THE EFFECT OF WORKING CAPITAL LEVELS ON FIRMS' VALUE OF LISTED AGRICULTURAL MANUFACTURING COMPANIES IN KENYA

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DECLARATION

This Research Project is my original work and has never been presented for a degree at any other University for examinations.

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D63/81991/2015

This research project was submitted for examination with my approval as the University supervisor.

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DEDICATION

I dedicated this work to the Almighty God for all the blessings he bestowed upon me and, to my loving family for their prayers, patience and encouragement during the entire course period.

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To my loving father, George Johnstone Oduori, thank you for your prayers and love during some difficult times. To my brother and sisters, Wycliffe, Pamella, Mercy, and Naomi, thanks for your support and for believing in me even when I doubted myself. To my nieces and nephews, thank you all for being there for me. I thank my late mum for her profound love and for teaching me the essence of hard work and resilience. I love you, mum, and miss you every day.

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LIST OF ABBREVIATIONS AND ACRONYMS

AP – Accounts Payables

AR – Accounts Receivables

CCC – Cash Conversion Cycle

CFO – Cash flow from Operations

CR – Current Ratio

DIO – Days Inventory Outstanding

DPO – Days Payable Outstanding

DR – Debt Ratio

DSO – Days Sales Outstanding

EOQ – Economic Order Quantity

GOP – Gross Operating Profit

INV - Inventories

LEV – Leverage Ratio

MV – Market Value

NSE – Nairobi Security Exchange

OLS – Ordinary Least Square

ROA – Return on Assets

ROE – Return on Equity

ROS – Return on Sales

SPSS – Statistical Package for Social Sciences

TCE – Transaction Cost Economics

ABSTRACT

The economic growth in Kenya is anchored on agricultural manufacturing sector that is significantly driven by working capital levels among many varying factors for firms' value. This is to ensure that agricultural companies operate into the future with a reason to build up Kenyan economy and improve local agricultural companies operational activities for effective and efficient production cycles. This therefore confirms that economic development of a country is exhibited by a well-functioning agricultural manufacturing sector which is enhanced significantly by effective working capital levels Deloof, M. (2003). Working capital levels play an important operational role by managing production runs to ensure continuous and effective usage of raw materials to produce agricultural products that are then supplied to the customers at the right time for value. This creates an economic platform for Kenya's local market and also foreign market through proper management of days sales outstanding, days inventory outstanding and days payable outstanding.The firm value can be explained by the determinants of working capital for efficient and effective operating cycle of manufacturing agricultural companies in Kenya. This study established effect of working capital levels on firm value of listed agricultural manufacturing companies in Kenya. The study used a descriptive research design on a population of interest for this study was seven (7) listed agricultural manufacturing companies including Sasini ltd, Kapchorua tea ltd, Rea vipingo ltd, Limuru tea ltd, williamson tea ltd, Eaagads and Kakuzi tea ltd that were in operation during the period 2012 to 2016. It applied secondary data that was extracted from published financial reports of the listed agricultural manufacturing companies which related to the association between working capital levels and firm value in a five year period of time from 2012 to 2016. The data collected was clean and analytically organized in a form that facilitated analysis using the Statistical Package for Social Sciences (SPSS). The study found out that the variations in the three determinants of working capital levels explained the changes in the firms' value by 69.3% depicting the model as statistically significant and therefore concluded that there existed significant association between the working capital levels and firms' value of listed agricultural manufacturing companies in Kenya. Also, working capital levels had a positive and important effect on value of the firm in agricultural manufacturing industry. The study's recommendations included the need for listed agricultural manufacturing companies in Kenya to exercise caution on operating cycle activities that ignites the finite value through daily activities, the need to extend the accounts payable days through suppliers credit policy agreeable to enhance increased value in agricultural industry and the need for firms management in the agricultural sector to institute efficient credit policy that would reduce the time period for receipt of money from credit customers as well as stringent credit policy which would increase efficiency in firm's ability to collect cash to invest and re-invest in available investment opportunities.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Working capital levels represent the area of agricultural manufacturing companies that ensures daily activities are effective and settle obligations on maturing to increase wealth of the shareholders. This invited firms' decision on investment in short term assets and their financing (Eljelly, 2004). Working capital is an operational goal that consequently evaluates all financial and investment decisions from cash flow perspective Shin and Soenen, (1998). In every organization levels of working capital are important factors which maintains solvency and defines the profitability of business (Weinraub, 1998).

The underpinning theories studied here-in included Baumol Model and Miller and Orr's Model of Cash Management that determined optimum cash balances for firms' daily activities setting the upper and lower limits of cash levels. Transaction Cost Economic Theory defined the optimum inventory level with respect to a tradeoff between benefits and costs related to the inventory requirement marks and Operating Cycle Theory that achieved the liquidity management through the balance sheet and income statement analysis. These theories did not bring out the aspects of determinants of working capital levels to create value in agricultural manufacturing companies in Kenya.

The operational challenges in manufacturing agricultural companies is lengthened operating cycle that is indicated by short payable days where suppliers are paid nearly immediately with no delay leaving firms without excess cash for reinvestment,

inefficient order policy which decreases stock at hand which reduces inputs like fertilizers, stock out expenses and raw materials (Autukaite, and Molay, 2011). The effective management decisions make the above factors to be very short to enhance cash flow requirements of the agricultural companies (Filbeck, and Krueger, 2005).

1.1.1 Working Capital Levels

It refers to firm's optimal combinations of both short-term assets and short term liabilities. Its management involves daily routine activities that ensures sufficient firms' resources in continuing operations. This invites receipts and disbursement activities of money. Therefore, manufacturing firms require working capital levels to control unpredictable financial out flows and inflows. Working capital monitoring maintains proper health of the company during her normal business environment. Short period finance is a vital section of working capital levels since company invests without any expectation of a defined return. (Hofman, 2010).

The investment activities are required to sustain the firm by concentrating on over-investing in the operating cycle. If the operating cycle is lengthened, it justifies the company needs for cash to facilitate its cycle (Mathur, 2010). The cycle is calculated by Days Sales Outstanding (DSO) + Days Inventory Outstanding (DIO) -Days Payable Outstanding (DPO). This equation defines dimensions of working capital level and when evaluated, it may result in cash flow deficiencies and reduced shareholders value. The components of levels of working capital are enshrined on the statement of financial position (Deloof, 2003).

Challenges such as stock outs due to credit terms that are inadequate, non-explained interfaces and ineffective loan decisions which require determinants of working

capital levels. The latter two are based on finance linking operating cycle and stock out as well as inventory are clustered under operating bracket. Kenya's Agricultural Companies hold little cash in non-productive stocks, shorten account receivables collection period and extend account payable payment period (Hofman, 2010).

1.1.2 Firm Value

It refers to the ability of a company to manage its resources in different ways and gain through competitive advantage (Iswatia, 2007). There are in two forms: financial value that builds on variables relating to the companies existence in generating cash flows and non-financial value that non-financial value that consolidates the human capital which provides service delivery Ostroff, (1993).

Company value is important to the management because it results into an outcome which is achieved by a group of individuals through their authority and responsibility in attaining the goal, and conforming to values and etiquettes (Dong & Su, 2010). Company's value is assessed on the basis of efficient inputs available, processing and dispatch of produced products to promote profitability where company's earnings are higher than their costs in relation to the shares outstanding as of end of financial period and market premium that exceeds reported book value (Weinraub, 1998).

Firm value varies conceptually in terms measurement since it's explained through outputs activities while assessing corporate performance Smith, M. B. (1997). Agricultural manufacturing companies in Kenya tradeoff their earnings and risks whenever investing cash in levels of working capital for operational worth.

1.1.3 Relationship between Working Capital Levels and Firm Value

The industry whose proper management of working capital levels through timely planning ensures availability of scarce input resources to agricultural manufacturing firms in Kenya. It is pivotal towards achieving entitys' value despite firms' liquidity challenges that restrains the company objectives (Ganesan, 2007).

Traditionally there was a perception that working capital and profitability both affected the firms' value by asset utilization .Profitability held that reduced working capital levels positively affect the value of firm through reduction in proportion of current assets in total assets. Deloof (2003) analyzed a sample of Belgian firms, and Wang (2002) analyzed a sample of Japanese and Taiwanese firms, emphasized that proper managing of working capital had significant impact on firms profitability. This was achieved by reducing account receivable days and inventory days. Also, a shorter operating cycle and net trade cycle which defined good performance reciprocated to the shareholders wealth.

In contrary more investment in inventory practically reduces production cost of interruptions, minimizes supply cost and prevent fluctuations in prices and business losses as may be caused by products scarcity. It was also stated that there was no way a company profitability would increase when liquidity is declining since in reality firms value cannot be attained with liquidity (Blinder, 1991) The efficient working capital level enhance the agricultural manufacturing companies in Kenya to increase earnings (Gitman, 1974).

1.1.4 Agricultural Listed Manufacturing Companies in Kenya

The Kenyan agricultural industry contributes greatly to an economy with agricultural outputs as main exports. Examples of top listed agricultural manufacturing companies in Kenya include Sasini ltd, Kapchorua tea ltd, Rea vipingo ltd, Limuru tea ltd, williamson tea ltd, Eaagads and Kakuzi tea ltd. They cultivate most of their inputs and manufacture products that include; tea, avocados, coffee, chocolates, pineapples, oils and livestocks. They also actively participate in forestry activities that boost coverage on environmental eco system.

During this era that firms' cash flow structure is expected to focus on operating cycle activities while considering metrics relating to consumer desires to enhance the firms' value. Agricultural manufacturing companies in Kenya have experienced receivable days of 204, inventory days of 115 and payable days of 36 during the period of consideration of 2012 – 2016. This demonstrated late collections from customers, maintaining high stock for long and seeking external financing to pay suppliers very early.

Working capital levels are very important in the case of agricultural manufacturing companies in Kenya. This is so because these companies short term assets are held in current assets and, they use short term liabilities to finance them. Results explains a divergent association on cash holding and firms value that confirms existence of optimal cash level. Therefore, Firm value decreases when the cash level disperses from the optimal level. Trade-off model brings out how optimal level of holding cash balances with the marginal benefit and cost hence achieving cash management (Saddour, 2006).

1.2 Research Problem

Agricultural Manufacturing Company's value is very essential and invites interested investors locally and abroad because of effective management of operating activities. An efficient working capital level improves the running of business successfully and enables plugging back of cash flow to expand operational activities and create infinite value in the long (Nimarathasan, 2010).

Working capital decisions in Agricultural Manufacturing companies are very vital as they ensure that companies have cash flow to settle short term commitments and running sundry expenses to continue with operations without any interruptions. The objective goal is to ensure that the agricultural manufacturing companies continue with their activities freely and effectively (Ganesan, 2007).

The test of working capital levels on firm value, Deloof (2003) using a sample of 1,009 large Belgian non-financial firms for a period of 1992- 1996 and also using correlation and regression tests, he noted significant association on value by accounts receivable days, inventory days and payable days. Based on the study results, he advised managers to enhance value by reducing receivable days and inventory days. Therefore, can working capital levels be ignored? Does it affect the smooth running of a firm? Expanding sales causes great pressure on inventory and receivable build-up while draining cash resources from the firm. Therefore, large sales increases short term assets (Raheman, 2007).

Strategic impact of working capital levels has ignited various researchers to focus on evaluating the working capital levels and firm value relationships (Lieberman, 2009). The necessity to gauge the importance of working capital levels has led

to the question as to whether working capital levels have an effect on firm value of listed agricultural manufacturing companies in Kenya.

1.3 Research Objective

The general objective of the study was to establish the effect of working capital levels on values of listed agricultural manufacturing companies in Kenya.

1.4 Value of the Study

Assessed the effect of working capital levels on values of listed agricultural manufacturing companies in Kenya that emphasized more insights to the managers, especially pertaining their financial decisions on working capital levels. It also motivated managers on creating the value through effective working capital levels.

Investors also benefited with the knowledge of accessing company's financial health through interrogating the effects of working capital levels in comparison with investment decisions.

This study was useful to the students of finance and accounting especially acquiring knowledge on the impact of working capital levels on firms' value.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

It highlighted theoretical framework where theories relating to the study were discussed. Also in the chapter a review of Empirical literature where past studies by various scholars globally and locally on working capital level/firm value were discussed. Lastly a summary of literature review wrapped up the chapter by highlighting the gap in the literature that the present study sought to bridge.

2.2 Theoretical Framework

The Working Capital theory as explained by the time period within which products' raw materials are purchased, processed and sold to end users to complete production cycle (Nobanee, 2011). The levels of working practiced across the manufacturing industry enables efficient check on both carrying and shortage costs, cash budgeting, financing policy as well as just in time techniques that manages company's short term operations.

2.2.1 Baumol Model of Cash Management

It is a model whose main aim is to define firms' required cash level under clear environment. Explicitly, it manages firms' cash by applying the economic order quantity with an objective of ascertaining the maximum target cash level through the following assumptions; that firms forecast their cash levels in certainty and collects some cash at regular interval, that cash out flows occur at a stable rate and uniformly for a period of time, that the foregone rate of interest on holding money is verifiable and remain constant over time, that cash available denies the firm an investment

opportunity, that firms incur constant transaction charges on converting securities to cash and cash transactions attracts both fixed and variable costs.

The Baumol model has operational restrictions which include; constant payment rate as opposed to the reality where cash outflows are experienced at different time lines, cash and cash equivalent are always due at separate dates since there is no frequent pattern of cash inflow and out flow, there is no safety inventory which is accepted because it takes a short period of time to dispose marketable securities (Baumol, 1952).

The model expects investment manager to invest and re-invest excess cash in interest bound securities and sell them when the firm is in need of cash. This happens when the returns escalate and the interest rate of holding cash increases prompting investment manager to deplete the cash level (Baumol, 1952).

2.2.2 Transaction Cost Economics Theory

This theory posits that the inventory's minimum level on the platform of a trade-off between costs and benefits related to the maintained optimum inventory level. It considers inventory holding costs that concerns purchase orders preparing charges, inspecting, receiving and recording of goods delivered. The model also brings out carrying costs which maintains inventory and explains how they arise with respect to the storage and opportunity costs. Therefore, it explores several motives for lower and higher inventory levels depending on the business nature. For example cost motive that is widely used and acceptable because of its simplicity in inventory management based on the transaction cost economics (TCE) theory (Marques, 2011). This enables companies to reduce their costs through keeping inventory charges at a

reasonable minimum rate to ensure competitive advantage in a highly valued stock market analysis.

2.2.3 Miller and Orr's Cash Management Model

According to this model Miller and Orr (1966) improved cash management model by introducing the range within which levels of cash could oscillate in two limits defined as upper and lower limits. This range enhanced the companies investment chances including buying marketable securities when the cash level at the lower limit and selling the marketable securities when the level of money was on the upper limit.

The model ironed out the restrictions experienced by the Baumol model by embracing fluctuations of cash inflows and outflows at separate time lines. It also provides an expression for obtaining the optimum cash available (Z), the level at which securities are sold to accumulate funds (lower level L) and investment of excess money through buying of securities to reduce holding of cash (upper level H).

2.2.4 Operating Cycle Theory

This theory confers that liquidity position is attained by analyzing both statement of financial position and the comprehensive income statement. Particularly pertaining short term activities which degenerates into finite company value. To ascertain liquidity, there are few ratios which are computed including current and acid-test ratios to reflect solvency. These indications define levels of working capital and realizes life expectations depending on basic activities like production, distribution and collection (Weston, 1979).

The turnover of account receivable indicates the extent to which companies collect cash from customers. This procedure is explained by credit and collection policy that describes accounts receivable outstanding in the statement of financial position in relation to the firms' periodical sales. That means that, when customers' credit policies are weaker, the accounts receivable becomes larger resulting into declining liquidity as well as cash flows and the sales increases. Therefore, the annual sales are supposed to increase as the receivables decrease to avoid deterioration of liquidity. Otherwise, illiquidity can be caused by reduced receivable turnover through overstated collection period. This affects managers' decisions on manufacturing large investments in receivables for a long period to invoke high current and acid-test ratios (Richards, 1980).

The theory also explains the inventory turnover through production cycle activities in the manufacturing companies. This regards purchase of raw materials, processing and distribution of finished products over sales outlets. It stresses that there has to be extensive inventory commitments which reflect longer and less liquid holding period of inventory. Also, firms have to revise payment patterns with sundry traders as a short term financing otherwise there can be a higher current ratio indicating insolvency (Weston, 1979).

The theory also expresses the deficiency of production cycle considering cumulative of days turnover of accounts receivable and investments in inventory. These concepts fail to consider short term obligations and so does not take care of liquidity requirements as applicable in firms' time dimension. Therefore, firms' current liabilities have to be settled to evaluate liquidity position by generating cash flows and transforming current asset investments (Richards, 1980).

2.3 Determinants of Firm Value

Firm value is a measure of an organizational capability to manage her resources and create finite gains in several different ways by developing competitive advantage strategies (Deloof, 2003). There are several measures of firm value including.

Working capital levels are short term investment activities of companies and generate operational cash flows defined by return. The investments are needed to maintain businesses going forward rather than producing products from themselves. Because of this, companies have to invest and over-invest in an operational cycle that explains the time period from the acquisition of raw materials, producing and selling of produces to the consumers. Therefore, a short cash conversion cycle signifies a better liquidity and that firms have sufficient cash to run daily operations. However, too long cash conversion, implies the companies need for financing (Mathur, 2010).

Debt ratio determined by the factor of total debt and equity (debt/equity ratio). It reveals the extent to which businesses put into use money borrowed. It depicts firm's capital structure. It ensures that the effect of capital structure on firm value. The levered agricultural manufacturing companies always risk experiencing bankruptcy when unable to settle their short term bills; they also loose lenders and fail to find new once in the future. Leverage itself enhances the shareholders' wealth on investment and objective use tax advantages related to borrowing (Rafuse, 1996).

Credit ratio (CR), reflected through current assets over current liabilities that determines liquidity of the firm. The study of Eljelly (2004), investigated the

effect of firms' value on liquidity. The ratio was also used to indicate the degree of financial policy explaining aggressiveness of the financial policy (Padachi, 2006).

2.4 Empirical Reviews

The study of working capital levels on firm value depict aggressive management of liquidity (lower CCC) which confines to increased profitability Deloof (2003). These results posits of managers raising firm value by reduction in the number of days of inventories and accounts receivable. Sometimes declining profits in companies delay in settling their obligations Uyar (2009), by examining the influence of operating cycle on companies' sizes which indicated a significant negative association of operating cycle and the company size. Eljelly (2004) further noticed of manufacturing companies' size having a significant effect on industry profits.

Reviewed studies (Samiloglu and Demirgunes, (2008) showed of influencing value negatively by the account receivables period, inventory period, and leverage affect. Nobanee and AlHajja (2009) suggested of company's profitability escalation through shortening both operating cycle using inventory and collection periods. Raheman and Nasr (2007) found out that there existed negative association of levels of working capital on company profitability while using net operating profits. In contrast, Lyroudi and Lazaridis (2000) concluded that operating cycle related positively to the assets and the net profit margin.

The Turkish clothing Industry study by Karabay and Gülseren (2013), checked on liquidity and profitability having reduced operating cycle through reduced collection period and debt and found that industry size experienced significant changes on

accounts payable days and current ratio, whereas big size companies faced solvency problems due to increasing capacity need in liquidity excluding borrowing.

Therefore firms' manager generate firm value by reducing accounts receivable days, and raising inventory levels to a reasonable mark and extending days of paying creditors without restraining the corporate dealings. In a study by Mogaka & Jagongo (2013) about management of working capital on profitability of the firm using panel data, it was deduced that there existed a significant negative association of accounts receivable and operating cycle on profitability and insignificant positive effect relationship with inventory and accounts payable.

The finding by Muchina & Kiano (2011), about management of working capital on firms' profitability by a case study of SMEs in Kenya, it was found that debtors average days, stock turnover timelines and operating cycle influenced profitability of the firm significantly. And, current ratio, firm size and leverage ratio all had an impact on profitability. However, the study failed to ascertain effect of levels of working capital on profitability. Kulkanya (2012) carried out a study on effect of working capital and profitability as measured by GOP and it was deduced that there was negative relationship between inventories conversion period and profits which still existed between receivables conversion period and operating cycle. This meant that managers would only improve profits by reducing operating cycle, inventory days and collection days as accounts payables experienced insignificant negative association with profitability hence value would be increased through lengthening payable days.

2.5 Summary of Literature Review

Three models were considered in this study including Baumoul model, Miller & Orr's model and operating cycle theory whose objective was determining the optimal cash level for an effective working capital levels. These theories relied on the trade-off between the liquidity generated by cash available and the opportunity cost on one's assets by non-interest bearing money. From the above, it was found that profitability is determined differently including cash levels, minimum operating cycle and agreeable range of cash limits. However, the authors also found out that there existed negative relationship of operating cycle on profitability as applied by debt as well. And,, non among the here-at theories brought out the aspect of working capital levels on firm value to mirror on the infinite life of the listed agricultural manufacturing companies while carrying out day to day activities.

Empirical findings reflect liquidity was highly related to profitability (Deloof, 2003). Also, that company value escalated through reduced days inventory outstanding and days sales outstanding (Samiloglu and Demirgunes, (2008). The above is consistent with results further obtained from local studies by Muchina and Kiano, (2011), and Mogaka and Jagongo, (2013) who explained the negative relationship of management of working capital and firms' profitability considering, a case study of SMEs in Kenya and concluded that debtors days, inventory period and operating cycle had significant influence on firm profitability.

The findings above limited research that was conducted on the levels of working capital on firm's value of listed agricultural manufacturing companies in Kenya. The existing studies were done in subsets of economies and there was literature on sufficient cause of working capital levels on firms worth in listed manufacturing

companies in Kenya. Therefore, this is research aimed at closing the gap of assessing how working capital levels defined the market value of listed agricultural manufacturing companies in Kenya for finite existence.

2.6 Conceptual framework

Variables of the study were; the independent variable was working capital levels which included concepts of days sales outstanding, days inventory outstanding, and days payable outstanding while the dependent variables was firm value. (Figure 1);

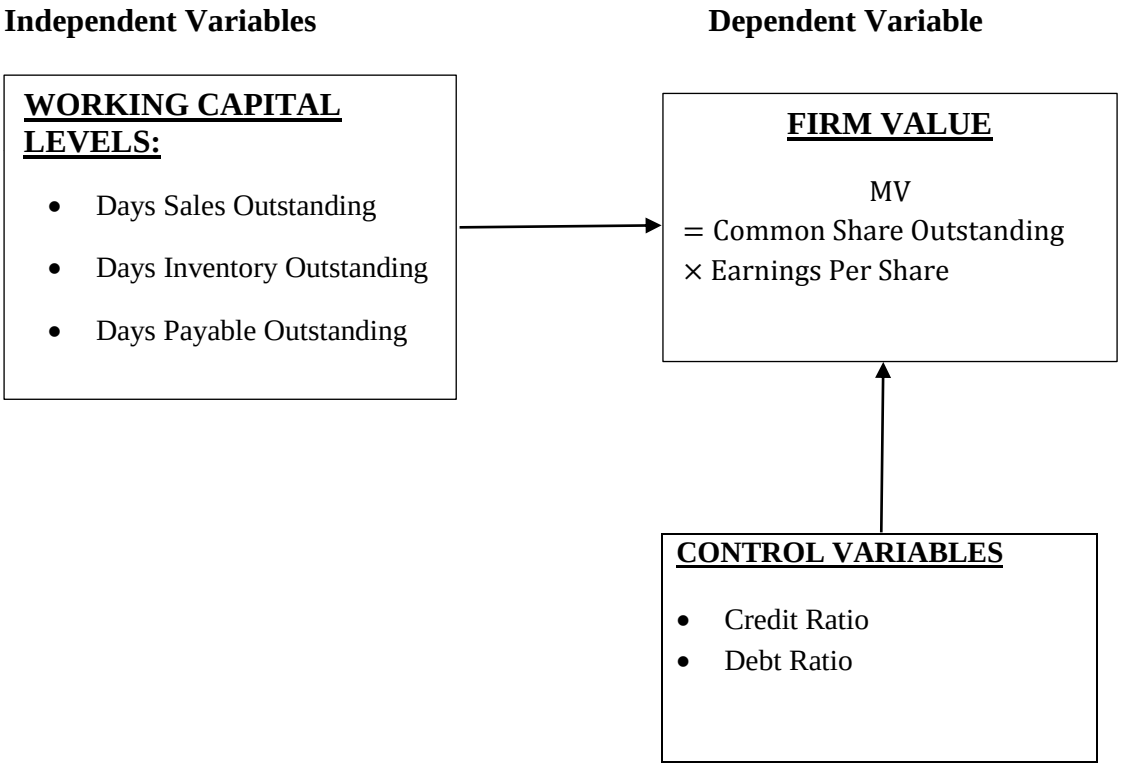

Figure 1: Conceptual framework

Source: Researcher, 2017

In this study the dependent variable was firm value controlled by debt ratio and credit ratio that classified under error term which explained other factors that affected firm value and the independent variable was working capital levels that was driven by DSO, DIO, and DPO.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter presented research methodology which a researcher used in facilitating execution of study to satisfy the study objective. Steps were; research design, population of interest, data collection, diagnostic test and analysis of data.

3.2 Research Design

Research design is a plan for investigating a situation to achieve solutions. The main purpose of this research was determining the association of working capital levels on firm value of Kenya's Listed Agricultural Manufacturing Companies. Therefore a descriptive research was used to assess the association between the variables.

Researcher used descriptive and quantitative designs for the purpose of obtaining accurate information and linking with the general overview as to what variables were worth testing quantitatively.

3.3 Population of the Study

The population comprised of Seven Listed Agricultural Manufacturing Companies that included Rea vipingo ltd, Sasini ltd, williamson tea ltd, Kapchorua tea ltd, Kakuzi tea ltd, Eaagads and Limuru tea ltd for the five year period from 2012 to 2016. The study was restricted to listed agricultural manufacturing companies in Kenya.

3.4 Data Collection

Data collection involves getting information through secondary data sources in order to explain a situation relating to the research. The sources of data were financial statements which include latest published annual reports, annual sales, current assets, current liabilities, working capital levels determinants, fixed assets and long term debt and equity to be surveyed. Company‘s financial statements was obtained from NSE library and the CMA library and website.

3.5 Diagnostic Testing

It refers to the misspecification tests that are based on test statistics from classical linear regression model. These tests are constructed in several ways to determine the test statistics that are assumed to follow the context of tests like X^2 distribution Cochrane, D. & Orcutt, G. H. (1949). Therefore, here-in are testing for the analytical regression model under consideration.

3.5.1 Linearity

Linearity depicts the degree of linearly of variables explained by the regression model. The regression was linear and parameters could not be multiplied together, divided, squared or cubed but, parameters were linearly combined with dependent variable Davidson, R. & MacKinnon, J. G. (1981).

Pearson Correlation Test was conducted to confirm the linearly association of working capital levels determinant and the Firm Value.

3.5.2 Normality

This relates to the normal distribution that is bell shaped and symmetrical around the mean of zero. It makes the regression involved in the statistical inference considerably simpler since dependent variable depends partially on disturbance term, therefore stating that both error term and dependent variable are normally distributed Bera, A. K. & Jarque, C. M. (1981).

It was tested using Bera & Jarque 1981 through the coefficient of skewness and the coefficient of kurtosis. The null hypothesis represented skewness between -1 and +1 for the normal distribution being symmetric and kurtosic. The null hypothesis of normality would be rejected if the determinants of working capital levels were significantly skewed.

Shapiro Wilk Test was also conducted to ascertain normality of the data using significance value of 0.05. The null hypothesis would be accepted if both t-statistic and significance levels for working capital levels (DSO, DIO and DPO) were greater than 0.05. Otherwise the data would not be normally distributed.

3.5.3 Homoscedasticity

It is an assumption which states that variances of the variables are constant and finite over all values of independent variables. However, if the variables do not have constant variances then, they are said to be heteroscedastic Bollerslev, T. (1986).

Koenker test was conducted on a linear regression to ascertain both LM and P-value for significance level. The null hypothesis was that the data was homoscedastic when

both LM value and p-value were greater than 0.05. Otherwise, the data was heteroscedastic.

3.5.4 Multicollinearity

It defines high association amongst independent variables in an OLS regression expression. It is classified into two classes: Perfect multicollinearity that occurs when there is exact relationship between independent variables. In this class, it is observed when the same explanatory variables are inadvertently used twice in a regression. Near multicollinearity arises when there is a non-negligible but not perfect relationship between explanatory variables Durbin, J. & Watson, G. S. (1951).

However, high correlation between explanatory variables and the dependent variable is not multicollinearity.

It was tested by both VIF and Tolerance tests where null hypothesis was accepted when Variance Inflation Factor value was less than 10 and, Tolerance was greater than 0.1 to ascertain that the data was not multicollinear.

3.6 Data Analysis

Data analysis started after completion of collection of data and ended during the interpretation and processing data. The study used quantitative research approach to derive findings. The researcher used both correlation and regression assessment to define the nature and degree of association between working capital levels drivers and firm value.

The analytical model as per studies by (Nazir, 2009; Zariyawati, 2008 & Samiloglu, 2008) was modelled with the firm's value as a function of working capital levels

determinants. The impact of working capital levels on value of the firm was modelled as adapted by Maina, (2013) used the below OLS regression expression in ascertaining estimates:

MV = f (DSO, DIO, DPO)

$$= \beta_0 + \beta_1 X_1 it_1 + \beta_2 X_2 it_2 + \beta_3 X_3 it_3 + \varepsilon$$

Where:

MV	Market Value (MV) used to measure company value
MVit	Firms market value of i period t (i = 1, 2… 4 firm,).
β_0, 1...5	Constants defined the direction and degree of a variable.
DSO	Days Sales Outstanding. Days that the business takes to collect cash from its customers and clients. Accounts Receivable / Net Sales*365
DIO	Days Inventory Outstanding The time inventories remain unsold in the business premises. The average inventory period ratio is measured by; Inventory / Cost of Goods Sold*365
DPO	Days Payable Outstanding The days it takes a company to pays off its suppliers. Accounts Payable / Purchases*365
ε	The error term that explains all other variables influencing firm value.
Xit	Variables of firm - i'period - t'.

t Period = 1, 2… 5 years.

A correlation test was conducted in assessing association of working capital levels on firm‘s value. Test of significance conducted on variables by use of t-test which reflected a 95% level of significance. Pearson correlation coefficients were calculated to examine association amongst the variables. The study was restricted to listed agricultural manufacturing companies in Kenya.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presented data analysis, interpretation as well as presentation. The objective was to investigate how working capital levels affect firms' value of listed agricultural manufacturing companies in Kenya in October 2017 excluding other companies in the agricultural sector during the period 2012 - 2016. The data sources included the listed firms' published annual reports for a period of 5 years (2012-2016). Data was collected based on the variables of the study, that is, firm value (MV) depicted by working capital levels (DSO, DIO, DPO).

4.2 Data Validity

4.2.1 Linearity of working capital levels (DSO, DIO, DPO) and firm value (MV).

Table 4.1 Correlations

		MV	DSO	DIO	DPO
Pearson Correlation	MV	1.000	-.664	-.478	.778
	DSO	-.664	1.000	.370	-.707
	DIO	-.478	.370	1.000	-.264
	DPO	.778	-.707	-.264	1.000
	DSO	.000	.	.014	.000
	DIO	.002	.014	.	.062
	DPO	.000	.000	.062	.
	DSO	35	35	35	35
	DIO	35	35	35	35
	DPO	35	35	35	35

Table 4.1 showed a strong positive linear relationship was found between days payable outstanding and firms' value. Also, a fairly strong negative relationship was found between days sales outstanding and firms' value and, a weak negative

relationship was found between days inventory outstanding and firms' value. These degrees of association depicted by determinants of working capital levels and accompanied by the increase or decrease in firms' value described the relationship by a straight line.

4.2.2 Normality of Working Capital Levels (DSO, DIO, DPO)

Table 4.2: Normality of working capital levels

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DSO	.151	35	.043	.943	35	.057
DIO	.159	35	.025	.934	35	.069
DPO	.166	35	.015	.690	35	.053

The findings from table 4.2 reveled the results of Shapiro-wilk test that days sales outstanding had significance values of 0.069, days inventory outstanding had a significance value of 0.053 and days payable outstanding had a significance value of 0.057.All these Shapiro-wilk test values were greater than the p value of 0.05 for accepting the null hypothesis. Therefore, the data was normally distributed.

4.2.3 Homoscedasticity of Data

------- Koenker test statistic and sig-values --------

Table 4.3: Homoscedasticity of data

	LM	Sig.
Koenker	3.937	.268

Null hypothesis: heteroskedasticity not present (homoskedasticity)

if sig-value less than 0.05, reject the null hypothesis

Table 4.3 revealed the result of koenker test of 0.268 that was greater than the p value of 0.05 significance level. The led to acceptance of null hypothesis hence concluding that the data was homoscedastic.

4.2.4 Multicollinearity of the working capital levels (DSO,DIO,DPO)

Table 4.4: **Multicollinearity**

	95.0% Confidence Interval for B		Collinearity Statistics	
Independent Variables	Lower Bound	Upper Bound	Tolerance	VIF
DSO	-27.494	1.082	.464	2.156
DIO	-4.990	-.498	.863	1.159
DPO	5.632	15.469	.500	2.001

The table 4.4 depicts relationships amongst the working capital levels' determinants where days sales outstanding had 0.464 tolerance, days inventory outstanding had 0.863 tolerance and days payable outstanding had 0.500 tolerance and, days sales outstanding had VIF of 2.156, days inventory outstanding had VIF of 1.159 while days payable outstanding had VIF of 2.001 respectively. Since all regressors had a tolerance greater than 0.1 and variance inflation factor less than 10 that depicted that the data used in the model was not multicollinear and that each independent variable explained the firms' value within the model.

4.3 Descriptive Statistics

Table 4.5 Descriptive Statistics

MV	Mean	Std. Deviation	N
DSO	.200	.063	35
DIO	.101	.039	35
DPO	.036	.023	35

The table 4.5 indicates the trend of working capital levels (DSO, DIO, DPO) on firm's value over the 5 year period for listed manufacturing companies in Agricultural

Sector in Kenya. The lowest mean was 0.036 for DPO between 2012 and 2016 while the highest mean was 0.2 for DSO during the same period of time. This represented a negative change in the firms' value of 0.164 across seven listed agricultural manufacturing companies over the 5 year period. The steady decline in days over the 5 year period indicates that the values of the listed firms were oscillating within the same five year period. Also, the different scores of standard deviation indicate spread in days explaining the working capital levels on firms' value for the seven agricultural manufacturing firms. Thus, there exists a significant influence of the working capital levels on firm values for listed manufacturing companies in agricultural sector in Kenya.

4.4 Correlation Analysis

Pearson product correlation was used in the study to ascertain the extent of linear association between the determinants of working capital levels and firms' value. From the table 4.1 above, there was a fairly strong positive linear association between days payable outstanding and firms' value and, a fairly strong negative association between days sales outstanding and firms' value as well as a weak negative relationship between days inventory outstanding and firms' value. This meant that increase in days payable outstanding and decrease in both days sales outstanding and days inventory outstanding increases the firm value of agricultural listed manufacturing companies in Kenya.

4.5 Regression Analysis and Hypotheses Testing

Regression analysis was used in this study to determine the relationship between days sales outstanding, days inventory outstanding, days payable outstanding and firms' value. Tables here under presents the findings.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.832[a]	.693	.663	23.844

a. Predictors: (Constant), Days Sales Outstanding, Days Inventory Outstanding, Days Payable Outstanding
b. Dependent Variable: Firm Value [MV]

Coefficients of determination explained the changes in the firm value was explained by the variation in the working capital levels in the firm value (MV) that was explained by determinant of working capital levels (Days Sales Outstanding, Days Inventory Outstanding, Days Payable Outstanding).

The three independent variables that were studied, explain 69.30% of variance in firms' value of the seven listed manufacturing companies in agricultural sector in Kenya as represented by the R Square. This therefore means that other factors not studied in this research contribute 30.70% of variance in the firms' value. Therefore, further research should be conducted to investigate the other factors that affect the firms' value of Kenyas' agricultural manufacturing companies.

Analysis of Variance

Table 4.7: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.978E12	3	1.326E12	23.320	.003[a]
	Residual	1.763E12	31	5.686E10		
	Total	5.740E12	34			

a. Predictors: (Constant), DPO, DIO, DSO

b. Dependent Variable: MV

Table 4.7 revealed that Analysis of Variance (ANOVA) consisted of calculations regarding variability levels in the model and formed a platform for tests of significance. F column provides a t - statistic for testing the hypothesis of $\beta \neq 0$ against the null hypothesis of $\beta = 0$ (Niresh, J. 2012) From the findings the significance value is .003 which is less than 0.05 thus the model was statistically significant in predicting how working capital levels (Days Sales Outstanding, Days Inventory Outstanding, Days Payable Outstanding) affected the firms' value of listed agricultural manufacturing companies in Kenya. The critical value at 5% level of significance is 2.179 and, Since F calculated (value = 23.32) is greater than the critical (2.179), the overall model was significant.

Model of Coefficients

Table 4.8: Model of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	257.334	2.673		.962	.343
	DSO	-8.335	.939	-.130	.887	.057
	DIO	-27.443	1.101	-.267	2.492	.069
	DPO	10.550	2.411	.616	4.375	.053

Table 4.8 shows the regression findings to be substituted in the equation

($MV = \beta_0 + \beta_1 X_1 it_1 + \beta_2 X_2 it_2 + \beta_3 X_3 it_3 + \varepsilon$) becomes:

MV= 257.334 – 8.335 X1 – 27.443 X2 + 10.550 X3 + ε

Where MV is the dependent variable (firms' value), X_1 is the days sales outstanding, X_2 is the days inventory outstanding and X_3 is the days payable outstanding.

According to the equation, taking all factors (days sales outstanding, days inventory outstanding and days payable outstanding) constant at zero, firms' value is 257.334. The findings shows that unit increase in days sales outstanding leads to a 8.335 decrease in firms' value; a unit increase in days inventory outstanding will lead to a 27.443 decrease in firms' value while a unit increase in days payable outstanding will lead to a 10.550 increase in firms' value. This means that the most significant factor is days payable outstanding followed by days sales outstanding and days inventory outstanding, respectively. At 5% level of significance and 95% level of confidence, days payable outstanding had a 0.053 level of significance; days sales outstanding had a 0.057 level of significance while days inventory outstanding had a 0.069 level of significance, implying that days payable outstanding is the most significant factor followed by days sales outstanding and days inventory outstanding (Days payable outstanding with a positive effect on firms' value while the other two with a negative influence on firms' value of listed manufacturing companies in agricultural sector in Kenya), respectively.

4.6 Discussion of Research Findings

The objective of the study was to determine the effect of working capital levels on firms' value of listed agricultural manufacturing companies in Kenya. The objective was assessed by use of secondary data and the subsequent analysis based on the variables of the study.

From the findings, the firms' value of the population of listed agricultural manufacturing companies firms under study oscillated over the 5 year period. The mean decline from days sales outstanding 0.200, days inventory outstanding 0.101 and days payable outstanding 0.036 indicated that days payable outstanding

contributed firms' value of the listed in agricultural sector in Kenya within the same period. Thus, there exist a significant relationship between the days payable outstanding and firms' value for listed agricultural manufacturing companies in Kenya. The findings are in agreement with Vieira (2010) who noted that there exists a significant and negative correlation between the days sales outstanding and days inventory outstanding on the firms' value variables in the short-run. He found that on the short term the more the days sales outstanding and days inventory outstanding, the declining the firms' value respectively. He further established that there is positive relationship between days payable outstanding and firms' value on the medium to long term. He therefore observed that agricultural companies practising ineffective determinant of working capital levels fails to match the firms' value expected within the players in agricultural sector in Kenya.

The study findings further revealed that the population of listed agricultural manufacturing firms' working capital levels' determinants remained constant at a mean of 0.200 for DSO, 0.101 for DIO and 0.036 for DPO between year 2012 and year 2016. This shows that the agricultural manufacturing companies maintained a steady level of the working capital levels over the 5 year period. Thus, days sales outstanding, days inventory outstanding and days payable outstanding had significant influence on the firms' value of the firms listed in the agricultural sector in Kenya over the 5 year period. The findings are consistent with Maina (2011) in whose study he found that days inventory outstanding is not a significant contributor alone of the firm's value and there exist other variables that will influence a firm's return on assets. However, the findings are in contrast with Nyabwanga et al. (2013) in whose study he found that there exists a significant impact of DSO and DPO on a firm's value (MV).

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides summarized the study findings, conclusions, recommendations and limitations of the study on the effect of working capital levels on firms' value of listed agricultural manufacturing companies in Kenya. The chapter also put forward contribution of the study to the knowledge and suggestions for future research.

5.2 Summary of Findings

The firm value can be explained by the determinants of working capital for efficient and effective operating cycle of manufacturing agricultural companies in Kenya. This study sought to established effect of working capital levels on firm value of listed agricultural manufacturing companies in Kenya. The study used a descriptive research design on a population of interest for this study was seven (7) listed agricultural manufacturing companies including Sasini ltd, Kapchorua tea ltd, Rea vipingo ltd, Limuru tea ltd, williamson tea ltd, Eaagads and Kakuzi tea ltd that were in operation during the period 2012 to 2016, thus it was a description research.

The study applied secondary data that was extracted from published financial reports of the listed agricultural manufacturing companies which related to the association between working capital levels and firm value in a five year period of time from 2012 to 2016. The data collected was clean and analytically organized in a form that facilitated analysis using the Statistical Package for Social Sciences (SPSS) so as to test the relationship between the variables, the inferential tests including the regression analysis used. The study found out that the variations in the three determinants of working capital levels explained the changes in the firms' value by

69.3%. Therefore, the study concludes that there was significant association between the working capital levels and firms' value of listed agricultural manufacturing companies in Kenya.

The working capital levels had a positive and important effect on value of the firm in agricultural manufacturing industry. The study recommended that there was a need for listed agricultural manufacturing companies in Kenya to exercise caution on operating cycle activities that ignites the finite value through daily activities. The study also recommended that there is a need extend the accounts payable days through suppliers credit policy agreeable to enhance increased value in agricultural industry.

5.3 Conclusion

The study concluded that the determinants of working capital levels had the following correlations; days payable outstanding is 0.778, days sales outstanding is -0.664 and days inventory outstanding is -0.478. Therefore, days payable outstanding had strong positive degree of association with firm value meaning that its increase increased firm value in the same direction. Whereas both days sales outstanding and days inventory outstanding had negative relationship with firm value with days sales outstanding being more negative absolutely relative to the firm value. Hence days payable outstanding influenced value in the same direction whereas days sales outstanding and days inventory outstanding both influenced firm value in an opposite direction.

The study also concluded that the coefficient of the levels of working capital were days payable outstanding 10.550, days sales outstanding -8.335 and days inventory outstanding -27.443. This means that days payable outstanding is positively defined

by the model to relate positively with firm and both days sales outstanding and days inventory outstanding inversely relate with the firm value. Also, the coefficients describe the extent to which every determinant of working capital levels change the firms' value. For instance days payable outstanding positively increase changes in firm value by 10.550 whereas both days sales outstanding and days inventory outstanding decreases firm value by 8.335 and 27.443 respectively.

5.4 Recommendations

From the findings, the study established that days sales outstanding as a working capital levels' measure negatively affected the firms' value of the agricultural manufacturing companies in Kenya. Therefore the study recommends that the management of the firms in the agricultural sector should institute efficient credit policy that would reduce the time period for receipt of money from credit customers. Stringent credit policy indicates increased efficiency in firm's ability to collect cash to invest and re-invest in available investment opportunities.

From the findings, the study established that days inventory outstanding as a working capital levels' measure negatively affected the firms' value of the agricultural manufacturing companies in Kenya. Therefore the study recommends that the management of the firms in the agricultural sector should strive to achieve and maintain an optimal inventory management system that ensures that the firms hold adequate resources for operational needs while ensuring that both ordering and holding costs are kept to the minimum level.

From the findings, the study established that days payable outstanding as a working capital levels' measure positively and significantly affected the firms' value of the

agricultural manufacturing companies in Kenya. Therefore, the study recommends that the management of the firms in the agricultural sector should focus on effective credit policies with their suppliers to ensure that they purchase their seedlings, tea sticks, coffee stems and other raw materials of good quality and enjoy better discount for enhanced production cycles. That would improve firms value in totality.

5.5 Limitations of the Study

The scope of the study focused on listed agricultural manufacturing companies in Kenya and hence the findings may not be a representative of other firms outside this scope. In addition, the study of working capital levels on firms' value of the listed agricultural manufacturing firms did not consider various financial ratios and as such was difficult to compute the various required ratios for the study from the available financial information.

The study used working capital levels to measure the firms' value of listed agricultural manufacturing companies in Kenya and used the days sales outstanding, days inventory outstanding and the days payable outstanding as the firms' value measures. However, there are other numerous indicators of firms' value such as credit ratio, debt ratio and turnover ratio. These were not part of this study.

Time frame was not sufficient for holding a full time job and engaging in research activities on part time basis.

Another limitation of the study was in developing a model which would enable the researcher to study the relationship between the firms' value and working capital levels. When developing this model, there was a great need to define the dependent variables and independent variables. If the model was not correct, the process of

analysis may not have given the right results. In this case, multiple linear regression was used since there were multiple variables which required to be studied.

5.6 Suggestions for Further Research

Since this study explored the relationship between working capital levels and firms' value for listed agricultural manufacturing companies in Kenya, the study recommends that; similar studies should be done in other countries for comparison purposes and to allow for generalization of findings on the relationship between working capital levels and firms' values for listed agricultural manufacturing companies in other countries.

Given that this study focused on the effect of days sales outstanding, days inventory outstanding and days payable outstanding as working capital levels measures on firms' value for listed agricultural manufacturing companies in Kenya. The study recommends that; similar studies should be done with increased variables for both firms' value and working capital levels. For firms' value, the studies can add turnover ratio and return on equity while for working capital levels, the studies can add cash ratio and liquidity ratio. This would help to show clearly the relationship between firms' value and working capital levels of the listed agricultural manufacturing companies in Kenya.

The study further recommends that studies should be done to investigate the relationship between working capital investment and financing policies and the firms' value for the agricultural manufacturing companies in Kenya. This would help to show the impact that working capital aggressive and conservative investment and

financing policies have on the firms' value of the agricultural manufacturing companies in Kenya.

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Appendix 1: Financial information in annual reports for assessing the determinants of the variables in the OLS Model

Period	Company	Sales	Cost of Goods	Purchases	Account Receivables	Inventories	Account Payables	Current Assets	Current Liabilities	Total Debt	Total Assets	MV
		Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'	Ksh'000'
2012	Sasini Ltd	2,779,883	1,869,523	1,918,498	409,383	430,589	460,177	1,109,871	585,628	2,496,178	8,922,980	-68,417
	Kapchorua Tea Ltd	3,607,409	1,726,745	1,146,797	1,215,558	357,901	926,666	2,447,223	1,017,203	2,298,171	7,243,227	1,641,635
	Rea Vipingo Ltd	2,571,725	1,394,208	1,152,708	345,285	461,210	155,486	374,214	457,932	654,473	2,376,618	380,400
	Limuru Tea Ltd	214,522	75,570	75,547	123,507	36	10,537	130,762	10,537	77,790	320,023	101,880
	Williamson Tea Ltd	3,607,409	1,726,745	1,146,797	1,215,558	357,901	926,666	2,447,223	1,017,203	2,298,171	7,243,227	820,817
	Eaagads	157,075	103,161	101,279	6,566	6,877	2,995	84,987	4,530	91,907	573,356	10,933
	Kakuzi Tea Ltd	1,628,478	895,249	883,312	274,505	65,428	129,212	1,237,473	146,023	770,475	3,571,700	379,260
2013	Sasini Ltd	2,816,834	2,043,694	1,983,369	518,334	370,264	536,688	1,295,045	731,249	2,671,455	9,054,366	-68,417
	Kapchorua Tea Ltd	3,490,681	1,576,433	1,834,270	873,471	615,738	686,309	2,684,364	738,619	2,165,577	8,023,834	1,652,493
	Rea Vipingo Ltd	2,570,103	1,422,005	1,403,812	359,322	443,017	143,691	1,040,887	220,663	712,349	2,834,011	380,400
	Limuru Tea Ltd	117,723	82,637	82,660	127,565	59	8,221	138,682	8,221	82,661	343,007	1,428,000
	Williamson Tea Ltd	3,490,681	1,576,433	1,834,270	873,471	615,738	686,309	2,684,364	738,619	2,165,577	8,023,834	826,246
	Eaagads	68,025	100,875	103,068	6,087	8,759	1,350	47,242	35,475	97,425	499,561	-59,169

	Kakuzi Tea Ltd	1,480,692	972,421	984,358	173,147	77,365	129,610	1,170,655	147,181	813,515	3,717,543	165,032
2014	Sasini Ltd	2,762,547	2,077,482	2,025,281	582,494	318,063	522,368	1,245,083	534,840	2,808,609	14,929,577	123,150
	Kapchorua Tea Ltd	1,192,489	980,361	559,559	263,775	194,936	106,293	621,620	121,855	548,496	1,929,161	1,651,442
	Rea Vipingo Ltd	2,700,547	1,482,238	1,533,093	536,194	493,872	164,156	1,288,318	198,051	719,158	3,203,131	444,600
	Limuru Tea Ltd	92,250	54,103	54,196	123,983	152	14,776	132,007	16,331	86,885	338,600	-16,800
	Williamson Tea Ltd	3,512,086	1,738,495	1,916,831	860,011	536,237	322,353	2,719,443	322,353	1,958,673	8,539,200	1,424,828
	Eaagads	95,635	87,910	98,682	13,020	19,531	37,938	33,001	37,938	85,341	445,793	-41,804
	Kakuzi Tea Ltd	1,689,917	1,132,563	1,117,320	129,888	62,122	150,147	1,181,085	177,421	872,726	3,857,454	160,132
2015	Sasini Ltd	2,786,126	1,048,142	1,019,240	510,106	341,362	429,139	2,058,665	467,712	2,486,022	16,044,527	22,806
	Kapchorua Tea Ltd	1,073,989	914,588	882,992	397,960	163,340	103,618	644,264	114,444	555,560	1,983,239	-14,083
	Rea Vipingo Ltd	992,346	429,443	431,483	104,053	2,040	146,766	1,171,602	810,690	1,594,008	2,645,130	351,000
	Limuru Tea Ltd	122,374	118,915	119,093	154,573	331	19,567	163,565	28,187	83,900	313,768	2,544
	Williamson Tea Ltd	2,590,416	1,437,919	1,354,054	1,142,542	452,372	313,893	2,749,449	320,264	1,975,522	8,558,558	-416,275
	Eaagads	101,468	74,533	79,004	16,002	24,002	48,375	43,178	48,375	81,226	615,426	8,039
	Kakuzi Tea Ltd	2,564,915	1,326,377	1,347,817	255,692	83,562	227,024	1,640,706	369,210	1,082,178	4,458,075	459,620
2016	Sasini Ltd	3,570,629	1,529,922	1,553,084	456,078	364,524	487,043	2,784,857	570,323	2,858,231	16,818,463	973,797

	Kapchorua Tea Ltd	1,209,133	922,070	1,061,671	464,255	302,941	153,256	887,840	210,297	686,710	2,329,151	289,957
	Rea Vipingo Ltd	949,332	487,323	486,874	76,934	1,591	139,246	1,266,160	754,910	1,747,358	2,936,260	291,000
	Limuru Tea Ltd	103,915	139,619	139,719	120,865	431	27,920	144,218	27,920	76,481	282,193	-19,080
	Williamson Tea Ltd	3,386,015	2,395,072	2,701,511	1,287,562	758,811	542,913	3,348,335	682,166	2,315,507	9,285,306	705,759
	Eaagads	126,012	89,082	111,229	69,223	46,149	20,317	116,384	20,317	69,229	761,165	322
	Kakuzi Tea Ltd	2,718,435	1,421,914	1,509,464	266,150	171,112	398,762	2,049,347	416,738	1,218,156	5,064,414	562,520

Source: (Financial Statements 2012-2016)

Appendix 2: Tested Variables in the OLS Model

Period	Company	Variables to be tested in the OLS model			
		DSO	DIO	DPO	MV
2012	Sasini Ltd	300	100	30	- 68,417
	Kapchorua Tea Ltd	100	70	60	1,641,635
	Rea Vipingo Ltd	130	90	50	380,400
	Limuru Tea Ltd	140	105	45	101,880
	Williamson Tea Ltd	105	80	55	820,817
	Eaagads	180	140	38	10,933
	Kakuzi Tea Ltd	131	91	49	379,260
2013	Sasini Ltd	295	106	29	- 68,417
	Kapchorua Tea Ltd	60	30	150	1,652,493
	Rea Vipingo Ltd	129	91	50	380,400
	Limuru Tea Ltd	170	155	36	1,428,000
	Williamson Tea Ltd	186	143	45	826,246
	Eaagads	227	90	20	- 59,169
	Kakuzi Tea Ltd	177	70	15	165,032
2014	Sasini Ltd	173	71	14	123,150
	Kapchorua Tea Ltd	169	150	49	1,651,442
	Rea Vipingo Ltd	240	170	30	444,600
	Limuru Tea Ltd	270	135	18	- 16,800
	Williamson Tea Ltd	169	157	35	1,424,828
	Eaagads	260	133	20	- 41,804
	Kakuzi Tea Ltd	183	68	17	160,132
2015	Sasini Ltd	265	134	20	22,806
	Kapchorua Tea Ltd	276	141	19	- 14,083
	Rea Vipingo Ltd	265	175	27	351,000
	Limuru Tea Ltd	285	88	12	2,544
	Williamson Tea Ltd	244	171	25	- 416,275
	Eaagads	283	85	18	8,039
	Kakuzi Tea Ltd	241	169	35	459,620
2016	Sasini Ltd	170	156	53	973,797
	Kapchorua Tea Ltd	178	60	34	289,957
	Rea Vipingo Ltd	179	59	35	291,000
	Limuru Tea Ltd	270	134	25	- 19,080
	Williamson Tea Ltd	173	159	49	705,759
	Eaagads	290	90	20	322
	Kakuzi Tea Ltd	210	160	35	562,520

Appendix 3: Letter of Authorization