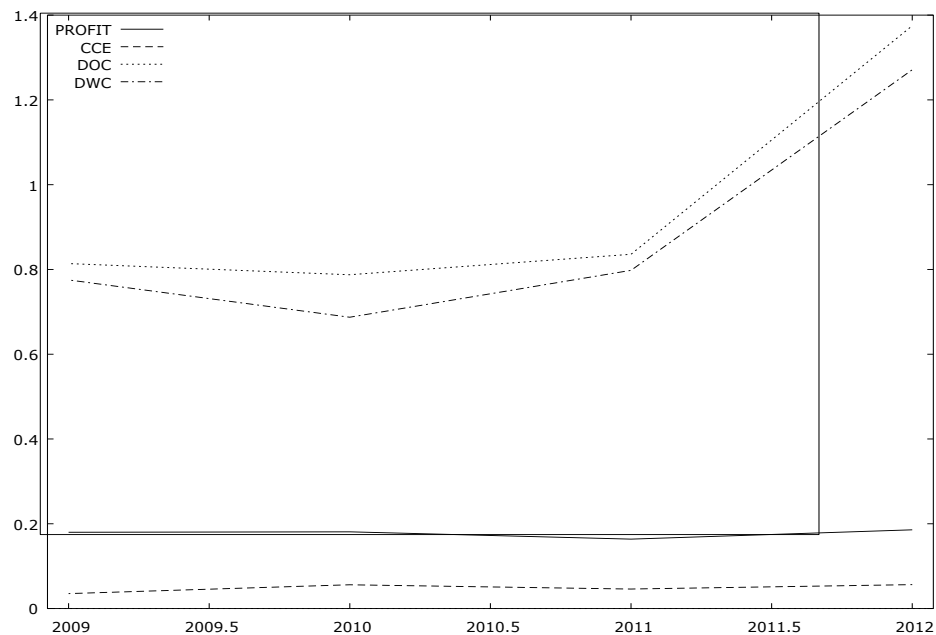
Table 4.2: Descriptive Statistics

	Financial Performance	CCE	DOC	DWC
Mean	0.1776	0.0484	0.9530	0.8829
Minimum	0.1638	0.0352	0.7875	0.6873
Maximum	0.1858	0.0564	1.3750	1.2711
Std. Dev.	0.0096	0.0100	0.2820	0.2632

(Source: Research Data, 2014)

Figure 4.1 below shows the time series plots of Financial Performance, CCE, DOC and DWC for all the firms for the study period. As shown, there is an upward trend for DOC and DWC. However, Financial Performance rate remained constant with only marginal changes. The same can be said for CCE.

Figure 4.1: Graphs of Financial Performance, CCE, DOC and DWC



(Source: Research Data, 2014)

4.2.6 Normality Analysis

In this normality analysis, the goal is to establish whether the distributions of the variables adhere to the normal bell-shaped curve. The analysis used skewness, kurtosis and the Shapiro-Wilkinson test to establish normality of the distributions. For a normal distribution, skewness should be zero and absolute kurtosis should be 3. The Q-Q plots shown in Figure 4.2 are a pictorial view of the normality of the distributions. The skewness for Profit was -0.9057 and the Kurtosis for profit was -0.8123. The distribution is slightly negatively skewed and platykurtic. The Shapiro-Wilkinson measure was 0.8502, $p > 0.05$ which shows the distribution is normal. The Q-Q plot for profit in Fig. 4.2 shows a negative skewness.

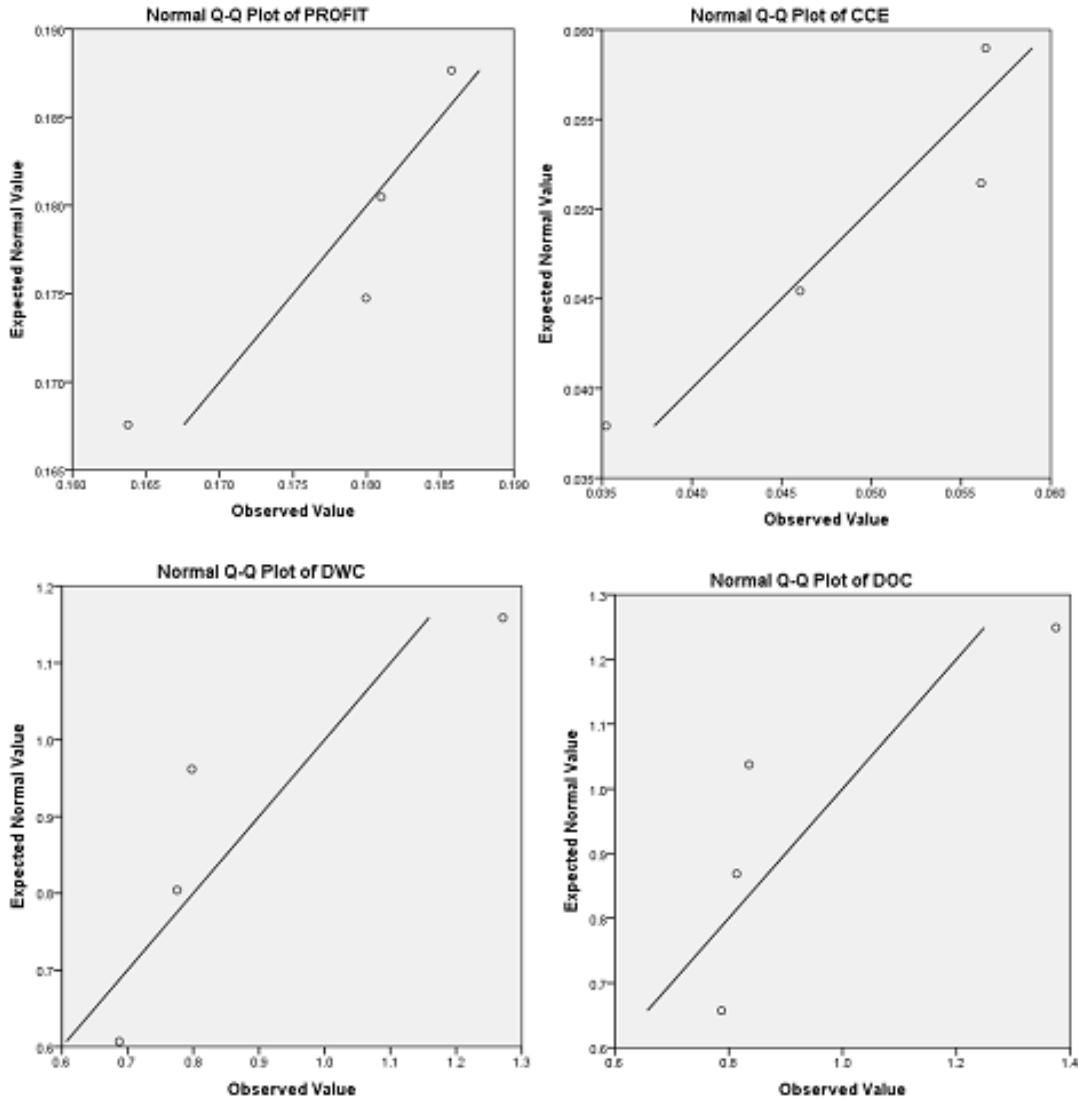
The skewness for CCE was -0.5201 with a kurtosis of -1.3392. This shows the distribution was slightly negatively skewed and mesokurtic. Its Shapiro-Wilkinson measure was 0.8694, $p > 0.05$ indicating the distribution was normal. The Q-Q plot in Fig. 4.2 shows that the distribution is slightly negatively skewed. The skewness for DOC was 1.1377 and the kurtosis of -0.6796. The Shapiro-Wilkinson measure was 0.6957, $p < 0.05$ indicating the distribution was not normal. The Q-Q plot for DOC shows positive skewness. The distribution of DWC was normal with skewness of 1.0383, kurtosis of -0.7425 with a Shapiro-Wilkinson measure of 0.7894, $p > 0.05$.

Figure 4.2: Normality Tests

	Financial Performance	CCE	DOC	DWC
Skewness	-0.9057	-0.5201	1.1377	1.0383
Kurtosis	-0.8123	-1.3392	-0.6796	-0.7425
Shapiro-Wilkinson	0.8502	0.8694	0.6957	0.7894
P-value	0.2267	0.2953	0.0103	0.0845

(Source: Research Data, 2014)

Figure 4.2: Q-Q Plots for Variables



4.2.7 Correlation Analysis

This sub section provides the correlation analysis of Financial Performance, CCE, DOC and DWC. The Pearson correlation coefficient was used to show the variables co-move. As shown by the correlation matrix in Table 4.4, there was weak positive correlation between Profit and CCE. There was slightly strong correlation between Financial

Performance and DOC. The strongest correlation was that between DOC and DWC with $r_{(30)} = 0.993, p < 0.05$.

Table 4.3: Correlation Matrix

	Financial Performance	CCE	DOC	DWC
PROFIT	1	0.323(.677)	0.516(.484)	0.454(0.546)
CCE		1	0.494(.506)	0.404(0.596)
DOC			1	0.993(0.007)**
DWC				1

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

(Source: Research Data, 2014)

4.2.8 Regression Analysis

Table 4.5 provides the regression analysis results and the regression statistics concerning the relationship between financial performance, CCE, DOC and DWC. The constant term of the correlation was 0.207304 which was significantly different from zero, $t_{(30)} = 1476.110, p < 0.05$. The coefficient of CCE was -1.47287 which was statistically significant, $t_{(30)} = -361.386, p < 0.05$. The coefficient of DOC was 0.524329 which was statistically significant, $t_{(30)} = 460.039, p < 0.05$. The coefficient of DWC was -0.518819 which was statistically significant, $t_{(30)} = -446.126, p < 0.05$. The regression was statistically significant, $F_{(1, 28)} = 1108805.989, p < 0.05$. The variation in financial performance was well explained by the variation in CCE, DOC and DWC as shown by $R^2 = 1.00$.

Table 4.4: Regression Model and Regression Statistics

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>
Constant	0.207304	0.0000	1476.110	.000
CCE	-1.47287	0.004	-361.386	.002
DOC	0.524329	0.001	460.039	.001
DWC	-0.518819	0.001	-446.126	.001
F(1, 3)	108805.989			.002
R-squared	1.0000			
Adjusted R-squared	1.000			

(Source: Research Data, 2014)

The model for the relationship between end of the month returns and the average of the other returns of the month is, therefore,

$$\pi = 0.207304 - 1.47287(\text{CCE}) + 0.524329(\text{DOC}) - 0.518819(\text{DWC}).$$

4.3 Summary and Interpretation of Findings

This study was designed to establish the relationship between working capital and financial performance in firm in the Kenyan coffee industry. Financial performance was the dependent variable while working capital was the independent variable captured by cash conversion efficiency, days operating capital and days working capital. The following are findings of the study: first, the constant term of the regression was positive and statistically significantly different from zero. Secondly, the coefficient of cash conversion efficiency was negative and statistically significantly different from zero. The coefficient of days operating capital was positive and statistically significantly different from zero. The coefficient of days working capital was negative and statistically significantly different from zero.

The positive constant of regression indicates that there is a part of profit in the firms in the coffee industry that is independent from the variables used to capture working capital. Irrespective of the changes in working capital, the firms still realized some profit. This is confirmed by a study by Demir (2004) in Turkey which found that macroeconomic factors like increased uncertainty, country risk, real interest rates and capital flow volatility had a significantly negative effect on manufacturing firm's financial performance. On the other hand, increasing short-term financial investments increased profit. This indicates that Financial performance is affected by factors other than working capital management.

The coefficient of cash conversion efficiency was negative and statistically significantly different from zero. This indicates that the higher the cash conversion efficiency, the lower the financial performance while lower efficiencies improved efficiency. The findings seem to agree with those of Makori & Jagongo (2013). The study by Makori & Jagongo on five manufacturing and construction firms listed on the Nairobi Securities Exchange with data from 2003 to 2012 found negative relationship between financial performance cash conversion cycle. The findings also agree with those of Anser & Malik (2013) who established that lesser rates of cash conversion efficiency increased financial performance of manufacturing sector organizations listed at Karachi stock exchange of Pakistan.

The coefficient of days operating capital was positive and statistically significantly different from zero. This indicates that a higher value of days operating capital leads to improved profit. The findings seem not to agree with those of Napompech (2013) who found a negative relationship between profit and days operating capital. The findings also

disagree with those of Ali (2011) who also established a negative relationship between profit and days operating capital in manufacturing firms listed on Pakistan stock exchange.

The coefficient of days working capital was negative and statistically significantly different from zero. This indicates that the more aggressive the firms become in collection of debts, the higher the profit. These findings agree with those of Danuletiu (2010) who found a negative relationship between profit and days working capital. The findings are also similar to those of Chatterjee (2012) who found a negative relationship between profit and days working capital.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This research sought to establish the relationship between financial performance and working capital management in the manufacturing sector focusing on firms in the coffee industry. Financial performance was the dependent variable while working capital was the independent variable. Working capital was further split into days operating capital, cash conversion efficiency and days working capital.

The research was done on firms in the coffee industry in Kenya that are registered as members of Kenya Coffee Traders Association. The firms provided the secondary data that was used for analysis. The data was from audited annual financial statements. A complete observation for each firm was realized when it was possible to calculate return on assets, days operating capital, cash conversion efficiency and days working capital. The analysis was done by linear regression.

The regression results show that the regression was statistically significant. The constant term was positive and significantly different from zero. The coefficient of cash conversion efficiency was negative and statistically significantly different from zero. The coefficient of days operating capital was positive and statistically significantly different from zero. The coefficient of days working capital was negative and statistically significantly different from zero.

5.2 Conclusions

The positive constant of regression indicates that there is a part of financial performance in the firms in the coffee industry that is independent from the variables used to capture working capital. Irrespective of the changes in working capital, the firms still realized some profit. The conclusion is that there are other factors apart from working capital that affect profit.

The coefficient of days operating capital was positive and statistically significantly different from zero. This indicates that a higher value of days operating capital leads to improved financial performance. The conclusion is that the longer it takes between receipt of stocks and when a sale is completed, the higher the financial performance. This suggests that the coffee firms should be less aggressive in changing stocks to sales to make higher financial performance.

The coefficient of cash conversion efficiency was negative and statistically significantly different from zero. This indicates that the higher the cash conversion efficiency, the lower the financial performance while lower efficiencies improved efficiency. This suggests that companies can improve their financial performance by reducing the time span during which working capital is tied up within the company.

The coefficient of days working capital was negative and statistically significantly different from zero. This indicates that as collection days are reduced there will be increase in financial performance. The firm should be aggressive in the management of its working capital to improve financial performance.

5.3 Policy Recommendations

From the finding that the positive constant of regression indicates that there is a part of financial performance in the firms in the coffee industry that is independent from the variables used to capture working capital. This study recommends that other than focusing on working capital management only, firms in the coffee industry should single out other factors and incorporate them in their financial performance drive.

From the research, a higher value of days operating capital leads to improved profit. This indicates that the longer it takes between receipt of stocks and when a sale is completed, the higher the profit. This suggests that the coffee firms should be less aggressive in changing stocks to sales to make higher profit. The research recommends that the firms become less aggressive in changing stocks to cash.

One other finding that the higher the cash conversion efficiency, the lower the financial performance while lower efficiencies improved efficiency. This suggests that companies can improve their financial performance by reducing the time span during which working capital is tied up within the company. The recommendation is that the firms become more aggressive in reducing the time span during which working capital is tied up within the company.

It was finally found that as collection days are reduced there will be increase in financial performance. The firm should be aggressive in the management of its working capital to improve financial performance. This research recommends that the firms become more aggressive in collection of debts.

5.4 Limitations of the Study

The scope of this research was for the five years ending and including the year 2013. However, due to unavailable data, the study had to do with data up to 2012. Further, out of the expected 40 firms, 30 provided data that was used for the study. This is a strong limitation because it is not possible to tell whether the results would hold if a longer period would have been researched upon. Further it is not possible to tell whether the same findings will hold for the period after 2012.

The findings of the research provide evidence limited to the coffee industry only. It is a limitation because there is no guarantee that the same findings are applicable to other industries in or out of the manufacturing sector in Kenya.

The research has dwelt on firms in the coffee industry in Kenya. The findings may not be applicable to firms in the coffee industries in the wider East African region. This could be of greater interest because the region is coalescing into one strong trading block. An applicable research result should be able to capture firms in the region.

5.5 Suggestions for Further Research

There is a need to answer the question of whether the findings of this research can be made universal across time in firms in the coffee industry. The time for the research is only five years. A research can be done to determine the nature of the relationship between financial performance and working capital for a longer period of time.

There are very many types of manufacturing firm not in the coffee industry. This study has covered only the coffee industry. A research can be conducted on firms in the

manufacturing sector covering and including firms not in the coffee industry. This will provide results with stronger implication.

Given the development on the EAC, a research can be done covering manufacturing firms in the EAC region. For the EAC to become a stronger economic bloc, firms have to be efficient in production and profit making. A research conducted to come up with a rule concerning working capital will go a long way to guide performance of the manufacturing firms.

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APPENDICES

Appendix I: Members of the KCTA

1. Africa Tea & Coffee Ltd.
2. Africoff Trading Co. Ltd.
3. Alanwood Ltd.
4. Anmer Coffee Co. Ltd.
5. Armajaro Kenya Limited
6. Brazafric Enterprises Ltd.
7. C. Dorman Ltd
8. Café Logistiques Ltd.
9. Central Impex Enterprises Ltd.
10. Chipso Products Ltd
11. Coffee Exporters (Kenya) Ltd
12. Coffee Management Services Ltd
13. Diamond Coffee Co. Ltd
14. Enterprises co. (K)
15. Goldrock International
16. Gourmet Coffee Ltd
17. Ibero (K) Ltd.
18. Jenem Coffee ltd.
19. Josra Coffee Co. Ltd
20. Jowam Coffee Traders Ltd.
21. Kenruss Ltd.
22. Kisaingu Transporters Limited
23. Kofinaf Co. Ltd. (Ruiru)
24. Louis Dreyfus Commodities (K) Ltd.
25. M.A. Panju & Brothers Ltd.
26. Mbaraki Port Warehouses (K) Ltd.
27. Merali Dewji & Sons (K) Ltd
28. Msumbi (K) ltd.
29. Nairobi Java House Ltd.

30. Nyambene Coffee Mills Ltd
31. Ransley Coffee company Ltd
32. Rashid Moledina & Co. (Msa)
33. Sangana Commodities Ltd
34. SDV Transami (K) Ltd
35. Servicoff Limited
36. Shah Meghji Hirji Ltd.
37. Sondhi Trading Limited
38. Sustainable Management Services Ltd
39. Taylor Winch (Coffee) Ltd.
40. Tropical Farm Management Kenya

Appendix II: Financial Performance Variable

	2009	2010	2011	2012
NAME OF FIRM	π	π	π	π
Africa Tea & Coffee Ltd.	0.2141	0.2067	0.1856	0.2055
Africoff Trading Co. Ltd.	0.2501	0.2986	0.2392	0.2604
Alanwood Ltd.	0.2192	0.1778	0.1652	0.2632
Anmer Coffee Co. Ltd.	0.1855	0.2342	0.2658	0.1860
Armajaro Kenya Limited	0.1418	0.2770	0.1685	0.1977
Brazafric Enterprises Ltd.	0.2384	0.1459	0.1663	0.4070
C. Dorman Ltd	0.1427	0.1841	0.1582	0.1297
Café Logistiques Ltd.	0.4360	0.1391	0.1263	0.2104
Central Impex Enterprises Ltd.	0.2098	0.2220	0.1429	0.1444
Chipso Products Ltd	0.1151	0.3406	0.2396	0.1117
Coffee Exporters (Kenya) Ltd	0.1174	0.0147	0.1148	0.1818
Coffee Management Services Ltd	0.1313	0.1219	0.2777	0.2099
Diamond Coffee Co. Ltd	0.1247	0.1218	0.0880	0.1125
Enterprises co. (K)	0.1412	0.1814	0.1283	0.1167
Goldrock International	0.1120	0.0984	0.1423	0.1354
Gourmet Coffee Ltd	0.1772	0.1059	0.1244	0.2685
Ibero (K) Ltd.	0.1951	0.1561	0.0869	0.0734
Jenem Coffee ltd.	0.1455	0.3055	0.1744	0.0965
Josra Coffee Co. Ltd	0.2854	0.1974	0.2306	0.2625
Jowam Coffee Traders Ltd.	0.1568	0.2421	0.2288	0.0794
Kenruss Ltd.	0.1512	0.1843	0.1782	0.1412
Kisaingu Transporters Limited	0.2050	0.0976	0.1618	0.1545
Kofinaf Co. Ltd. (Ruiru)	0.0827	0.2066	0.1844	0.2034
Louis Dreyfus Commodities (K) Ltd.	0.1157	0.1307	0.1122	0.1478
M.A. Panju & Brothers Ltd.	0.2455	0.2055	0.1420	0.3214
Mbaraki Port Warehouses (K) Ltd.	0.2780	0.2116	0.1719	0.1539
Merali Dewji & Sons (K) Ltd	0.1417	0.1366	0.0778	0.2104
Msumbi (K) ltd.	0.2350	0.1565	0.0769	0.1201
Nairobi Java House Ltd.	0.1091	0.2258	0.1153	0.2217
Nyambene Coffee Mills Ltd	0.0952	0.1029	0.2391	0.2457

Appendix III: Cash Conversion Efficiency

	2009	2010	2011	2012
NAME OF FIRM	CCE	CCE	CCE	CCE
Africa Tea & Coffee Ltd.	0.0471	0.0642	0.0547	0.0588
Africoff Trading Co. Ltd.	0.0651	0.1216	0.0918	0.0906
Alanwood Ltd.	0.0834	0.0506	0.0474	0.0839
Anmer Coffee Co. Ltd.	0.0475	0.0889	0.0815	0.0714
Armajaro Kenya Limited	0.0177	0.1036	0.0607	0.0615
Brazafric Enterprises Ltd.	0.0752	0.0250	0.0299	0.1898
C. Dorman Ltd	0.0408	0.0574	0.0414	0.0607
Café Logistiques Ltd.	0.1112	0.0594	0.0441	0.0470
Central Impex Enterprises Ltd.	0.0868	0.0812	0.0662	0.0512
Chipso Products Ltd	0.0372	0.0970	0.1034	0.0438
Coffee Exporters (Kenya) Ltd	0.0341	0.0544	0.0487	0.0621
Coffee Management Services Ltd	0.0491	0.0451	0.0551	0.0737
Diamond Coffee Co. Ltd	0.0381	0.0409	0.0200	0.0628
Enterprises co. (K)	0.0577	0.1037	0.0712	0.0428
Goldrock International	0.0211	0.0129	0.0332	0.0326
Gourmet Coffee Ltd	0.0736	0.0252	0.0454	0.0257
Ibero (K) Ltd.	0.0574	0.0343	0.0268	0.0227
Jenem Coffee ltd.	-0.1236	0.0383	0.0178	0.0540
Josra Coffee Co. Ltd	0.0288	0.1160	0.0217	0.0265
Jowam Coffee Traders Ltd.	0.0312	0.0796	0.0803	0.0196
Kenruss Ltd.	0.0028	0.0199	0.1059	0.0433
Kisaingu Transporters Limited	0.0443	0.0297	0.0163	0.0662
Kofinaf Co. Ltd. (Ruiru)	0.0283	0.0285	0.0309	0.0856
Louis Dreyfus Commodities (K) Ltd.	-0.0249	-0.0220	0.0109	0.0286
M.A. Panju & Brothers Ltd.	0.0846	0.0647	0.0128	0.1040
Mbaraki Port Warehouses (K) Ltd.	-0.0433	0.1041	0.0528	0.0300
Merali Dewji & Sons (K) Ltd	0.0404	0.0118	0.0359	0.0391
Msumbi (K) ltd.	0.0209	0.0608	0.0183	0.0355
Nairobi Java House Ltd.	0.0093	0.0709	0.0301	0.0554
Nyambene Coffee Mills Ltd	0.0146	0.0159	0.0257	0.0221

Appendix IV: Days Operating Cycle

	2009	2010	2011	2012
NAME OF FIRM	DOC	DOC	DOC	DOC
Africa Tea & Coffee Ltd.	0.1998	0.1747	0.2024	0.4456
Africoff Trading Co. Ltd.	0.4819	0.0956	0.2107	0.2995
Alanwood Ltd.	0.1333	0.2680	0.3786	0.1555
Anmer Coffee Co. Ltd.	0.2636	0.2372	0.0905	0.4037
Armajaro Kenya Limited	0.3030	0.1681	0.2531	0.5737
Brazafic Enterprises Ltd.	0.9856	0.2949	0.3389	0.7210
C. Dorman Ltd	0.4581	0.3466	0.5758	2.3179
Café Logistiques Ltd.	0.4565	1.0514	0.7872	0.4643
Central Impex Enterprises Ltd.	0.3310	0.2814	1.1295	1.4379
Chipso Products Ltd	1.2986	0.2417	0.4701	1.7214
Coffee Exporters (Kenya) Ltd	0.9005	0.7303	0.9103	1.1206
Coffee Management Services Ltd	0.4222	0.6354	0.2573	1.5608
Diamond Coffee Co. Ltd	0.9997	1.2995	1.2159	4.6486
Enterprises co. (K)	1.9811	2.0830	2.1046	2.7382
Goldrock International	0.8106	0.3283	0.8693	1.2415
Gourmet Coffee Ltd	2.2220	0.8818	1.3345	0.5522
Ibero (K) Ltd.	0.7103	0.7116	1.2852	1.7389
Jenem Coffee ltd.	-0.7385	0.0862	-0.7128	5.6002
Josra Coffee Co. Ltd	0.2617	4.9035	0.1511	0.3475
Jowam Coffee Traders Ltd.	2.2098	0.6241	0.9885	1.9531
Kenruss Ltd.	1.1409	0.6270	3.3711	1.6075
Kisaingu Transporters Limited	1.8980	1.5095	0.5808	2.0752
Kofinaf Co. Ltd. (Ruiru)	1.1485	0.2688	0.6716	1.0462
Louis Dreyfus Commodities (K) Ltd.	0.2617	0.5860	1.0168	1.4350
M.A. Panju & Brothers Ltd.	0.9579	0.5956	0.1866	1.2688
Mbaraki Port Warehouses (K) Ltd.	0.7504	1.0975	0.7346	0.2562
Merali Dewji & Sons (K) Ltd	0.4302	0.1224	1.6932	0.1600
Msumbi (K) ltd.	0.4690	1.4832	2.3821	2.4722
Nairobi Java House Ltd.	1.3471	0.5972	1.4403	0.5993
Nyambene Coffee Mills Ltd	1.3217	1.2953	0.1546	0.2873

Appendix V: Days Working Capital

	2009	2010	2011	2012
NAME OF FIRM	DWC	DWC	DWC	DWC
Africa Tea & Coffee Ltd.	0.0507	0.0520	0.0952	0.3243
Africoff Trading Co. Ltd.	0.4209	-0.0794	0.0852	0.1703
Alanwood Ltd.	0.1180	0.1543	0.2698	0.0173
Anmer Coffee Co. Ltd.	0.1238	0.1301	0.0541	0.3198
Armajaro Kenya Limited	0.1290	0.0188	0.1704	0.4565
Brazafric Enterprises Ltd.	0.9617	0.1848	0.2213	0.6238
C. Dorman Ltd	0.3392	0.2451	0.4929	2.2734
Café Logistiques Ltd.	0.2645	0.9965	0.7246	0.3251
Central Impex Enterprises Ltd.	0.2620	0.1943	1.0819	1.3714
Chipso Products Ltd	1.2395	0.0305	0.3993	1.6746
Coffee Exporters (Kenya) Ltd	0.8322	0.6592	0.8610	1.0329
Coffee Management Services Ltd	0.2171	0.5765	0.0666	1.4535
Diamond Coffee Co. Ltd	0.8974	1.2297	1.1535	4.6121
Enterprises co. (K)	1.9199	2.0376	2.0639	2.6764
Goldrock International	0.7273	0.1546	0.7739	1.1510
Gourmet Coffee Ltd	2.1568	0.8102	1.2689	0.3242
Ibero (K) Ltd.	0.5193	0.6035	1.2370	1.6953
Jenem Coffee ltd.	0.8532	0.1703	0.8765	5.5643
Josra Coffee Co. Ltd	0.1625	4.8733	0.0475	0.1322
Jowam Coffee Traders Ltd.	2.1730	0.4929	0.8692	1.8950
Kenruss Ltd.	1.0464	0.4652	3.3278	1.5232
Kisaingu Transporters Limited	1.8553	1.4557	0.4459	2.0135
Kofinaf Co. Ltd. (Ruiru)	1.0779	0.1049	0.5298	0.9793
Louis Dreyfus Commodities (K) Ltd.	0.2200	0.4484	0.9154	1.3270
M.A. Panju & Brothers Ltd.	0.8828	0.4809	0.0654	1.1243
Mbaraki Port Warehouses (K) Ltd.	0.6681	1.0144	0.6356	0.1418
Merali Dewji & Sons (K) Ltd	0.2150	0.0067	1.6549	0.0034
Msumbi (K) ltd.	0.4018	1.4108	2.3318	2.3896
Nairobi Java House Ltd.	1.2799	0.4815	1.3711	0.4515
Nyambene Coffee Mills Ltd	1.2423	1.2159	-0.0466	0.0857

Appendix VI: Regression Variables

YEAR	PROFIT	CCE	DOC	DWC
2009	0.179946	0.035224	0.813879	0.775257
2010	0.180984	0.056117	0.787523	0.687309
2011	0.163775	0.04603	0.835758	0.797861
2012	0.185755	0.056373	1.374991	1.271093