EFFECTS OF WORKING CAPITAL MANAGEMENT ON FINANCIAL DISTRESS OF NON- FINANCIAL FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE MARKET

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Effects of Working Capital Management on Financial Distress of Non- Financial Firms Listed at the Nairobi Securities Exchange Market

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

To my family that comprises my lovely wife Risper, beautiful daughters: Vivian and Riyce and my son Calvince to whom I remain indebted for their constant support and prayers. To my late father Onchangwa who never lived long to see his son pursue higher education and to my mum Esther Nyanchera for her inspiration during the entire study period.

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ABBREVIATIONS

ACC   India Cement and Concrete Company

ACP   Average Conversion Cycle

ASE   Athens Stock Exchange

ANOVA   Analysis of Variance

CCC   Cash Conversion Cycle

CMA   Capital Markets Authority

DPO   Days of Payables Outstanding

EOQ   Economic Order Quantity

GNP   Gross National Product

ICMA   International Capital market Association Centre

ICP   Inventory Collection Period

IOSR   International Organization of Scientific Research

ISDA   International Swaps and Derivatives Association

JEIEFB   Journal of Emerging Issues in Economics, Finance and Banking

KSE   Karachi Stock Exchange

JKUAT   Jomo Kenyatta University of Agriculture and Technology

LTD   Limited

MDA   Multiple Discriminant Analysis

MIT   Massachusetts Institute of Technology

NPV   Net Present Value

NSE   Nairobi Securities Exchange

OLS   Ordinary Least Squaress

ROK   Republic of Kenya

ROE   Return on Equity

SME   Small and Medium Enterprise

TMA   Texas Medicine Association

TSE   Tehran Stock Exchange

TPS   Toyota Production System

US   United States

DEFINITION OF TERMS

Cash: money which an organization or firm can disburse immediately without restriction (Pandey, 2010)

Cash Management: managing the firm's resources to obtain maximum interest income of idle cash (Horne, 1974)

Cash Conversion Cycle: duration from buying raw materials, changing to final products, sales and collecting account receivables (Mansoori & Muhammad, 2012)

Accounts Payable: Amounts due to suppliers for purchases on credit (Fabozzi & Peterson, 2003)

Average Payable Period: also called Days of Payable Outstanding. This is the time taken to pay suppliers (Wanjiku, 2013)

Accounts Receivable: Amounts owed by Customers (Fabozzi & Peterson, 2003)

Average Collection Period: Time taken to collect cash from customers (Mathura, 2009)

Inventories: Stock of the product a company is manufacturing for sale and components that make up the product (Pandey, 2010)

Inventory Collection Period: the duration taken to change inventory held into sales (Deloof, 2003)

Inventory management: includes appropriate control and administration of inventories (Paramasivan & Subramanian, 2009)

Financial Distress: a state where a firm's operating cash flows cannot meet current obligations and the firm is compeled to resort to corrective action (Ross, Westerfield & Jaffe, 2005)

Receivable management: is the process of making decision resulting to the investment of funds in these assets which will result in maximizing the overall return on investment of the firm (Paramasivan & Subramanian, 2009)

Debt service coverage: Is the firm's ability of covering current obligations of fixed charge such as interest, dividend and other fixed charges payable currently (Tesfamariam, 2014)

Days of payables outstanding: a measure that expresses the average time that a firm takes before paying its creditors (Kroes & Manikas, 2014)

ABSTRACT

In Kenya many listed non-financial firms have gone under. The effect is loss of investors' funds and erosion of confidence in the bourse. The general objective of the present study was to establish the effects of working capital on financial distress of non-financial firms listed at the Nairobi Securities Exchange. This is because appropriate working capital in firms can strengthen cash flow levels, improve profitability, budgeting and forecasting process. To achieve this general objective the study sought to find out the effects of inventory, cash, receivables and payables on financial distress of non-financial firms listed at Nairobi Securities Exchange (NSE). Quite a number of studies show are plagued by gaps; for instance, in their study Khaliq et al. (2014) considered only government linked listed firms; Nzioki et al. (2013) considered only 9 manufacturing firms; Gill et al.(2010)'s study covering 3 years was insufficient to establish effectively the relationship between working capital management and profitability of American firms; in his methodology, Mawutor (2014) unilaterally analyzed the study variables where the joint effects of all the working capital elements on profitability was not captured by the model. The study employed quantitative research design. All the 41 non-financial firms listed at (NSE) as at December 2016 comprised the population of study. The study did not adopt sampling but used a census instead. Secondary data for a period of 10 years (2007-2016) was used for analysis. Descriptive statistics and multiple regression analysis techniques were employed. Fixed effects model was applied to model the relationship among the variables of study. The results of this study were expected to reduce losses through establishing strong working capital levels applicable in non-financial firms listed at NSE. The study's findings showed that cash had a positive and significant effect on financial distress; inventory had a negative and significant effect on financial distress; receivables indicated a negative and significant effect on financial distress; payables management indicated a positive and significant relationship with financial distress; firm value had a significant moderation effect on the relationship between working capital management and financial distress of non-financial firms listed at NSE. The study therefore recommended that in order to fix financial distress among non-financial listed firms good cash management, inventory management, receivables management, payables management ought to be embraced; firm value should be taken into consideration as a moderator in the relationship between working capital and financial distress of the non-financial firms. The study suggested a number of studies to be carried out: a study to investigate the effects of working capital management on financial distress among firms in East African Community; a study on working capital management and financial distress of small and medium sized firms in Kenya; Further empirical work was encouraged to test other measures like market demand conditions, political stability and financial contagion in addition to the four independent variables of the study; Lastly, a comparative study on the effects of working capital management on financial distress of non-financial firms listed in other countries was suggested.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Working capital management is crucial for investors or lending institutions who wish to protect their financial investments. It is also crucial for a firm's day to day operations (Kesimili & Gunay, 2011). According to Khanqah, Mohsen and Mohammadreza (2012) working capital management is instrumental in determining success or failure of a firm in business performance due to its effect on firm's profitability as well as liquidity. The study on working capital management in non-financial firms listed at NSE was done on four independent variables: payables management, inventory management, receivables management and cash management.

Working capital management is an act of planning, organizing and controlling the components of working capital like cash, bank balance, inventory, receivables, payables, overdraft and short-term loans (Paramasivan & Subramanian, 2009). It indicates to management whether the firm is well managed or not. If not well managed the management can therefore take corrective action. Competitors to the firm can use working capital management to identify their areas of weakness in order to take competitive edge. Working capital management ensures a company has sufficient cash flow in order to meet its short term debt obligations and expenses (Nimalathasan, 2010). These involve managing the relationship between a firm's current assets and its current liabilities. According to Eljelly (2004) working capital management refers to planning and controlling current assets and current liabilities in order to eliminate the risk of inability to meet due current obligation and avoid excessive investment in these assets. Therefore, firms must have an optimal level of working capital if they are to maximize their value (Kamara, 2014).

Takon and Atseye (2015) have also shown that efficient working capital management creates value for shareholders while a deprived policy or inefficient management

might affect the business in an appalling way and might cause a financial distress. More inventories and favorable trade credit policy may lead to higher sales. Firms with more inventories tend to reduce stock-out risk and also a good trade credit policy may enhance sales since it enables customers to assess products quality before making payment (Deloof, 2003). Moreover, accounts payable which is a current liability must be managed in a reasonable manner in terms of delaying payment to suppliers (Kamara, 2014). In addition, firms that have less competition would focus on minimizing the receivables to increase cash flow, while firms where there are large numbers of suppliers of materials focus on maximizing the payables (Ganesan, 2007). Hence, the way in which working capital is managed may impact significantly on firms' profitability (Deloof, 2003 & Barine, 2012). Firms follow an appropriate working capital management approach that is favorable to their industry (Takon & Atseye, 2015). Flexible trade credit policy and keeping very large inventories can cause finance to get locked up in working capital. This can in turn cause firms to have trouble with managing short term finance, reduce profitability of the firms and also affect the liquidity position of the firms (Kamara, 2014).

Working capital has been an interesting field of finance because it has a significant commitment in adding and decreasing the wealth of shareholders (Attari, 2012). According to Shahzad, Fareed and Zulfiqar (2015) working capital management contains extent parity of working capital segments, that is, debt holders, stock and payables and the utilization of money successfully for day by day business operations. Many listed firms do not synchronize their current assets with current liabilities. Huge differences in living up to expectations of capital practices are present among firms (Filbeck & Krueger (2005). The main aim of working capital management is managing the short term assets and short term liabilities appropriately and maintaining sufficient amount of both short term assets and short term liabilities. The management of the key ingredients of working capital like inventories, cash and receivables assumes paramount importance due to the fact that the major portion of working capital gets blocked in these assets (Paramasivan & Subramanian, 2009). Effective management of working capital implies administrating different parts of working capital in order to ensure that adequate amount working capital is kept up

for smooth running of a firm and for satisfaction of profitability (Media, 2010) as cited in Shahzad et al. (2015).

Good working capital management in firms can maintain liquidity, solvency, survival and profitability of business (Mukhopadhyay, 2004). Firms which are better at managing working capital are better at generating funds internally and face lesser problems while seeking external sources of financing (Quayyum, 2011). As a firm tries to maintain liquidity in its daily operations in order to meet its short-term obligations, asset-liability mismatch exists which enhances the firm's profitability in the short-run but at the risk of bankruptcy (Anand & Gupta, 2002). According to Takon and Atseye (2015) firms should choose the amounts of accounts receivable, cash and inventories they should maintain given the level of sales and cost values. High current ratio leads to low probability of financial distress for a firm (Tesfamariam, 2014).

Working capital management is very critical in financial distress. This is because poor working capital management may lead to financial distress of firms which can result into losses for employees, shareholders and the economy in general. The aim of working capital management is to guarantee that the firm has the capacity to reach its working costs and stay in a position to pay fleeting commitments as and when they fall due (Ukaegbu, 2014). A firm which cannot strike a tradeoff between borrowing and repayment can easily plunge into insolvency. Therefore, it is very essential to understand the relationship between working capital management and financial distress of firms listed in NSE in Kenya in order to reduce losses caused by financial distress.

1.1.1 Financial Distress of Non-financial Listed Firms: A global Perspective

Recent history indicate that there has been several corporate failures throughout the world (Mahama, 2015). In China many trading firms exhibit a deteriorating financial trend that is difficult to recover from (Altman, Heine, Zhang & Yen, 2007). To protect the interests of investors and as a message from the government that the investors should be aware of the default rate, China's Securities Regulatory

Commission decided in March 1998 to differentiate those firms in financial difficulties by launching a new policy to offer "special treatment" to such firms (Altman et al., 2007). These special treatment firms include; first, companies that had negative cumulative earnings over two consecutive years or net assets value per share below par value (book value); second, companies that had negative earnings for one year but the current year shareholders' equities are below its registered capital; third, companies that received the auditors' going concern opinion. These firms are pressed to improve their financial situation through reorganization, mergers. Those that exhibit no sign of financial improvement will have their shares deleted from the stock exchange (Altman et al., 2007).

In Turkey, a study carried out by Samiloglu and Demirgunes (2008) examined the effects of working capital management and profitability of a sample of 5843 Istanbul Stock Exchange quoted companies. The study covering a ten year period from 1998-2007 used multiple regression an analysis. Seven independent variables of working capital management were analyzed. The independent variables were inventory period, accounts receivable period, cash conversion period, firm size, leverage, firm growth and fixed financial assets. The study findings showed that accounts receivables, inventory periods and leverage had significant negative effects on company profitability. This meant that lengthening receivables and inventory periods and also increase in debt reduces profitability and vice versa. Moreover, firm growth had a significant positive effect on profitability, indicating that increase in sales grows profitability. The variables of cash conversion cycle, firm size and fixed financial assets were found to have no statistically significant effect on firm profitability.

In Ethiopia manufacturing firms face financial distress situation as a result of low level of debt service coverage (Basa, 2011). Financial reports of manufacturing firms indicate that on average the debt service coverage ratio is less than 50% (Basa, 2011). Hence the available funds cannot cover the principal and interest on the bank loan. The liquidity status of the firms, measured by current assets to current liabilities is far below the industry average. Since liquidity is not maintained a number of

highly leveraged firms are capable of renegotiating their debt contract if they have breached contract, instead they go for reorganization, acquisition, merger or liquidation. In 2009, when the Ethiopian government minimized subsidization for raw material price locally and increased tax, the effect was increased cost of production and squeezed profitability. Consequently many companies suffered big losses and cash shortage. Reduced liquidity and negative cash flow coupled with high leverage leads to financial distress (Outecheva, 2007). High levels of leverage in the firms and increasing volatility make equity vulnerable, so that each possible decline in the enterprise value may rapidly impair equity (Altman & Hotchkiss, 2005).

In Nigeria, numerous firms are experiencing challenges of insufficient working capital or illiquidity (Takon & Atseye, 2015). The mismanagement of working capital by firms has converted some viable investments with high rate of return into failures and frustrated out of business (Olugbenga, 2010).

1.1.2 Financial Distress of Non-financial Firms Listed at NSE in Kenya

Since independence, Kenya has experienced numerous cases of financial distress of quoted firms. This is evidenced by some companies facing financial restructuring and others being placed under receivership and subsequently delisted (Ong'era, Muturi, Oluoch & Karanja 2017). According to Gibendi (2015) firms that have gone under include Mumias sugar company, Webuye Paper Mills, Muhoroni Sugar Company, Uchumi Supermarket and Kenya Meat Commission.

Eighteen listed companies have issued profit warnings, an indication of tough economic times (Mwiti, 2016). In 2014, eleven listed companies issued profit warnings up from eight in 2013 an indication of tough economic times (Mwiti,2016). According to Kipruto (2013) failure of high profile public and private companies in the past include; Uchumi supermarkets (2006), Discount Securities (2008), Invesco insurance (2008), Standard Assurance (2009), Ngenye Kariuki Stock brokers (2010) and Hutchings Biemer (2010). Moreover, more than 56% of the

companies quoted on NSE had a downward trend on their market capitalization for the years 2011, 2012, 2013, 2014 and 2015 (CMA, 2016).

Companies listed at NSE have showed poor performance. For example, Kenya Airways reported a loss of Ksh 25.7 billion because of operational inefficiencies (Okoth, 2015), Mumias sugar company reported a loss of Ksh 3.4 billion (Gibendi, 2015), Uchumi supermarket creditors have sued for unpaid billions (Michira, 2016), Eveready East Africa Limited is exiting the Kenyan markets having lost Ksh 248 million (Aderibigbe, 2015).

1.1.3 Effects of Working Capital on Financial Distress

The effects of working capital management on financial distress have been the focus of considerable amount of theoretical and empirical research for a number of ears and in different environment. In US Shin and Soenen (1998) found a robust negative relationship between the length of the company's net trade cycle (a proxy of working capital management) and profitability. Moreover, in America Gill, Biger and Mathur (2010) study indicated that there is no relationship between cash conversion cycle, accounts receivable and performance. Nevertheless, the study found a significant negative relationship between accounts receivable and profitability

Deloof (2003) in studying a sample of 1009 Belgian non-financial companies found a negative and significant relationship between gross operating income and accounts payable, inventories and accounts receivable in days of Belgian companies. Lazaridis and Tryfonidis (2006) studied 131 companies listed in Athens Stock Exchange. The results showed that there is a significant relationship between gross operating profit (a proxy of profitability and cash conversion cycle (a measure of working capital management). In the context of Pakistan, Raheman and Nasr (2007) studied the effects of working capital management variables on net operating profitability. The working capital management variables considered were inventory turnover in days, average collection period, average payment period and cash conversion cycle. The results indicated that there is a strong negative relationship between these working

capital management variables and profitability of the companies. In Nigeria, similar results were found by Falope and Ajilore (2009)

In Malaysia, Zariyawati, Annuar, Taufiq., & Rahim (2009), using cash conversion cycle as a proxy of working capital management, found a significant negative relationship between cash conversion cycle and profitability. In Japan Nobanee and AlHajjar (2009) found a negative relationship between cash conversion cycle, inventory conversion period and receivables collection period and profitability. However, the findings showed a positive relationship between payables deferral period and profitability.

In Kenya, Mathura (2009) found a strong negative significant relationship between accounts collection period and profitability. Moreover, the study indicated a positive and significant relationship between inventory conversion period and profitability. In their study of liquidity as a financial antecedent to financial distress in listed companies at NSE, Ong'era et al. (2017) found that liquidity has a significant positive effect on financial distress.

1.1.4 Nairobi Securities Exchange

Nairobi Securities Exchange formerly called Nairobi Stock Exchange was established in 1994 (Kamara, 2014). Its establishment was informed by the need to sell shares of public companies listed at NSE and other private companies intending to go public. Today NSE is a major securities exchange market in East Africa with 61 companies quoted and categorized into industries. Included in those industries are the non-financial firms which are composed of 41 companies.

Until 2015, the NSE was grouped into 3 market segments. These are; main investment market segment, alternative investment market segment and fixed income market segment. The main investment market segment was further categorized into 4 sectors: agriculture, industrial and allied, finance and investment, and commercial services. However, these have been re-classified into 12 sectors in line with various sectors of the economy (NSE, 2015). These sectors include commercial and services

(9 companies), agricultural (7 companies) automobiles and accessories (3 companies), telecommunication and technology (1 company), insurance (6 companies) banking (11 companies) manufacturing and allied (9 companies), investment (2 companies), energy and petroleum (5 companies), construction and allied (4 companies), investment services (1 company) and growth enterprise market (4 companies). Hence there are 62 companies currently listed and trading on NSE (NSE, 2015).

1.2 Statement of the Problem

There is an upward trend of failure of Kenyan listed firms. In order for Kenyan economy to achieve its Sustainable Development Goals of becoming industrialized, the contributions from non-financial firms listed at NSE are critical. Despite their significance, several firms have been delisted from NSE. These are; Mumias sugar, Eveready Lonho East Africa, Pearl dry cleaners, East African Packaging and Uchumi supermarket (Wangige, 2016). Most of the non-financial listed firms experience challenges in striking a compromise between surplus and shortage of working capital. Consequently, the firms experience failure because of the inability to pay daily expenses of their operations and difficulty of exploiting new markets and undertake profitable projects because of shortage of working capital resulting from poor working capital management. Working capital management is crucial since it determines success or failure of a firm in business performance due to its effects on firm's profitability as well as liquidity (Khanqah et al., 2012). The aim of working capital management is to sustain the optimum balance of all working capital components and it is necessary for companies to monitor overall trends in order to detect areas that require closer management (Wambugu, 2013). These components of working capital include cash, receivables, inventory and payables.

It is however notable that in spite of the working capital management being such a critical determinant of a firm's health, past empirical studies have failed to provide conclusive evidence on how working capital management influences financial distress. Several studies have been done on working capital management and

financial distress. These studies have found contradictory empirical evidence. Amongst them the studies include Falope and Ajilore (2009), Raheman, Qayyum, and Bodla (2010), Kaddumi and Ramadan (2012), Widyastuti et al., (2017) and Dong and Su (2010). In spite of the studies employing different proxies of financial distress such as profitability, firm value, liquidity and growth in stock returns, they failed to agree on their findings.

Such conflicting empirical observation indicates that the relationship between working capital management and financial distress is vague and requires a more thorough investigation. Therefore, this study sought to address this scholarly gap. Unlike previous empirical studies whose investigations were premised on financial performance variables such as profitability and firm value, the present study established the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya by using Z- score as a measure of financial distress. Some studies have employed Z-score as a proxy of financial distress. For example, in studying the relationship of working capital with liquidity, profitability and solvency of ACC Ltd in the period 2000 to 2009 in India, Panigrahi (2014) used Z-score to measure solvency of the company. Since the Z-score was less than 3 in the study period the study concluded that the company's financial position was not good.

1.3 Research Objectives

To carry out the study the objectives were categorized into two. These were the general objectives and specific objectives

1.3.1 General Objective

To establish the effects of working capital management on financial distress of non-financial firms listed at NSE in Kenya

1.3.2 Specific Objectives

  i)   To examine the effects of cash management on financial distress of non-
        financial firms listed at NSE in Kenya

 ii)   To establish the effects of inventory management on financial distress of
        non-financial firms listed at NSE in Kenya

iii)   To determine the effects of receivables management on financial distress of
        non-financial firms listed at NSE in Kenya

 iv)   To examine the effects of payables management on financial distress of non-
        financial firms listed at NSE in Kenya

  v)   To establish the moderating effect of firm value on the relationship between
        working capital management and financial distress of non-financial firms
        listed at NSE in Kenya

1.4 Research Hypotheses

Ho_1: Cash management has no statistically significant effect on financial distress of
non-financial firms listed at NSE in Kenya

Ho_2:   Inventory management has no statistically significant effect on financial
distress of non-financial firms listed at NSE in Kenya

Ho_3: Receivables management has no statistically significant effect on financial
distress of non-financial firms listed at NSE in Kenya

Ho_4:   Payables management has no statistically significant effect on financial
distress of non-financial firms listed at NSE in Kenya

Ho_5: Firm value has no statistically significant moderating effect on the relationship
between working capital management and financial distress of non-financial firms
listed at NSE in Kenya

1.5 Significance of the study

The results of the present study would provide essential knowledge about the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya. The study findings would be of significant scholarly contribution as it would set the pace for future research in this field. Moreover, the results from the study would afford industry practitioners a vital reference point on the need by corporations to determine and maintain optimal working capital necessary to cushion firms against instances of financial distress. This would maximize shareholders' wealth and also ensure that the firms survive and grow. The research findings would also help the capital market regulator, Capital Market Authority (CMA) and other policy makers in formulating relevant mechanisms necessary to continuously supervise and evaluate the working capital of non-financial listed firms. This would be through identifying specific industry-based working capital requirements that would ensure that non-financial listed firms are not exposed to the risk of financial distress that leads to erosion of investors' wealth. The study would also be of great assistance to the government in crafting appropriate strategies and policies that enhance profitability of non-financial firms listed at NSE in Kenya. The study would also enable non-financial listed firms to adopt a robust working capital management to enable them survive and grow in turbulent conditions. Moreover, the study would equip financial analysts and equity fund managers with pertinent skills in effectively managing working capital in non-financial listed firms.

1.6 Scope of the Study

The study's target population comprised of all the non-financial firms listed at NSE in Kenya. The study did not include financial firms, banks and insurance companies, on grounds that the firms are subject to tight regulatory controls regarding liquidity requirements; which would distort the conclusions of the study. Moreover, according to Altman (2000), financial firms have a tendency to apply off-balance sheet policy in disclosing their financial assets and liabilities; with the effect that not all the reported assets and liabilities actually belong to the firm.

The study's secondary data was collected over the ten-year period from 2007-2016. There was increase in the number of listings at the NSE at the time. This favorable situation was therefore expected to be reflected in the final statements of the listed firms.

1.7 Limitations of the Study

In carrying out the study a number of limitations were encountered. Firstly, some non-financial firms did not qualify for analysis since they were recently listed. These include Kurwitu ventures, atlas development and support services in the growth enterprise segment that was first listed in 2013. However, this did not limit the study enough since these were small firms and were essentially represented by large counterparts that are analyzed in the study.

Secondly, there was a small number of non-financial firms listed at the NSE. This numbered to forty one during the study period. In order to overcome the problem the study focused on all the segments of the NSE in order to clarify how working capital management affects financial distress. Moreover, this increased the number of firm-year observations for objective analysis. Thirdly, the results of the present study may not be generalized to all listed non-financial firms. The results can be used as a point of reference to listed non-financial firms in developing countries since they face almost the same challenges due to the existing economic conditions unlike listed non-financial firms in developed countries.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviewed literature on working capital management variables and financial distress as shown in the conceptual framework. The chapter opened with theories postulated in the area of receivables management, cash management, inventory management, payables management and financial distress. Thereafter, a

conceptual framework was developed which laid the basis and linkages in establishing existing relationships among the variables of the study. The chapter also dealt with empirical review, critique of existing literature, a summary and a gap on working capital management which was bridged by the current study.

2.2 Theoretical Literature.

A theory is a set of interconnected concepts, definitions and propositions that provide a systematic view of events or situations by specifying linkages among variables in order to explain and predict events or situations (Van & Heaney, 1992). Theoretical literature deals with theories or hypotheses rather than practical application. Several theories explain relationships between working capital management and financial distress of entities. Some of the theories were discussed with their implications of financial distress.

2.2.1 The Baumol-Allais-Tobin Model

The aim of this model is to mitigate the sum of opportunity cost related to holding cash and trading cost related to converting other securities into cash. The underlying assumption of the model is that the firm holds a combination of marketable securities that can be easily converted into cash (Baumol, 1952). The model assumes that cash starts from a replenishment level and then decreases smoothly to zero. The financial manager has to make decision on the liquid funds between cash and marketable securities (Pandey, 2008).The model analyses the cash management challenges of firms. It is useful in establishing the target cash balances of businesses.

This model describes cash management and the general current asset management (Kamara, 2014).

For firms to determine optimum cash level, they must take into consideration costs; opportunity cost, trading cost and total cost (Kamara, 2014). Opportunity cost is the cost incurred for holding cash. According to Pandey (2010) opportunity cost is the interest foregone for funds held in cash instead of investing the cash. Interest is the

opportunity foregone for holding of cash. Trading cost is the cost resulting from trading in marketable securities during the fiscal period. Total cost is equal to the sum of the opportunity cost and trading cost (Kamara, 2014). The theory is plagued by a number of limitations; first it assumes a steady and certain cash outflow(Ross, Westerfield, Jordan, & Firer, 2000). However, disbursement rates are both variable and predictable. Secondly, the model assumes that no cash will come into the firm during the period being considered. However, most firms usually have cash inflows at all times and that the firms make more money than they pay out. Thirdly, according to Cornett, Adair, and Nofsinger, (2009) the model does not provide for any safety stock of extra cash to buffer the company in times of unexpected high demand for cash. The theory informs the cash management variable of working capital management of the study.

2.2.2 The Miller – Orr Model

The model was developed by Miller and Orr (1966). The model attempted to generate a more realistic approach to cash management over Baumol's model (Kombo & Wekesa, 2017). The model is based on the assumption that net cash flows are uniformly distributed with the value of the mean and standard deviation being zero. This model operates in terms of the upper and lower constraints of the firm's cash balance. Hence firms allow their cash balance to wander around between the upper and the lower limits. If the cash balance is between the prescribed upper limit and the lower limit, there is no problem (Kamara, 2014). If the cash balance strikes the upper limit firms' management buys marketable securities to restore the cash balance level.

Moreover, when cash balance strikes the lower limit firms' management sells marketable securities in order to bring the cash balance back to normal level (Ross et al., 2000). For proper utilization of cash in the firm there should not be excess or too little cash balance. For example, Padachi (2006) states that inadequate cash balance may result into stoppage in business operations. It is possible for a company to be profitable but without liquid cash. This can lead to interruption of the firm's

operations and eventually forced winding up of the company by its creditors. The theory informs the cash management variable of the present study.

2.2.3 Finance Theory

The theory is threefold; working capital, capital structure and capital budgeting (Aksoy, 2005). Whereas capital budgeting and capital structure decisions relate to management of long term investments, working capital decisions relate to financing and managing short term investments and concerns both current liabilities and current assets simultaneously (Wambugu, 2013). Good working capital management directly influences liquidity and profitability of any firm (Raheman & Nasr, 2007). Firms whose profits are consistently positive may face bankruptcy if their working capital management procedures are inaccurate (Karger & Bluementhal, 1994). Whereas excessive amount of working capital can lead a firm into substandard return on assets, insufficient amount of working capital may result into difficulties in maintaining day to day business activities. For small and medium sized and high growth firms working capital acts as a major source of capital. The firms' limited access to capital markets is overcome by short-term borrowing (Wambugu, 2013). A firm whose amount of working capital is high can meet its short-term obligations easier. The consequence of this is increased capacity of the firm to borrow and reduced default risk. This in turn leads to decreased cost of capital and increased firm value (Wambugu, 2013).

2.2.4 Agency Theory

An agency relationship is one in which one or more individuals (Principal(s) hires another (agent(s)) to execute the roles on their behalf (Jensen & Meckling, 1976). The Agency Theory explains how best the relationship between agents and principals can be tapped for purposes of governing a corporation to realize its goals. Since the owners of capital (principals) have neither the requisite expertise nor time to effectively run their enterprises, they hand them over to agents (managers) for

control and day- to -day operations, hence, the separation of ownership from control, and the resultant agency problems. Some corporate governance scholars (Lorsch & Carter, 2004; Leblanc & Gillies, 2005) also argue that at the heart of good corporate governance is not board structure but instead board process (especially consideration of how board members work together as a group and the competencies and behaviors both at the board level and the level of individual directors). This separation is however, linked and governed through proper agency relationship at various levels like, between shareholders and board of directors (BOD), between BOD and senior management, between senior management and subordinate levels of management (International Swaps and Derivatives Association, ISDA, 2002). In such principal-agent relationship, there are always inherent potential conflicts within a firm because the economic incentives faced by the agents are often different from those faced by the principals (ISDA, 2002). All companies are exposed to agency problems and to some extent develop action plans to deal with them (ISDA, 2002). Such action plans include establishing such measures as controls on the actions of agents, monitoring the actions of agents, financial incentives to encourage agents of the principals, and separation of risk taking functions from control functions (ISDA, 2002). Firms with greater growth opportunities have a lower level of debt given that great investment opportunities increase the possibility of agency problems between managers/owners and creditors, because the former have a great incentive to under-invest (Myers, 1977).

The theory is pertinent to the current study from the viewpoint of the financial manager. The financial manager acts as the agent of the owners (Principal) of a company.

The financial manager makes decisions regarding payables, inventories and receivables of an entity (Aminu & Zainudin, 2015). Creditors provide finance to the company with the expectation of settlement of their loans as scheduled. Stockholders provide capital to the firm while expecting maximum return from their investment. Employees and management provides the firm with requisite skills as they anticipate favorable working environment and fair remuneration. Customers offer revenue to an

entity while expecting value for money and quality services. Suppliers provide input to the firm in anticipation for fair prices. Because of differences in stakeholder expectations agency relationships arise.

In the present study the managers of listed firms at NSE act as agents and must act in good faith to fulfill the principles of the principal in order not to plunge the firms into financial distress. The theory informs the variables of inventory management, receivables management, cash management and payables management. Failure to address the principal agent problems may lead to poor working capital management. Cash mismanagement practices like fraudulent practices arise. Economic order quantity will not be observed under inventory management. Receivables and payables will not be collected and paid respectively when they fall due under principal agent problems. These negative practices brought about by principal agent problems lead to financial distress of listed firms

2.2.5 Resource Based View Theory

Firms are viewed as a collection of resources that they exploit to generate competitive edge (Barney 1991). The superior performance of a firm which leads to their competitive advantage is based on their tangible and intangible resources that are heterogeneously distributed across the firms. The tangible resources can be categorized into physical capital and financial capital resources. The resources have been operationalized differently (Nothangel, 2008). For example physical assets were measured by Farjoun (1998) as the sum of other tangible assets and raw materials. Financial resources were measured by Chatterjee and Singh (1999) using current ratio and leverage ratio; property based resources like buildings were used by Miller and Shamsie (1996). The resources can be human or material. Jiang (2014) posits that firms can take competitive edge if their resources have a low cost.

This theory explains a firm's ability to deliver sustainable competitive advantage when resources are managed so that competition cannot imitate their outcomes, which ultimately creates competitive barrier (Mahoney & Pandian 1992, cited by Hooley and Greenly 2005. According to Makadok (2001) a firm may reach a

sustainable competitive advantage through unique resources which it holds and these resources cannot be easily bought, transferred or replicated and simultaneously, they add value to a firm while being rare.

This theory is relevant to the current study because listed firms need to manage well the resources of cash, inventory, receivables and payables. The theory informs cash management, inventory management, receivables management and payables management variables of the current study. The theory includes the cognitive capability of management to effectively manage short-term assets of an entity (Working capital) (Alvarez & Busenitz, 2001). Hence managers possess resources that recognizes new opportunities, effectively assemble resources, make payments, collects accounts receivable when they fall due in ensuring that working capital is effectively managed and eventually the firm's profitability (Aminu & Zainudin, 2015).

2.2.6 Keynesian Liquidity Preference Theory

The theory was developed by Keynes (1936) and states that rational investors prefer liquid investments to illiquid investments and seek a premium for longer maturing investments, holding all other factors constant. Therefore, the main reason for holding cash is liquidity. According to Bitrus (2011) a firm holds money for the following motives: to meet their daily business transactions; for speculative motive like to invest; for precautionary motive such that if anything happens they can manage; for compensation motive to meet employees obligation in the payroll. The theory is relevant to the present study since there is a dire need for non-financial firms listed at NSE to have sufficient liquidity capable of supporting their day to day activities.

The objective of working capital management is to enhance both liquidity and financial performance (Pandey, 2010). Although Gakure, Cheluget, Onyango, and Keraro (2012) stated that there is a negative and significant relationship between a firm's liquidity and its financial performance, firms should ensure that they minimize their total cost of liquidity and the cost of illiquidity.

2.2.7 Corporate Risk Management Theory

The theory states that shareholders are better off when a firm maintains smooth cash flows (Minton & Schrand, 1999). Smooth cash flows reduce a firm's dependence on external finance. This can add value to the firm since external finance is costly. Investors place more value on firms whose cash flows are smooth than those whose cash flows are volatile (Wamhbugu, 2013). Earnings volatility is important to the firm independent of cash flow volatility (Wambugu, 2013). High earnings volatility increases the probability of negative earnings surprises. Firm managers undertake extensive earnings smoothing which can reduce a company's possibility of default and hence a firm's cost of borrowing.

A company may smooth earnings in order to mitigate informational advantage of informed investors over uninformed investors. This shields these investors who may need to trade for liquidity purposes. Capital Asset Pricing Model (CAPM) is another way in which financial uncertainty interacts with value of the firm. CAPM holds that systematic risk should be negatively correlated to value, because higher discount leads to a lower value, all things held constant (Wambugu, 2013).

2.2.8 Free Cash Flow Theory

With regard to excess cash flows there exists a difference in interests between managers and shareholders. Managers would strive for retention of excess cash flow and invest in value reducing projects. The value reducing projects are projects whose net present values is negative. One of the means of controlling managerial behavior is capital structure (Kombo &Wekesa, 2017). The use of debt minimizes cash flow at the discretion of managers for spending and it forces them to pay out future cash flows.

Shareholders are faced with the challenge of forcing managers to pay out cash flows instead of retaining them. Therefore, the theory predicts that Chief Executive Officer's announcements have an adverse effect on stock returns and performance because it increases free cash flow available for poor spending (Kombo &Wekesa,

2017). Furthermore, the theory predicts in as much as the number of opportunities with positive NPV is limited, the firms will face a decrease in performance following equity issue

2.2.9 Theory of Credit

The theory was first postulated by Emery (1984). The theory states that credit rationed firms use more trade credit than those firms with access to lending institutions. Therefore, for a firm under financial constraints, trade credit can provide for the reduction of credit offer from lending institutions (Kombo & Wekesa , 2017). Hence firms whose access to capital markets is better can finance the credit rationed firms. To support this assumption, Nielsen (2002) used small firms to proxy for credit rationed firms to find that in the presence of monetary contraction, small firms' reaction is to increase the amount of trade credit accepted. Since firms that are not constrained financially are unlikely to demand trade credit, there is an expected negative relationship between a buyer's access to other financing sources and trade credit

2.3 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of inquiry and used to structure a subsequent presentation (Kombo & Tromp, 2009). The conceptual framework for the current study indicated the relationship between receivables management, cash management, inventory management, payables management (working capital) and the dependent variable; financial distress and also the moderating influence of firm value on the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. Figure 2.1 conceptualized that inventory management, cash management, payables management and receivables management influence financial distress of non-financial firms listed at NSE in Kenya and also that firm value moderated the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya.

Independent Variables　　　　　　**Moderating variable**　　　**Dependent Variable**

Ho$_1$

| CASH MANAGEMENT |
| • Cash Conversion Cycle |

INVENTORY MANAGEMENT
• Inventory collection period

Ho$_2$

RECEIVABLES MANAGEMENT
• Average collection period

Ho$_3$

FINANCIAL
DISTRESS

• Altman's   z-
  score

PAYABLES MANAGEMENT
• Days of payables outstanding(
  DPO/APP)

Ho$_4$

FIRM VALUE
• Market value of equity
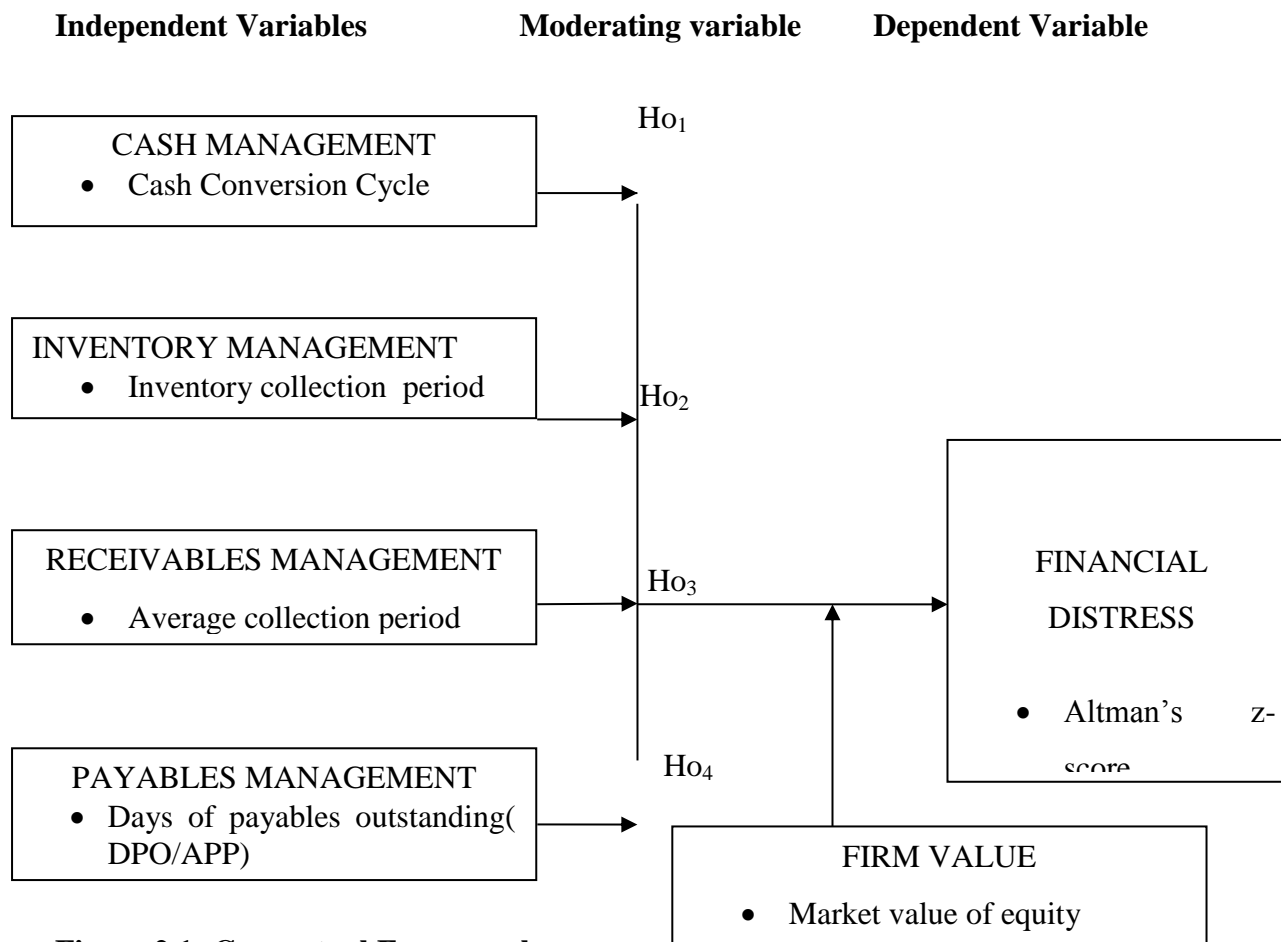
Figure 2.1: Conceptual Framework

2.4 Review of Variables

The study variables were reviewed in the following subsections

2.4.1 Cash Management

Cash management is the planning and controlling cash flows into and out of the firm and cash balances owned by a firm (Pandey, 2004). Efficient cash management means reduction of the cash conversion cycle in such a way that cash can go fast through the cycle of activities (Soaga, 2012). Efficient cash management involves the determination of the optimal cash to hold by taking into consideration a balance between the opportunity cost of holding too much cash and the trading cost of holding too little cash (Ross, Westerfield, & Jordan, 2008). This is expected to minimize costs such as lost opportunities due to lack of funds and interest costs. Cash management is more important than other current assets since cash is the most important asset that a firm holds (Uwuigbe, Uwuigbe & Ben-Caleb, 2012). It is essential to every firm with a craving to meet its short-term financial obligations.

One of the standard measures of cash management is Cash Conversion Cycle (CCC) (Wanjiku, 2013). CCC is the period of time from buying raw material, converting to finished goods, sales products, and collecting accounts receivables (Mansoori & Muhammad, 2012). CCC represents the time required to convert cash investments in supplies into cash receipts from customers for goods or services rendered (Kroes & Manikas, 2014). It is calculated by the formula: CCC = ACP + ICP - APP. As CCC increases profitability reduces and hence managers could create value for shareholders by reducing the cash conversion cycle (Raheman & Nasr, 2007).

Strategies for managing cash include cash planning, managing the cash flows, optimum cash level and investing surplus cash. In cash planning cash inflows and outflows should be planned to project cash surplus or deficit for each period of the planning period. This is achieved by preparing a cash budget. A cash budget aids in the planning for and control of cash receipts and payments. According to Pandey (2010) a cash budget summarizes the firm's expected cash inflows and outflows over

a projected duration of time. It is useful to a financial manager in determining the firm's future cash needs, planning for financing the needs and exercising control over the liquidity of the firm. The time frame of a cash budget differs across firms.

2.4.2 Inventory Management

Inventory is an asset which firms must carry in order to provide goods to their customers in a timely fashion. It consists of raw materials, work in progress, finished goods, extra material and consumption materials. Inventory management is a challenging task for working capital managers who would like to reduce the inventory in order to minimize the cash conversion cycle and reduce costs (Rimo & Panbunyuen, 2010). Inventory management is the effective control and administration of inventories (Paramasivan & Subramanian, 2009). Inventory control implies a mechanism that ensures the timely supply of the required quantity and quality of inventories while at the same time preventing unnecessary investment in inventories. This requires inventory management techniques. Reduction in inventory may lead to reductions in customer service (Kroes & Manikas, 2014). Reducing inventory close to zero increases the probability of running out of materials useful in the production or running out of finished goods during a high demand. This is costly for any company due to the revenues they would lose (Maness & Zietlow, 2002). However, by holding inventory cash invested in inventory is not free. This forces a firm to suffer carrying costs.

Stock is among the major working capital component in a business (Teale, 2015). Hence, an optimal inventory level is required in a firm to ensure continued operations (Lwki, Ojera, Mugenda & wachira, 2013). Therefore, inventory management shuolb be treated a s part of every organization's overall strategic plan (Godana & Ngugi, 2014). Inventory ensures that a firm remains a going concern and if insufficient will lead to loss of customers and plummeted revenue. Efficient nventory management reduces unnecessary wastages and ensures that stock is available when required (Asaolu, Agorzie & Unam, 2012). It also ensures that a firm

survives and that shareholders' wealth is maximized. It further enables affirm to balance between liquidity and profitability (Aminu & Zainudin, 2015).

According to Kroes and Manikas (2014) inventory reductions may reduce holding costs and free up cash that can be reinvested to increase sales. Literature suggests that shorter inventory holding periods improves liquidity and better firm financial performance (Capkun, Hameri, & Weiss, 2009); Chen, Frank, & Wu, (2005); Koumanakos, (2008); Swamidass, 2007). Although lowering inventory may expose a firm to a risk of stock-outs, in practice firms often reduce inventories without sacrificing service through methods including lean/just- in- time management, programs, automated replenishment systems, vendor management inventory (VMI) programs, and consignment inventory programs (Achabal, McIntyre, Smith, & Kalyanam, 2000; Harrington, 1996; Myers, Daugherty, & Autry, 2000). These programs lower inventory levels by substituting additional inventory with better information, which has been shown by Milgrom and Roberts (1988) to reduce inventory levels effectively without damaging performance. However, too little inventories might lead to interruption of operation in manufacturing, increase the possibility of losing sales and consequently lower the returns of the firms (Wambugu, 2013).

 Bernard & Noel, (2012) asserts that there is a significant relationship between inventory, sales and profits (as cited in Munene & Tibbs, 2018). According to Namazi (2012) inventory management impacts on a firm's performance (as cited in Munene & Tibbs, 2018). Singhal (2005) has shown that excessive inventory levels are related to poor operational and financial performance. Too much inventory can lead to financial distress. Dimitrios and Koumanakos (2008) suggests that too much inventory could demand more physical space, could lead to a financial distress, and increase the possibility of inventories damages, deterioration and losses.

Inventory management is one of the tools that can improve asset productivity, target customers and place a company's products in various markets. Efficient inventory management may increase a company's competitiveness and market share. Good

inventory management may make a company take competitive edge over its competitors and hence improve the company's financial performance (Isaksson & Seifert, 2014). Good inventory management facilitates growth of a firm since firm productivity has a direct relationship with volume of production which is further directly proportional to the quality of the product (Adesuyi, Nwekpa & Bassey, 2017).

The main goal of inventory management is to set the right days of inventory outstanding. Days of inventory outstanding measures the average time that goods are held in inventory before they are sold (Kroes & Manikas, 2014). Days of inventory outstanding is also called inventory collection period (ICP). ICP is used to measure inventory management (Deloof, 2003) and it is the time it takes a firm to convert inventory held into sales.

To ensure optimum inventory a firm can use one of the techniques, Economic Order Quantity (EOQ) to manage inventory. Efficient inventory management practices involve knowing how much should be ordered and when it should be ordered (Wanjiku, 2013). This relates to determining the economic order quantity and analysis of the costs of maintaining certain levels of inventory (Ross et al., 2008). Inventory management costs include the cost of holding too much stock and the cost of holding too little stock (Wanjiku, 2013). EOQ is the level of inventory that keeps the total of ordering and carrying costs to a minimum (Pandey, 2010). It is calculated by the the formula:

$$EOQ = \sqrt{2ab/c}$$

where: a = annual usage of inventories

        b = buying cost per order

        c = carrying cost per unit

2.4.3 Receivables Management

Accounts receivable is the rate at which a business collects payments from its customers (Sharma & Kumar, 2011). It is the money owed to a firm when it sells its products or services on credit and the firm does not receive cash immediately (Pandey, 2004). The average number of day's accounts receivable is used as a proxy for accounts receivable management. Efficient receivables management involves a shortened creditor's collection period, low levels of bad debts and a sound credit policy which often improves the businesses' ability to attract new customers and accordingly increase financial performance (Ross et al., 2008).

According to Subramony (2009) efficient receivables management is characterized by a short creditor's collection period, minimized bad debts and a good credit policy improves the firm's ability to attract new customers and hence increases the firm's financial performance. Managing accounts receivable consists in managing the firm's receivables and inventory in order to establish a trade-off between risk and returns and hence contribute positively to value creation (Kennedy, 2014). A sound accounts receivable policy reduces days for the accounts due (Michalski, 2012).

Bellie et al. (2000) argued that accounts management should not be treated as to customers' inability to pay but the organization's ability to identify accounts at risk in advance to enable proactive management of a customer before the organization plunges into bankruptcy (as cited in Kennedy, 2014). In making credit granting decision, net present value (NPV) technique is used (Pandey, 2010). If NPV is positive then credit is granted, otherwise credit is denied. NPV is the subtraction of present value of lost investment in payment not received from receivables from present value of payment received from receivables.

Firms which appropriately manage accounts receivables identify the basic accounts receivables drivers, optimum level of accounts receivables to hold in order to mitigate risk, adequately prepare for uncertainty and enhance the overall performance of the business (Lamberson, 1995, cited in Kennedy, 2014). A well-managed firm maintains average collection lower than average payment period in

order to reduce investment in receivable and also meet its short term obligations timely (Shin & Soenen, 1998). The main objective of accounts receivable is to attain an optimum balance between cash flow components (Gill et al., 2010). The optimum accounts receivable is the one which maximizes the value of a firm when marginal rate of return of an investment is equal to the marginal cost of funds used to fund the investment (Sundgren & Schneeweis, 2010) as cited in Munene and Tibbs (2018). A high level of accounts receivable ratio on profitability may result into a negative effect. This is because if a company has a large number of debtors, they may run short of cash leading to difficulty in meeting their short-term financial obligations. In conducting its day to day operations a firm should strike a trade-off between liquidity and profitability. Liquidity is a prerequisite for a firm to meet its short term obligations and its continued flow can be guaranteed from a profitable business.

Accounts receivable constitute a substantial part of current assets and play a critical role in a firm's performance, risk and value (Smith & Jay, 2010) as cited in Munene and Tibbs (2018). Management of accounts receivable is important. Firstly, it creates value and can enable businesses take competitive advantage (Deloof, 2013). Secondly, it has a direct effect on the liquidity and profitability of a firm (Pandey, 2010). A high level of current assets and also a low level of current assets may impact negatively on a firm's profitability and difficulties in a firm's operations (Duru, Ekwe & Okpe, 2014). Efficient accounts receivable enables a firm to improve on its profitability by decreasing the transaction costs of accessing funds in case of liquidity crisis (Ahmet, 2012).

2.4.4 Payables Management

Accounts payable is the liability that comes from credit sales and is posted as a sum receivable by the seller and accounts payable from the buyer (Thuvarakan, 2013). It is a form of short term debt. Buying goods on credit and then selling them on credit to customers is a cheaper form of finance than an organization taking a bank overdraft to finance credit sales (Arnold, 2008). Effective management of trade credit

is important and a company should ensure that suppliers are receiving the payment on time to make them satisfied (Thuvarakan, 2013).

Extending the payment cycle will allow a firm to hold on to cash longer, resulting in improved liquidity (Stewart, 1995). However, when a firm extends its payment cycle it foregoes early payment discounts and possibly harms its relationships with suppliers (Fawcelt et al., 2010) as cited in Kroes and Manikas (2014). According to Raghavan and Mishra (2011) when a supplier is starved of cash due to long period payment cycles, the overall supply chain may be impacted negatively over the long term. Long payment cycles also may force a firm's suppliers to provide lower levels of service (Timme & Wanberg, 2011).

Days of Payables Outstanding (DPO) is a measure that expresses the average time that a firm takes before paying its creditors. DPO is also called Average Payable Period. APP is the time taken to pay suppliers and is used as a proxy of accounts payable (Deloof, 2003). The management of creditors and suppliers is essential as slow payment by a firm may create ill-feeling and can signal that the business is not doing well (Wanjiku, 2013). Paying the debt on time will improve the company's image and hence will prevent any legal action taken by creditors. Moreover, the opportunity cost of maintaining high accounts payables may harm the firm if early payment discount is offered (Ruichao, 2013). However, delaying bills payments acts as a source of financing. A financially distressed firm has an alternative of restructuring its debt. Deciding whether a specific accounts payable turnover rate is good or bad requires additional information. This is through calculating how long, on average, it takes the firm to pay (Fabozzi & Peterson, 2003). If accounts payable a firm generates on a typical day and its typical balance of accounts payable is known, it can compute the number of days' worth of payables it has in accounts payable.

Number of days in accounts payable depends on a firm's credit terms. If the ratio exceeds the days in the firm's credit terms then the firm is, on average, paying late. If the calculated ratio is less than the days in a firm's credit terms then the firm is, on average, paying too early. Accounts payable management is a balancing act: the cost

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of trade credit must be balanced against the cost of alternative sources of financing (Fabozzi & Peterson, 2003).

In case there are varied credit terms a classification of accounts payable into three groups is necessary. These groups include; one, payables that are still within the discount period; two, payables that are beyond the discount period yet are not overdue and; three, payables that are overdue. This classification would enable the firm to focus on why each of the accounts payable is not paid when due and why discounts were not taken (Fabozzi & Peterson, 2003). This allows a firm to plan for discounts that can be taken in the near future

2.4.5 Firm Value

Shareholders' wealth maximization is one of the corporate goals. A firm's value is determined through different parameters (Precha, 2004). But the most important ones relate to profitability and liquidity. An important measure of the shareholders' wealth is the market value of a firm (Adenugba, Ige & Kesinro, 2016). The author suggests that a firm's value can be obtained by the market value of all its outstanding shares. This is a popular method of valuing public corporations. The second measure of firm value is the accounting net worth or book value. This measure is problematic because the accounting rule in a model may be at variance with the generally accepted principles of financial accounting (Adenugba et al., 2016). This is due to the fact that conformance with some generally accepted principles like historical cost and conservatism can lead to values that are far from what is reasonable. The third measure of firm's value is the capitalized value of its projected future performance with the limitation that it requires at least one arbitrary parameter

The fourth measure of firm's value is the deductive application of human judgment. Here firms are rated along a psychometric scale. The results are then converted by formula to monetary values. This method is plagued by subjective judgment. The fifth measure of firm's value is the firm's accounting net worth adjusted for intangible and the idiosyncrasies of accounting rules used in simulation (Adenugba et al., 2016). This method does not require arbitrary parameter and can be

completely objective. It is plagued by the fact that it requires detailed knowledge of imitation used in any particular model

The market value measure of determining the value of a firm is the most reliable and direct way of determining the value of a firm. The method is also called market capitalization, that is, total value of all shares outstanding (Adenugba et al., 2016). However, the method only works for publicly traded companies where shares value can be easily determined. It is a usual method of valuing companies whose stocks are publicly traded (Kanyugi, 2016). The market value of a firm (firm's market capitalization) can be determined by obtaining a product of the number of outstanding shares and the current stock price (Adenugba et al., 2016).

During the period of distress, an entity incurs various costs whether directly or indirectly which often affects its ability to generate returns and consequently lead to a reduction in the value of the entiry (Kanyugi, 2016). The direct costs of financial distress include restructuring fees, auditor's remuneration, management compensation, management consultancy fees paid to lawyers. Indirect costs of financial distress are costs incurred by an entity purposely to react to the actions taken by stakeholders of the company such as employees, suppliers, investors and shareholders (Pandey, 2010).

Financial distress principal suppliers restrict or suspend their supplies for fear of losing their funds in the event of liquidation of a financially distressed entity. The already troubled entity becomes unable to turnaround since financiers and investors shy away from providing the required capital injection to the entity (Kanyugi, 2016). Consequently, this hampers the production process due to unavailability of required resources like supplies for use in the production line and finances to acquire new assets or replace impaired ones.

Moreover, employees of a financially distressed firm develop reduced motivation and they also agitate for revision of their terms of service. They take most of their time looking for better opportunities since they feel the company in its financial distress may not meet their growth targets. Eventually, most of the employees with

valued expertise either leave the financially distressed firm for another company with a high competitive remuneration package or renegotiate their compensation packages. Reduced productivity coupled with replacement of talented employees leads to direct cost on business and often destroys the company's reputation and value (Kanyugi, 2016).

In the same vein financial distress may lead to loss of market share to competition. As competitors may execute an aggressive strategy aimed at attracting customers of the troubled entity through price wars, the distressed entity may be forced out of the market (Outecheva, 2007). Managers of a distressed firm are often tempted to misappropriate the entity's assets and resources and they also become more risk averse (Pandey, 2010). Consequently, short term decisions and interests are attended to at the expense of long-term strategies that would sustain the business in the long-run. As a result, investments in quality of the products and support through acquisition of the appropriate assets are given a low profile (Kanyugi, 2016). Further, accountability is lost since focus shifts to management of liquidity to avoid deepening the crisis.

Financial distress therefore results into weakening of a financial system of the troubled entity and prejudices the rapport between the entity and various stakeholders including employees. Employees become strained and their motivation levels reduce resulting in a negative impact on the entire organization structure (Kanyugi, 2016). Loss of key employees is detrimental to the survival of the already strained entity and can easily force the entity into liquidation (Outecheva, 2007).

Kanyugi (2016) studied the effects of financial distress on value of firms listed at NSE. The author employed Logarithm of market capitalization to measure value of firms listed at NSE. The study sampled 34 companies listed at NSE over a five -year period from 2011 to 2015 to find a robust positive relationship of 74% between the logarithm of market capitalization and the Altman's Z- score.

2.4.6 Financial Distress

Financial health of firms is an important indicator of the company's performance to both investors and management. Investors prefer to invest in those companies which are financially healthy since the risk of default is minimized for the firms. Financial distress has been studied by numerous researchers but little effort has been made by the studies to establish the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. A study by Khaliq, Actarturi, Thaker, Harun, and Nahar (2014) to determine financial distress measurement among 30 Government Linked (GLCs) listed firms in Malaysia in the period from 2008 to 2012 used Z- score model. The study identified current ratio and debt ratio to be determinants of financial distress. The study is in consonance with Suleiman (2001) in which current ratio is positively related with financial distress. The study findings reflect that the debt borrowed by GLCs firms have an association with financial distress. The findings of the study indicate that both variables (current ratio and debt) and Z- scores that determine financial distress of GLCs are related. The study further recommended the use of other models in future including logit analysis and artificial networks. The target population of the study was only Government Listed Companies in Malaysia. The study did not cater for private listed companies. The present study sought to fill this gap by studying non-financial firms listed at NSE in Kenya.

Lizal (2002) examined the determinants of financial distress. The study's findings showed that state - controlled firms are less prone to financial distress. The study analyzed the trinity causes of financial distress: neoclassical (when the allocation of assets is inappropriate), financial and bad management. However, in Kenya, there is a tendency of state controlled firms going under. The current study sought to study all non-financial firms listed at NSE, state controlled firms included, in order to establish the relationship between working capital management and financial distress of non-financial firms listed at (NSE) in Kenya. Basa (2011) examined financial distress and its determinants in selected beverage and metal manufacturing firms in Ethiopia in the period from 1999 to 2005. Employing multiple regression, the study

findings indicated that profitability, firm age, liquidity and efficiency have positive and significant influence on debt service coverage as a measure of financial distress. Leverage was also found to have a negative and significant relationship with debt service coverage. In the same vein the study also found that operational viability and good corporate governance have no significant impact on the status of firm's financial distress. Debt service coverage is earning after tax plus depreciation and amortization expense minus tax plus interest divided by principal plus interest or coupon. According to Basa (2011) financial distress is dependent on debt service coverage and is determined by liquidity, leverage, profitability, operational viability, firm size, efficiency and error term. The current study contemplated that financial distress is dependent on working capital management.

Altman et al. (2007) studied corporate financial distress diagnosis in China. The study used a local model Z_{China} score to support identification of potential distress of firms in China.

The model which is similar to the Z- Score contains four factors, which include asset liability, working capital, return on total assets and retained earnings ratio. The model was used on the proposition that it may not be practical to directly apply those models or methodologies developed elsewhere to support identification of distressed situations in china (Altman et al., 2007). This is because there are disparities in the accounting procedures and the quality of financial documents between the firms in China and those in the Western world (Altman et al., 2007). However, there is a dire need for a universal model applicable anywhere to indicate the relationship between financial distress and working capital management. It is on this background that the current study sought to use panel data model to establish the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya.

2.5 Empirical Literature Review

2.5.1 Studies on Cash Management and Financial Distress

Hau (2017 examined the effect of free cash flows on the performance of manufacturing and real estate firms quoted in Vietnam. The study findings indicated a positive relationship between cash flows and profitability of firms in all sectors. Bhutto, Abbas, Rehman and Shah (2011) investigated the relationship between cash conversion cycle with working capital approaches, firm size and firm's profitability in Pakistan. The study sampled 157 non-financial firms listed on the Karachi Stock Exchange, Pakistan. Financial statements were used to collect secondary data of the companies in the year 2009. The study excludes firms with negative equity and profitability. Data was analyzed using Karl pearson's correlation coefficient and Analysis of Variance (ANOVA). The findings showed that cash conversion cycle has negative relationship with sales, return on equity (ROE) and the firms' financing policies. However, cash conversion cycle was found to have positive relationship with return on assets, total assets. The studies constantly predict that the actions that reduce the cash cycle and increase liquidity will enhance firm performance (Kroes & Manikas, 2014). Moreover, liquidity results into a firm's growth by increasing working capital adequacy and ideal cash investment (Ong'era et al., 2017).

Altman (1968) suggests that those firms with low values of liquidity are more prone to financial distress because cash constrained firms are more exposed to exogenous negative shocks to cash flow. The inability of a firm to meet its current obligation shows a high probability of financial distress. This Implies that liquidity is an essential determinant of financial distress (Pranowo, Achsani, Manurung, & Nuryartono, 2010).

Numerous studies have suggested that there is a positive link between liquidity and performance. The studies include Cheluget (2014); Ndirangu (2013); Njeru (2016); Omondi and Muturi (2013). However, other studies have indicated that liquidity is negatively related with financial performance. Yet other studies have proved that liquidity and financial performance have a null relationship. Jakpar et al. (2017) studied the effects of working capital management on performance of a firm. The

study covering 5 years in the period 2007 to 2011 sampled 164 firms quoted on the Main Board of Bursa Malaysia to conclude that cash conversion cycle has no control over the profitability of a firm.

Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The study's objective was to establish a relationship between profitability as measured by return on assets and working capital elements, cash conversion cycle, average collection period and inventory turnover days. Size, growth and leverage were control variables identified. Using regression analysis the study established the relationship between cash conversion cycle, average collection period, average payment period and inventory turnover days. Each of the four variables was used as a proxy for working capital management and analyzed unilaterally. The study found that cash conversion cycle had a significant negative coefficient. The implication of the study was that if a firm decreased cash conversion period, profitability increased.

Uwuigbe et al. (2012) examined the relationship between cash management and corporate profitability in selected manufacturing firms in Nigeria. Cash conversion cycle was used as a proxy for cash management. The study used current ratio, debt ratio and sales growth as control variables.

The study employed Pearson's correlation and regression analysis to analyze secondary data obtained from a sample of 15 listed manufacturing firms in Nigeria for 5 years between 2005 to 2009. The findings indicated that there is a robust negative correlation between cash conversion cycle and profitability of the firms. To create positive value for shareholders the study recommended that managers should reduce cash conversion cycle while keeping accounts receivable at an optimum level.

Ebben and Johnson (2011) examined the relationship between cash conversion cycle, liquidity, invested capital and performance of a sample of 879 small US manufacturing firms and 833 small US retail firms. Cash conversion cycle was found to have a significant relationship with liquidity, invested capital and performance in the small firms. Firms whose cash conversion cycle were more efficient were found

to be more liquid, needed less debt and equity financing and had higher returns. Hence, cash conversion cycle was a proactive management tool for small business owners.

Abbasi and Bosra (2012) investigated the effects of cash conversion cycle on operational gross profit to assets ratio for firms listed on Tehran Stock Exchange in the period 1998 to 2009. The relationship between cash conversion cycle components and 12 control variables were tested in a regression model. The results indicated that cash conversion cycle and the number of days of inventory holding had no significant effect but accounts receivable and accounts payable showed a significant negative effect on operational gross profit to assets ratio.

2.5.2 Studies on Inventory Management and Financial Distress

In studying the relationship between inventory management and working capital management Singh (2008) found that firms with poor inventory management acumen can cause serious problems which destroy the long-term profitability and firms' survival chances. The study also indicated that firms with well-thought inventory management can reduce the inventory to an optimal level which has also negative effect on production and sales. Garcia- Teruel, Pedro, and Pedro, (2007) used 8872 Spanish firms in the period from 1996 to 2002. The study findings indicated that profitable firms convert the inventories into finished goods within a short period.

A study by Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The study's objective was to establish a relationship between profitability as measured by return on assets and working capital elements, cash conversion cycle, average collection period and inventory turnover days with size, growth and leverage as control variables. Using regression analysis the study established a positive relationship between inventory turnover and return on assets. The study findings indicated that the time taken by a firm to sell its inventory has an effect on its profitability.

Egbide et al.(2009) analyzed working capital management and profitability of firms listed in Nigeria for the period 2005 to 2006 and 1995 to 2005. Using pooled regression technique and ordinary least squares the study found that average age of inventory directly affect profitability. Khan, Deng and Khan (2016) analyzed inventory turnover performance within a Chinese supermarket. Data from internal database for 41 months was used. The analysis revealed that there is negative correlation between inventory turnover and profit margin percentage.

Shardeo (2015) investigated the impact of inventory management on financial performance of the firm. Using correlation analysis on secondary data from three major manufacturing industries of India the study found an impact of inventory management on financial condition of the firm. The study covered the period of 5 years from 2010 to 2014. Alan, Gao, and Gaur (2014) examined the efficiency of inventory in predicting future stock returns. Data for 25 years of the study was analyzed. The study used four-factor model of Fama and Carhart to conclude that changes in productivity of inventory can explain stock returns. Hence, changes in productivity of inventory could be used to predict stock returns.

Makori and Jagongo (2013) studied the relationship between working capital management and performance of manufacturing companies quoted at NSE. Twenty companies were analyzed for a period of 5 years using principal components analysis and multiple regressions. The results indicated a positive relationship between inventory collection period and profitability.

Nyamao, Patrick, Martin, Odondo, and Otieno (2012) examined the effect of working capital management on performance of small scale enterprises (SSEs) in Kenya. The study used pearson's correlation coefficient and multiple regression on 113 SSEs. The results showed that financial performance is directly related to efficiency of inventory management.

 Gakure et al.(2012) examined the relationship between working capital management and performance of firms listed at NSE. The study analyzed 15 manufacturing firms in the period between 2006 and 2010. Using pearson's correlation analysis and a

regression model the study found an inverse relationship between performance and average age of inventory.

Mwaura (2017) investigated the effect of inventory turnover on financial performance of large and medium retail supermarkets in Kenya. Covering 5 years from 2012 to 2016 the study adopted descriptive cross-sectional research design. The study used regression analysis in Stata software to analyze data. The results indicated that there is a robust and significant relationship between inventory turnover and financial performance of large and medium retail supermarkets in Kenya.

From the studies there is conflicting empirical evidence on the relationship between inventory management and financial performance. Some studies favor shorter inventory collection period while others favor longer inventory collection period. Moreover, it is not clear of the relationship between inventory management and financial distress. The studies reviewed focused on inventory management and performance and no relationship was established between inventory and financial distress, the subject matter of the current study.

2.5.3 Studies on Receivables Management and Financial Distress

Gill et al. (2010) studied the relationship between working capital management and profitability of 88 American firms. Using regression analysis the study measured working capital management by the average days of accounts receivable in a study covering 3 years.

The results indicated that accounts receivable had a negative and significant relationship with profitability. Hence, slow collection of accounts receivable led to low profitability.

Falope and Ajilore (2009) sampled 50 Nigerian listed non-financial firms in the period 1996-2005. The study's objective was to establish the relationship between working capital management and profitability of Nigerian listed firms. The study

employed panel data in a pooled regression analysis which combined time series and cross sectional observations. The findings showed a significant and negative relationship between net operating profitability and cash conversion cycle, inventory turnover, average collection period and average payment period for the 50 Nigerian firms listed on the Nigerian Stock Exchange. The study hence found a significant negative relationship between working capital management and profitability of non - financial firms quoted on the Nigerian Stock Exchange.

Raheman and Nasr (2007) studied the effects of working capital management variables on net operating profitability of a sample of 94 Pakistan companies quoted on Karachi Stock Exchange. The study's focus was 6 years from 1999 to 2004. The working capital management variables considered were inventory turnover in days, average collection period, average payment period and cash conversion cycle. Net operating profitability was used as a proxy for profitability, average collection period as a measure of collection policy, inventory turnover in days as a measure of inventory policy, average payment period as a measure of payment policy and cash conversion cycle as a comprehensive proxy for working capital management. Using regression and pearson's correlation analysis the findings indicated a robust negative relationship between these working capital management variables and profitability of the companies. From the results, increase in cash conversion cycle leads to decrease in profitability of the firms. Hence managers can create wealth for shareholders by reducing cash conversion cycle. Further, the study found a negative relationship between number of days of accounts payable and profitability. This meant that less profitable firms take more time to pay their bills. Hence, Pakistani companies take too long to pay their accounts payable.

However, making earlier payments to suppliers may increase profitability since companies usually benefit from discount for prompt payment.

A study by Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The study's objective was to establish a relationship between

profitability as measured by return on assets and working capital elements, cash conversion cycle, average collection period and inventory turnover days with size, growth and leverage as control variables. Using regression analysis the study results showed that average collection period, a proxy for receivables management, had a negative and statistically significant relationship with return on assets. The results meant that if average collection period decreased, then profitability increased.

A study by Kennedy (2014) on the effects of accounts receivables management on financial performance of manufacturing firms in Nakuru county, Kenya, targeted 25 manufacturing companies. The study covered the period between 2008 to 2013. Using correlation and regression analysis the study found that there is a significant positive relationship between average collection period (a proxy for receivables management) and return on equity, a measure of financial performance of the manufacturing firms in Nakuru county, Kenya.

Lazaridis and Tryfonidis (2006) studied a sample of 131 companies listed in Athens Stock Exchange (ASE). The study's objective was to investigate the relationship between profitability and working capital management of the firms. Regression analysis was used to analyze secondary data obtained from the 131 firms listed at the ASE. In the study period covering 4 years between 2001 to 2004 the study found that low gross operating profit is related with an increase in number of days of accounts payables. Hence less profitable companies wait longer to pay their bills in order to benefit from the credit period granted by their suppliers. Further, the study found a negative relationship between accounts receivables and the companies' profitability suggesting that less profitable companies will seek a reduction in their accounts receivables.

Moreover, a negative relationship was found between number of days in inventory and profitability. This implied that mismanagement of inventory will result into tying up of excess capital at the expense of profitable activities.

Waweru (2011) investigated the relationship between receivables management and the value of those companies listed at the NSE. The study covering the period from

2003 to 2009 used regression analysis to find that receivables management and firm's value were correlated. The study's Pearson correlation coefficient indicated that there existed a negative relationship between inventory turnover in days, average cash collection period, cash conversion cycle and the firm value. Research has shown that when a firm extends the accounts receivables period through the use of credit sales, the risk of collecting the outstanding receivables increases significantly (Tsai, 2011).

Nzioki, Kimeli, Abudho and Nthiwa (2013) studied the effects of working capital management on profitability of manufacturing firms quoted on the NSE. The study covering a period of five years from 2006 to 2010 targeted 9 manufacturing companies. Correlation and regression analysis was used on secondary data to conclude that profitability of manufacturing companies depends on effective working capital management. The study established a positive relationship between gross operating profit (a measure of profitability) and average collection period (a proxy for receivables management). Hence it is profitable to delay payables in order to invest the money in beneficial ventures. Moreover, the study found a positive correlation between gross operating profit and average payment period. However, cash conversion cycle had a negative relationship with gross operating profit.

The relationship between gross operating profit and inventory turnover in days was insignificant. The study recommended that firm managers should collect receivables earlier and reduce cash conversion cycle.

Paul, Stephene, Marcella and Jannifer (2013) examined the effects of working capital management on profitability of 9 manufacturing firms quoted on NSE. Employing multiple regression and correlation analysis the results indicated that gross operating profit had a positive correlation with average collection period and also average payment period; but a negative correlation with cash con version cycle. The study found an insignificant relationship between inventory turnover in days and gross operating profit.

Iyewumi, Remy and Omotayo (2015) used secondary data to investigate the relationship between working capital management and profitability of firms in the oil and gas sector in Nigeria. The study used a sample of 2 quoted oil firms in Nigeria in the period from 1995 to 2011. Employing correlation analysis and ordinary least squares the study reported that firm's profitability is affected by cash conversion cycle, average days receivables, average days payables. Size of the firm was also found to affect profitability of firms.

Muhammad, Rabi'U, Wambai, Ibrahim and Ahmad (2015) study the impact of working capital management on corporate profitability of 7 quoted firms in Nigeria. Covering the period from 2008 to 2012 the sample results from descriptive and generalized least squares regression analysis showed a positive relationship among average collection period, current ratio, and the size of the firm with profitability. A negative relationship was obtained between inventory turnover period and average payment period.

2.5.4 Studies on Payables Management and Financial Distress

Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The study's objective was to establish a relationship between profitability as measured by return on assets and working capital elements, cash conversion cycle, average collection period and inventory turnover days with size, growth and leverage as control variables. Using regression analysis the study established a negative and statistically significant relationship between average payment period, a measure of accounts payable, and profitability measured by return on assets. The implication of the findings was that less profitable companies wait longer to settle their bills since the higher the payment period, the lower the profit to be realized.

In testing the relationship between working capital management and corporate profitability Deloof (2003) examined a sample of 1,009 Belgian non-financial firms in a study covering 5 years from 1992-1996. The study used trade credit policy and inventory policy measured by number of days accounts receivable, accounts payable

and inventories, and cash conversion cycle as a measure of working capital management. Using correlation and regression tests, the study found a significant negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable for Belgian firms. On the basis of the study results, the author suggested that managers can create value for their shareholders by minimizing the number of days accounts receivable and inventories also. He further suggested that less profitable firms take longer to pay their bills. Hence, days of payable outstanding should also be minimized.

Kumaraswamy (2016) investigated the effects of working capital management on financial performance of Gulf Cooperation Council companies. The study covering a seven year period from 2008 to 2014 investigated four hypotheses pertaining to average payments period components. Using regression models the study found positive relationship between average payment period and profitability on one hand and a negative relationship between average collection period and profitability. The results showed that average payment period was the most significant factor followed by average collection period.

Nobanee and AlHajjar (2009) analyzed a sample of 2123 Japanese non-financial companies quoted in the Tokyo Stock Exchange for the period 1990 to 2004. The findings of the study suggested that extending the payables deferral period could increase profitability. However, extending the payables deferral period could damage the company's credit reputation and harm its profitability eventually (Wambugu, 2013). The author indicated that delaying payments to suppliers enabled companies to assess quality of the products that were bought and can be an expensive and flexible source of funding. Late payments can have very high implicit costs whenever early payment discounts are available (Wambugu, 2013).

Madugba and Ogbonnaya (2016) investigated the impact of average payment period on financial performance of manufacturing companies in Nigeria. Using multiple regression the study analyzed secondary data collected from published financial statements of the firms. The findings showed that average payment period impacts

significantly on both earnings per share and return on capital employed. The study implied that efficient management of average payment period improves financial performance of the manufacturing firms. The study recommended that professionals should be employed by these firms to ensure efficient stock management to prevent stock out. Hence, good management of average payment period keeps manufacturing firms afloat.

Garcia et al. (2007) studied 8872 Spanish firms in the period 1996 to 2002. The study concluded that profitable firms pay their dues early. Hence, the study findings showed that profitability is negatively related with DPO. Bagechi and Khamrui (2012) selected 10 fast moving consumer goods companies covering the period from 2000 to 2010. Using profitability as an independent variable measured by return on assets the study concluded that working capital components were negatively related with profitability of the firms. Therefore, DPO was negatively related with profitability. Ahmadi, Arasi & Garajafary, (2012) found that working capital components and profitability are negatively related. This means that more payable days can decrease the profitability of the company.

Yahaya (2016) investigated the effects of working capital management on financial performance of pharmaceutical companies in Nigeria. The study which covered 8 years from 2006 to 2013 used secondary data collected from financial reports and Nigeria Stock Exchange bulletins of the firms.

The study findings indicated that average payment period was positively and significantly related with financial performance.

Gill et al. (2010) examined the relationship between working capital management and profitability of 88 American firms quoted on New York Stock Exchange. The study period covered 3 years from 2005 to 2007. Average days of accounts payable was used as a proxy for payables management.

Using regression analysis the study findings reflected no statistically significant relationship between accounts payable and profitability measured by gross operating profit.

2.5.5 Studies on Working Capital Management and Financial Distress

Given that working capital management is important, studies on the area indicate contradictory results. Mathura (2009) studied the influence of working capital management components on profitability. The study used a sample of 30 firms listed at NSE in the periods 1993-2008. The working capital components studied were payables payment period, average age of inventory and accounts receivables. Employing the pooled ordinary least squares and fixed effects regression models the study's findings indicated that: 1) there is a highly significant negative relationship between the time the firm takes to collect cash from their customers and profitability; 2) there is a highly significant positive relationship between the time taken to convert inventories into sales and profitability and 3) there is a highly significant positive relationship between the period taken by the firm to pay its creditors and profitability. Therefore the study found a significant and positive relationship between inventory collection period, days of payable outstanding and a negative significant relationship between average collection period and profitability.

Dong and Su (2010) examined the relationship between working capital management and profitability using fixed effects model for 130 companies quoted on Vietnam stock market for the period 2006-2008. The findings indicated a significant and negative relationship between receivable collection period, inventory collection period, cash conversion cycle and profitability.

However, the results showed a significant and positive relationship between days of payable outstanding and profitability. This implied that the longer the period suppliers offered the company to pay its obligations, the better its profitability.

Malik, Waseem and Kifayat (2011) sought to establish to establish the effects of working capital management on profitability in the textile industry in Pakistan. The

study whose target population was the textile industry of Pakistan used secondary data obtained from quoted firms in Karachi Stock Exchange in the period from 2001 to 2006. Data analysis was carried out using correlation and regression analysis in panel data methodology. The study results showed that there is a robust positive relationship between profitability and cash, inventory and accounts receivable while a negative relationship between profitability and accounts payable was obtained. The implication was that an increase in inventory, cash and credit sales leads to increase in profitability of a firm.

Raheman et al. (2010) proved a positive effect of working capital turnover on performance in Pakistan. Other studies that echoed the study findings include Mashady, Darminto and Ahmad (2014) Kaddumi and Ramadan (2012). Azam and Haider (2011) investigated the impact of working capital management on firms' performance for non-financial companies quoted on Karachi Stock Exchange (KSE-30) Index to show that working capital management has significant impact on firms' performance. The findings indicated that reducing inventory in days led to increase in companies performance. Moreover, increasing the time period of suppliers improves the overall firm's performance. In the same vein, the relationship between firm per4fromance and cash conversion cycle was found to e negative. Hence firm performance could be enhanced wth decrease in cash conversion cycle.

A study by Widyastuti et al., (2017) on the influence of working capital management and 3 macroeconomic variables (inflation rate, foreign exchange rate and   interest   rates) on the value of 10 Indonesian Textile companies for the study period 2005-2014 used path analysis techniques to find that cash conversion cycle and working capital turnover did not significantly influence the performance of the companies.

Lyroudi and Laziridis (2000) used food industry in Greek to study the cash conversion cycle as a liquidity indicator of the firms and sought to determine its relationship with the current and quick ratios. The study found that there is a

significant positive relationship between the cash conversion cycle and the liquidity measures of current and quick ratios.

Using a sample of 94 Pakstani firms listed on Karachi Stock Exchange for a period of 6 years from 1999 to 2004, Raheman and Nasr (2007) studied working capital management effect on liquidity as well as on profitability of the firms. The working capital management variables studied included average collection period, average payments period, cash conversion cycle, inventory turnover in days and current ratio. The dependent variable was net operating profitability. The findings showed a negative relationship between working capital management and profitability in regression analysis methodology. Hence, the study indicated a negative relationship between inventory turnover in days, averae collection period, average payment period, cash conversion cycle and profitability of the firms

A study by Juan and Solano (2007) on the effects of working capital management on SME profitability sampled 8872 SMEs in the period 1996-2002. The objective of the study was to provide empirical evidence about the effects of working capital management on the profitability of a sample of small and medium-sized Spanish firms. The study applied multivariate analysis where number of days accounts receivables, number of days inventories, number of days accounts payable and cash conversion cycles were analyzed in turns while controlling for firm size, sales growth, debt level and annual GDP growth. Return on assets was used as a dependent variable to measure profitability. The study findings showed that SMEs's profitability is reduced by increasing the number of days accounts receivable, number of days inventory and number of days accounts payable.

The results which were consistent with those of Deloof (2003) for large firms shows the importance of working capital management for firms. Extending the deadlines for customers to make payments may enhance profitability since greater payment facilities may increase sales.

It may also affect profitability negatively because a more restrictive credit policy which grants customers less time to settle their accounts improves performance. The

results also found that firms firm's profitability can be enhanced through reducing the number of days of inventory. Thus, holding inventory for a short time can also improve profitability.

Moreover, the study findings reflect that extending the number of days accounts payable reduce profitability. This could be explained by the increased implicit cost of vendor financing to the firm because the firm foregoes discounts for early payment. However, the explanation doesn't hold true if we consider that the dependent variable (return on assets) does not include financial costs. This result is justified by Deloof (2003). By stating that less profitable firms extend payment of their bills. In the analysis the cash conversion cycle was obtained by the integrated analysis of days of inventory, number of days accounts receivable and days of accounts payable. The study found that shortening cash conversion cycle enhances profitability of SMEs.

2.6 Critique of Existing Literature

From reviewed relevant literature, it has come out strongly from several writers like Kennedy (2014) that working capital has a positive effect on financial distress. However, other scholars like Gill et al. (2010), Deloof (2003) found contradicting results on relationship between working capital management and financial distress. Inconsistent results were also found on the effects of working capital management on financial distress by Garcia et al. (2007) who empirically finds that shorter DPO periods are related to higher firm financial performance. These mixed results and alternative views from different countries and writers are as a result of a deficiency of comprehensive analysis of the relationship between working capital management and financial distress of non-financial firms listed at the NSE in Kenya.

Gill et al. (2010) sought to establish the relationship between working capital management and profitability of a sample of 88 American firms quoted on the New York Stock Exchange for a period of 3 years.

The study used multiple regression model which studied the effects of the working capital components on profitability in turns while maintaining firm size, financial debt ratio and fixed financial assets ratio in the model. The model used would not have effectively found the relationship between working capital management and profitability since, the model included other study variables not related with working capital like firm size, financial debt ratio and fixed financial assets ratio. In the same vein, the working capital variables of accounts receivable, accounts payable and cash conversion cycle were analyzed unilaterally as measures of working capital management. Moreover, the study period covering 3 years was insufficient to have established effectively the relationship between working capital management and profitability of the sampled American firms

Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The study's objective was to establish a relationship between profitability as measured by return on assets and working capital elements, cash conversion cycle, average collection period and inventory turnover days. Size, growth and leverage were control variables identified. Using regression analysis the study established the relationship between cash conversion cycle, average collection period, average payment period and inventory turnover days. The sample size of 4 companies was too small given that a sample size less than 30 is too small to effectively achieve a study's objectives. Similarly the period of 5 years was not sufficient for the study. Moreover, under methodology, the regression model used analyzed each working capital element separately. Hence, the joint effect of all the working capital elements on profitability was not captured by the model. This compromised on the results of the study

 Khaliq et al. (2014) examined financial distress measurement among 30 Government Linked (GLCs) listed firms in Malaysia over the period of five years (2008 to 2012). The study used Z- score model to establish a relationship between both current ratio and debt and Z- scores that determine financial distress. The

study's target population was only Government listed firms in Malaysia. The study did not target private listed firms.

The current study targets both Government and private non-financial listed firms alike. According to Capkun et al. (2009), Chen et al. (2005), Koumanakos (2008), Swamidass (2007) inventory holding periods improves liquidity and better firm financial performance. The studies link inventory with firm performance, leaving a gap on the relationship between inventory and financial distress. The current study sought to bridge this gap by seeking to establish the relationship between working capital management (inventory included) and financial distress of non-financial firms listed at NSE in Kenya.

Iyewumi et al. (2015) study sampled 2 quoted firms in Nigeria from 1995 to 2011. The sample size was too small to effectively investigate the relationship between working capital management and profitability of firms in oil and gas sector in Nigeria. Raheman and Nasr (2007) study focused 6 years in establishing the effects of working capital management variables on net operating profit of 94 companies quoted on Karachi Stock Exchange. The period of 6 years was not sufficient for the study. Lazaridis and Tryfonidis (2006) investigated the relationship between profitability and working capital management of 131 companies listed in ASE. The study covering 4 years found that low gross operating profit is related with an increase in number of days of accounts payables. The study period of 4 years was inadequate to effectively establish the relationship between profitability and working capital management.

2.7 Research Gaps

The review of the existing literature indicates that little efforts have been made in establishing the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. A number of studies related to the current study reflect gaps. For instance, Khaliq et al. (2014) examined financial distress measurement among 30 Government Linked (GLCs) listed firms in Malaysia over the period of five years (2008 to 2012). The study used Z- score

model to establish a relationship between both current ratio and debt variables and Z-scores that determine financial distress. The study's target population was only Government listed firms in Malaysia. The study did not target private listed firms. The current study targets both Government and private non-financial firms listed at NSE in Kenya.

Lizal (2002) found that state controlled firms are less susceptible to financial distress. This situation is different in Kenya where state controlled firms are more prone to financial distress. Literature confirms that firms owned by the Government of Kenya are going under. These include Kenya Airways (Okoth, 2015), Mumias Sugar Company (Kiplang'at, 2015), Uchumi Supermarket (Nyakio, 2013).

Basa (2011) used panel data from 1999 to 2005 to study financial distress and its determinants in selected beverage and metal manufacturing firms in Ethiopia. The author employed multiple regression to conclude that financial distress depends on debt service coverage. The current study conceptualized that financial distress depends on working capital management and sought to use panel model in data analysis for a period of 10 years from 2007 to 2016. Nzioki et al. (2013) studied the effect of working capital management on profitability of 9 manufacturing firms listed on NSE in the period 2006 to 2010. The study's sample size of 9 firms and a period of 5 years were not sufficient to effectively establish the effect of working capital management on profitability of the firms.

Altman et al. (2007) derived a local model, Z_{China} score to support identification of potential distress of firms in China. The model is applicable in China only. The current study proposed to come up with a generalizable model showing the relationship between working capital management and financial distress of firms listed in NSE. Kroes and Manikas (2014) study relate short cash cycle that improves liquidity with improved firm performance. The study is dormant on the relationship between cash management and financial distress of firms.

Studies show that shorter inventory holding periods improves liquidity and better firm financial performance (Capkun et al., (2009); Chen et al. (2005); Dimitrios and

Koumanakos, (2008); Swamidass, 2007). The studies link inventory with firm performance, leaving a gap on the relationship between inventory and financial distress. The present study sought to bridge this gap by seeking to establish the relationship between working capital management including inventory management and financial distress of listed firms in NSE.

Gill et al. (2010) examined the relationship between working capital management and profitability of 88 American firms. The results indicated that accounts receivable had a negative and significant relationship with profitability. In the same vein, the working capital variables of accounts receivable, accounts payable and cash conversion cycle were analyzed unilaterally as measures of working capital management.

The present study used a multiple regression model which sought to establish the effects of cash conversion cycle, accounts receivable, inventory and accounts payable, all used as joint measures of working capital management, on financial distress of non-financial firms listed at NSE in Kenya. Moreover, the study period covering 3 years was insufficient to have established effectively the relationship between working capital management and profitability of the sampled American firms. The present study sought to establish the effect of working capital management of non-financial firms listed at NSE for a study period covering 10 years from 2007 to 2016. Kennedy (2014) conflicts with the previous study by indicating that more aggressive receivable management is associated with more profitability.

A study carried out by Samiloglu and Demirgunes (2008) to investigate the effects of working capital management on firm profitability used regression analysis model which captured seven independent variables of cash conversion cycle, accounts receivable periods, inventory periods, leverage, fixed financial assets, firm size and firm growth. The model mixed variables which are directly related with working capital management and those not related with working capital management. The variables considered as related with working capital management included cash

conversion cycle, accounts receivable periods and inventory periods. Those that are not related with working capital management include leverage, fixed financial assets, firm size and firm growth. Hence, the model used would not have adequately found the effects of working capital management on profitability of Istanbul Stock Exchange quoted companies.

Theodore and Hutchson (2002) uses cases to show that higher performing firms have longer DPO (a measure of accounts payable) periods. The finding was negated by Deloof (2003), Garcia et al. (2007) who empirically find that shorter DPO periods are related to higher firm financial performance. Deloof (2003) used correlation and regression tests to study the relationship between working capital management and corporate profitability. Using a sample of 1,009 large Belgian non –financial companies for a period of 5 years from 1992-1996, the study found a negative significant relationship between gross operating income and the number of days inventories, accounts receivable and accounts payable of the Belgian companies.

The five year period of the study would not have been sufficient to effectively study the relationship between working capital management and corporate profitability. Our study covering a ten year period is more impressive.

The relationship between DPO and performance is less clear in literature (Kroes & Manikas, 2014). Theodore and Hutchson (2002) used cases to show that higher performing firms have longer DPO periods. The finding is negated by Deloof (2003), Garcia et al. (2007) who empirically find that the shorter DPO periods are related to higher financial performance of firms.

Mawutor (2014) examined working capital management and profitability of 4 companies listed on the Ghana Stock Exchange for a period of five years from 2006 to 2010. The sample size of 4 companies was too small given that a sample size less than 30 is too small to effectively achieve a study's objectives. Similarly the study period of 5 years was not sufficient for the study. Moreover, under methodology, the regression model used analyzed each working capital element separately. Hence, the joint effect of all the working capital elements on profitability was not captured by

the model. This compromised on the results of the study. These gaps were filled by the present study given that the study period was 10 years, having studied all the 41 non-financial firms listed at NSE.

Moreover, the present study's panel data was analyzed using multiple linear regression model which captured all the four elements of working capital management.

The reviewed literature indicated that there is contradicting empirical evidence on the relationship between working capital management and financial distress. Most studies have concentrated on developed countries. In addition, some studies have used questionnaires to collect financial data which can accurately be obtained from published financial statements. This exposed these studies to drawbacks of depending on data obtained through questionnaires. Considering these contradicting findings and shortcomings of earlier studies the present study sought to establish the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya.

2.8 Summary of Literature

This chapter reviewed both the theoretical and empirical literature about the effect of working capital management on financial distress of non-financial firms listed at NSE in Kenya. Working capital management is important for non-financial firms listed at NSE. Proper management of short-term assets and liabilities is essential for non-financial firms listed at NSE. This is done in order to avoid the firms plunging into financial distress. There is lack of consensus as whether and how working capital management affects financial distress. From the reviewed literature, there is conflicting argument on the effect of working capital components on financial distress. Several studies about the effect of working capital management on financial distress have been done both locally and internationally. Most of the studies have found a positive effect of working capital on performance. The studies include Raheman et al. (2010), Mashady and Ahmad (2014), Kaddumi and Ramadan (2012). Yet other studies have found a negative effect of working capital on performance.

The studies include; Juan and Solano (2007), Raheman and Nasr (2007), Deloof (2003).

Malik et al. (2011) established a positive relationship between profitability and cash, inventory and accounts receivable and a negative relationship between profitability and accounts and accounts payable. Dong and Su (2011) found a significant and relationship between receivable collection period, inventory collection, cash conversion cycle and profitability. However, the findings showed a significant and positive relationship in days of payable outstanding and profitability.

The theories reviewed are in agreement since they propose the importance of effective working capital management. Working capital is instrumental in determining the profitability and liquidity level of a company. According to finance theory good working capital management directly influences liquidity and profitability of any firm. In the agency theory, failure to address the principal agent problems may lead to poor working capital which can plunge a firm into financial distress. Trade credit theory postulates that credit rationed firms use more trade credit than those firms with access to lending institutions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Methodology describes the overall approach to research design. It is a strategy or a plan of action that links methods to outcomes. The specific areas of concern in this chapter were: the research design, sampling frame and technique, target population, data collection procedure, data analysis and presentation, measurement of study variables, Model of analysis and diagnostic tests

3.1.1 Research Philosophy

Research philosophy is a system of beliefs and assumptions about knowledge development (Saunders, Lewis, & Thornhill, 2007). It is the theory used to direct the researcher to conduct research design procedure, research strategy, questionnaire design and sampling (Malhotra, 2009). As business and management researchers we should take cognizance of the philosophical comments we make through our choice of research strategy, because this has a significant effect on what we do and how we understand what it is we are investigating (Johnson & Clarke, 2006). Two major research philosophies exist. These are; positivist also called scientific and interpretivist also called antipositivist (Galliers, 1991). It is important to understand research philosophy so that we can examine the assumptions about how we can view the world. These assumptions are contained in the research philosophy we choose, knowing that they are appropriate or not (Saunders et al., 2007).

Three major ways of thinking about research philosophy exist, namely; ontology, epistemology and axiology (Saunders al., 2007). Ontology is concerned with nature of reality, axiology studies judgment about value and epistemology concerns what constitutes acceptable knowledge in a field of study (Saunders et al., 2007). Epistemology further contains 3 philosophical positions. These are; positivism, realism and interpretivism.

Positivism support investigating social reality and the final work will be law-like generalizations as those produced in physical and natural sciences (Remenyi et al., 1998 as cited in Saunders et al., 2007). It is effective to generate a research strategy to collect creditable data resulting from observable reality hence contributing to developing hypotheses (Saunders et al., 2007). The present study adopted positivist philosophy which advocates for collecting data resulting from observable reality that contributes to developing hypotheses. This fitted in well with the quantitative research design of the study that established the relationships among study variables objectively independent of the researcher's influence. This approach enabled the researcher to investigate the creditable and measurable results from financial statements in order to establish the effects of working capital management on financial distress of non-financial firms listed at NSE in Kenya.

3.2 Research Design.

A research design is the process an investigator follows right from the inception to the completion of the study (Cooper & Schindler, 2011; Kothari, 2011). Hence, it is the heart of planning for research to be undertaken. A research design is a plan of research that is used to answer the research objectives Kothari (2011). It provides direction and makes research systematic. A research design has a bearing on the work involved in the project, estimating costs involved, preparing time schedule and verifying results (Omari, 2015). It is the structure, or the blue print of research that directs the process of research from the formulation of the research questions and hypotheses to giving a report on the research findings (Maina, 2015).

The study used quantitative research design. To establish the influence of working capital management on financial distress of non-financial firms listed at NSE in Kenya, Time Series Cross Sectional (TSCS) data was used. This is because TSCS designs are the best for studying causation (Stimson, 1985). Moreover, TSCS design increases number of observations while providing a platform of modeling time and space (Jakobsen, 2013). This is because the total observations is a product of number of cross sections and the number of time points.

This increases the researcher's ability to show causation. TSCS data uses repeated observations on fixed units (Beck & Katz, 1995).

The study adopted Panel data estimation technique. This is due to the fact that the technique caters for heterogeneity associated with individual firms by allowing for individual specific variables (Muriithi & Waweru, 2017). Moreover, by combining cross sectional and time series observations, panel data provides more variability, less collinearity among variables, more informative data, more degrees of freedom and more efficiency (Muriithi & Waweru, 2017). Further, Ogboi & Unuafe (2013) have shown that panel data enriches empirical analysis in a manner that may not be possible if either only time series data or cross sectional data is used

3.3 Target Population

According to Mugenda and Mugenda (2003) target population is the population to which a researcher wants to generalize the study results. The target population for the study was all the non-financial firms listed and trading on the NSE for the period 2007 to 2016 (Appendix 2). As at December 2016 there were 41 non-financial firms listed and trading on NSE (NSE, 2016).

3.4 Sampling Frame and Techniques

A sampling frame constitutes a list, directory or index of cases from which a sample can be chosen Mugenda and Mugenda (2003). The sampling frame for this study was all the forty one (41) non-financial firms listed at NSE in Kenya as at December 2016 as per appendix 2. The study used a census which is a study of all the items in the target population. A census is highly recommended since it eliminates errors that are associated with sampling (Saunders et al., 2007). Moreover, the availability of secondary data from final statements of the non-financial firms listed at NSE supported the use of a census.

3.5 Data Collection Procedure.

When making a decision on data collection procedure one should care against bias and unreliability of the procedure employed Kothari (2011). The study made use of secondary data obtained from final accounts for each of the 41 non-financial firm listed at NSE. Secondary data is data collected by someone else and which have already been passed through the statistical process (Kothari, 2004). The four basic final accounts are the statement of financial position, the income statement, the statement of retained earnings and the statement of cash flow (Brigham & Ehrhardt, 2008). Final accounts provide more valuable data in prediction of financial distress in business (Tuvadaratragool, 2013). An unbalanced panel data for all the 41 non-financial firms listed at NSE over a period of ten years (2007 to 2016) was collected. The study employed secondary data that was collected from audited financial statements and annual reports of non-financial firms listed at NSE in Kenya using secondary data collection sheet (Appendix 1).

3.6 Data Processing and Analysis

The study obtained secondary data from all the 41 non-financial firms listed at NSE. The relationship between working capital management and financial distress of non-financial firms listed at the NSE was established using panel data model which has two approaches (Otieno, 2013); the random effects model (also called Error Components Model, ECM) and the fixed effects model. According to Baltagi, et al., (2005) panel data enables the achievement of better regression results. Muigai (2016) posits that one of the main advantages of panel data is that it enables the researcher to control against unobserved heterogeneity and provides the researcher with both cross-sectional and time-series dimensions; which reduces the likelihood of bias in the parameter estimators.

After data was extracted from the financial statements and NSE hand books, Excel program was used to calculate ratios relevant to the study variables. Descriptive statistics were used to summarize the study variables; cash management, inventory

management, receivables management, payables management and financial distress of non-financial firms listed at NSE.

To establish the relationship between working capital management variables and financial distress, Panel regression analysis using E-views version 10 was employed. Inferential statistics such as t-test, F-test were employed to determine the significance of explanatory variables.

3.7 Measurement of Study Variables

3.7.1 Financial Distress

This was a dependent variable. It was measured using Altman's Z- score. The model adopted was ; $Z = 1.2Y_1 + 1.4Y_2 + 3.3Y_3 + 0.6Y_4 + 1.0Y_5,$

The researcher employed the Altman Z-score model as an appropriate proxy of financial distress of non-financial firms listed at NSE in Kenya. This was on the premise that the model is based on MDA statistical technique that provides a suitable platform highly useful for corporate bankruptcy studies (Altman, 1968). Moreover, the model provides superior accuracy in predicting financial distress (Zouari & Abid, 2000). In addition, the model has the ability to assist management for predicting corporate problems early enough to avoid financial difficulties (Ray, 2011). Further, the model has been empirically found to be effective in predicting financial distress for listed firms in Kenya (Sitati & Odipo, 2011). It is also a familiar statistical mechanism employed to categorize and forecast corporate failure (Altman, 2000).

3.7.2 Cash management

This was an independent variable which was measured by cash conversion cycle. The model used was; $CCC = ACP + ICP - DPO$. This model was adopted by Wanjiku (2015) who measured cash using cash conversion cycle. Similarly, Bushuru, Basweti, and Mukonyi (2015) measured cash using cash conversion cycle.

The author used the model CCC = ACP + ICP − APP. Uyar (2009) measured cash using cash conversion cycle by adopting the model CCC = Inventory Collection Period plus Accounts Receivable Period less Accounts Payable Period

3.7.3 Inventory Management

This was an independent variable. It was measured using inventory collection period (ICP). The model used for its measurement was;

$$\text{ICP} = \frac{End\ period\ value\ of\ inventory}{cost\ of\ goods\ sold} * 365$$

Several authors have used the same model to measure inventory management. These include Bushuru et al., (2015), Wanjiku (2015), Rimo and Panbunyuan (2010)

3.7.4 Receivables Management

This was an independent variable. It was measured using Average collection period (ACP). According to Wanjiku (2013) the standard measure of receivables management is the Average Collection Period (ACP). It is given by the formula:

$$\text{ACP} = \frac{Average\ Accounts\ Rceivable}{Credit\ Sales} * 365$$

This formula was adopted by other authors; Jakpar et al.(2017), Rimo and Panbunyuan (2010), Bushuru et al., (2015)

3.7.5 Payables Management

This was an independent variable. It was measured using Days of payables outstanding (DPO). According to Thuvarakan (2013) there are two methods of identifying when the payables are due. First is to analyze past instances by taking into account the time taken to pay creditors. The second method is to take payables outstanding divide it by credit sales and multiply by the number of days. This indicates how long it takes to pay the creditors.

$$\text{DPO} = \frac{Payables\ outstanding}{credit\ purchases} * 365$$

A number of authors have used the same formula to proxy for payables management. These are; Bushuru et al., (2015), Wanjiku (2015)**,** Rimo and Panbunyuan (2010).

3.7.6 Firm Value

This was a moderating variable. It was measured by market value of the firm (V). This was obtained as market value of equity According to Modigliani (1980) the value of a firm is the sum of its debt and equity. The model adopted by the present study was;

V = E

Where E is the market value of equity

3.8 Model of Analysis

The study used unbalanced data in the period from 2007 to 2016. Panel data estimation technique was adopted. The technique was used because the study's observations have two dimensions; cross-section and time-series. Panels are attractive since they often contain more information than single cross-sections and thus allow for an increased precision in estimation (Hoechle, 2007). Moreover, panel estimation method contains more degrees of freedom and less multicollinearity leading to more efficient estimates (Hsiao, 2005). It further allows for greater flexibility in modeling differences in behaviour across firms which enables us to control unobserved heterogeneity (Wooldridge, 2010).

From the foregoing, combining time series and cross-section observations, panel data, gives more variability, more information data, less collinearity among variables, more degrees of freedom and more efficiency. However, despite their substantial advantages, panel data pose several estimation and inference problems that plague cross-sec

tional and time series data (Kariuki, 2016). These problems are fixed through several estimation techniques. These are; first, pooled ordinary least squares (OLS), which combines all the time series and cross-sectional data and then estimates the underlying model by utilizing OLS. The difficulty with pooled OLS procedure is that assumption of constant intercept and slope may be unreasonable (Pindyck & Rubinfeld, 1998). According to Kariuki (2016) it is appropriate toi allow the intercept term to vary over time and over cross-sectional unit.

 The second model, fixed effects model (FEM), allows the intercept in the regression model to differ among individuals in recognition to the fact that each individual or cross-sectional unit may have some special characteristics (Gujarati, 2012).

The third model, random effect model (REM), also error component model (ECM), improves the efficiency of the first least squares estimation process by accounting for cross-sectional and time series disturbances. In REM, it is assumed that the intercept of an individual unit is random drawing from a much larger population with a constant mean value (Gujarat, 2012).

The panel regression equation differs from a regular time series or cross- section regression by the double subscript attached to each variable. The general form of the panel data model is

$$Y_{it} = \beta_0 + \beta_i X_{it} + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

i = the cross − sectional dimension. It represented 1 to 41 non-financial firms listed at NSE in Kenya.

t = time series dimension. It represented the study period in years which was a ten year period from 2007 to 2016.

Y_{it} = financial distress of non-financial listed firm i at time t.

 β_0 = the model constant or intercept term

β_i = the coefficients of explanatory variables

X_{it} = the independent variables in the model.

To test the influence of the four independent variables (working capital management variables) without the moderation effect of firm value the study used equation (ii):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + e_{it}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(ii)$$

Equation (ii) was model one (1) of the study.

To test the moderating influence of firm value on the relationship between the independent variables and financial distress of non-financial firms listed at NSE in Kenya the study adopted equation (iii). The study introduced a dummy variable (X_5) in equation (ii) to capture the influence of the moderator (firm value) in the model.

$$Y_{it} = \beta_0 + \beta_1(X_1*X_5)_{it} + \beta_2(X_2*X_5)_{it} + \beta_3(X_3*X_5)_{it} + \beta_4(X_4*X_5)_{it} + \beta_5 X_5 + e_{it}\dots\dots\dots\dots(iii)$$

This was model two (2) of the study where:

β_0 = constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = coefficients of the product terms (interaction variables).

β_5 = coefficient of the moderating variable

Y_{it} = Financial distress for firm i in time t

X_{1it} = Cash management for firm i in time t

X_{2it} = Inventory management for firm i in time t

X_{3it} = Receivables management for firm i in time t

X_{4it} = Payables management for firm i in time t

X_5 = Moderating variable

e_{it} = random error term for firm i in time t

To test the suitability of models (i), (ii) and (iii) for the study data, the coefficient of determination (R^2) was used. This test statistic shows the total change in the relevant dependent variable explained by change in the independent variables in the regression models. Objective 1 was achieved by running cash conversion cycle on the Z-score used to measure financial distress. The statistical significance of the coefficients β_0, β_1, β_2, β_3, β_4 and β_5 was tested using the t-statistic at 95% confidence intervals and the corresponding degrees of freedom. The conclusions were also supported with the P-value statistic which was compared with 5% significance level arising from the 95% confidence interval. The null hypothesizes were reject3d when the t-values were greater than the standard t-values at the given degrees of freedom from the model. This also coincides with the case when P-values were more than 5%.

For the second objective of establishing the effect of inventory management on financial distress of non-financial firms listed at NSE in Kenya, inventory collection period was run on Z-score. The P- value and t-statistic at 95% confidence interval and the required degrees of freedom were checked against the critical value for the coefficient of the regression model. The explanatory power of inventory management in the model was verified using the coefficient of determination. Similarly, for the third and fourth objective, the same procedure as in objective 1 and 2 was adopted. For the third objective of the effects of receivables management on financial distress of non-financial firms listed at NSE in Kenya, receivables management was run on Z-score. For the fourth objective of effects of payables management on financial distress of non-financial firms listed at NSE in Kenya, days of payables outstanding was run on Z-score.

For the fifth objective of the effects of firm value on the relationship between working capital management and financial distress of non-financial listed at NSE in Kenya, the study used model (iii). The significance of the beta for interaction and a change of R^2 of the model would mean that firm value significantly moderated the influence of the four independent variables on financial distress of non-financial firms listed at NSE in Kenya.

3.9 Diagnostic tests

3.9.1 Multicollinearity Test

Correlation test was employed to test for multicollinearity. The range of correlation coefficients is between negative one and positive one. A positive correlation coefficient implies that the variables move in the same direction while a negative coefficient implies that the variables move in different directions. A zero correlation coefficient means that there is no association existing between any two variables. Near perfect correlation is indicated by a correlation coefficient of positive or negative one. This leads to a problem of multicollinearity

To avoid multicollinearity variables that exhibit perfect multicollinearity ought to be dropped in favour of the other. However, if the pair-wise correlation coefficient is less than 0.8 then the problem of multicollinearity is not severe and is ignored (Gujarati, 2003). On the other hand if the coefficient of correlation is greater than 0.8 multicollinearity exists and a remedial measure should be taken.

3.9.2 Normality Test

The normality assumption requires that the error term has a normal distribution with constant variance. Jarque-Bera (JB) test statistic as extended by Galvao et al., (2013) was used as a test for normality. Under this test the null hypothesis is that the error term is normally distributed. Rejecting the null hypothesis implies that the t tests and standard errors will not test the significance of the regression coefficients. If the calculated P value of the JB statistic is low, which occurs if the value of the statistic is different from 0, one can reject the hypothesis that the residuals are normally distributed (Gujarati, 2003). But if the p value is large, which occurs if the value of the statistic is near to zero, we do not reject the normality assumption. Hence, the null hypothesis is rejected if JB statistic is significant.

3.9.3 Autocorrelation test

Autocorrelation is the degree or similarity between a given time series and a lagged version of itself over successive time intervals (Escudero, 2009). One of the regression assumptions is that no errors associated with one observation are correlated with the errors of any other observation. Durbin Watson (DW) statistics was used to test for autocorrelation. The DW statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample, values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation (Brook, 2008).

3.9.4 Panel Unit Root Test

Panel unit root test was carried out on all variables used in the analysis to establish whether the panel data was stationary or not. The results as laid out on Table 4.4 were based on the Fisher-type Augmented Dickey and Fuller (ADF) and the Fisher-type Phillips and Perron (PP) tests with and without time trend. The null hypothesis tested was that panel data was non-stationary i.e. [(H0): $\rho = 1$] against the alternative hypothesis that the data was stationary i.e. [(Ha): $\rho < 1$]. Both the result of ADF and Phillips Perron (PP) were presented for comparison purposes. This is based on the observation by Gujarat (2003) that unlike the ADF test which is parametric, the PP test uses non-parametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms.

3.9.5 Heteroscedasticity Test

Heteroscedasticity refers to instance where the variance of the residual-term is not constant but varies with changes in explanatory variables (Gujarati, 2003). To test for panel level heteroscedasticity, the study employed the White's general Heteroscedasticity test. Unlike the Goldfed-Quandt test, which requires reordering the observations with respect to the X variable that supposedly caused heteroscedasticity, or the Breusch-Pagan-Godfrey (BPG) test, which is sensitive to normality assumption, the general test of heteroscedasticity proposed by white does

not rely on normality assumption (Gujarati, 2003). If no cross-product terms are present in the White test procedure, then it is a test of pure heteroscedasticity. Under the null hypothesis that there is no heteroscdedasticity, sample size (n) times the R^2 obtained from regression asymptotically follows the chi-square distribution with degrees of freedom(df) equal to the number of regressors, excluding the constant term (Gujarati, 2003). If the chi-square value obtained is significant at the selected level of significance, the conclusion is that there is heteroscedasticity (Muigai, 2016). If it is insignificant, then there is no heteroscedasticity.

3.9.6 Cointegration Test

The study used Johansen tests to test for cointegration. Johansen tests are called the maximum eigenvalue test and the trace test (Dwyer, 2015). Panel cointegration test in empirical research provides the researcher with a mechanism to determine the long run relationship among the study variables (Baltagi et al., 2005). The test assumes that the variables are not cointegrated; meaning that all linear combinations of the dependent and explanatory variables, including the residuals from OLS, are unit root non- stationary as suggested by Granger (1986) who observed that "a test for cointegration is necessary as a pre-test to avoid spurious regression. In a spurious regression the errors would be correlated and the standard t − statistic will be wrongly calculated because the variance of the errors is not consistently estimated. The null hypothesis for the test was that there was no cointegration of variables against the alternative hypothesis that the variables were cointegrated.

3.9.7 Causality Tests

To study causality test in the study variables the study used Granger causality tests. It is a popular method used to study links between random variables (Granger, 1969). The method assumes linear interactions through the auto-regressive model structure. The basic concept underlying Granger causality is that B Granger causes A if B possesses information that can enable forecasting the future of A better than the information in the past of A forecasts or information in the past of other conditioning variables, C (Friston, Moran, & Seth, 2013). Granger causality test is useful for

determining whether one time series can be used to forecast another (Granger, 1969). Regression shows mere correlations but according to Granger (1969) causality can be tested by measuring the capability of predicting future values of a time series using prior values of another time series.

A time series say X is said to Granger-cause Y if it can be proved through t-tests and F-tests on lagged values of X (including lagged values of Y also), that the X values yield statistically significant information about the future of Y. Granger-causality is a hypothesis testing which determines whether one time series forecasts another. The null hypothesis is that X does not Granger-cause Y. If the value of the probability is less than a given α- level, the hypothesis is rejected at the α- level (Wei, 2013).

3.9.8 Hausman Test

A test for random effects model versus fixed effects model is one of the classical test for panel data (Yafee, 2003). To estimate the models, it is necessary to determine if there is a correlation between independent variables. If the correlation exists then fixed effects model provides consistent results otherwise random effects model is used which gives efficient estimators when estimated using Generalized Least Squares (Garcia et al., 2007). Hausman (1978) test was applied for each of the specified panel regression models to investigate which estimation affects (fixed and random) yielded superior results for the present study. The test was carried out against the null hypothesis that random effect model was the preferred model. The null hypothesis was rejected if the chi-square statistic was significant at 5% significance level; otherwise, the null hypothesis was accepted.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of analyses of secondary data collected in tandem with the research design of the study described in chapter 3. Analysis of data involved descriptive statistics meant to profile the study variables, performing diagnostic checks on the data to determine suitability for statistical analysis, estimating the regression models specified under section 3.8 and discussion of results in relation to the findings from empirical literature

The computed data for financial distress, cash management, inventory management, receivable management and payables management was then analyzed using panel data regression model with the help of E- views version 10 computer software. Diagnostic tests were applied on the data as a pretest condition.

4.2 Panel Descriptive Statistics

This section presents the panel summary statistics for the entire sample. The summary statistics considered by the study included the mean; a measure of central tendency; measures of dispersion such as the standard deviation, minimum and maximum values. Descriptive data analysis was undertaken to determine the statistical properties of the data used in the study. The coefficient of skewness and kurtosis which showed the distribution of panel data was also included. For variables to be normally distributed their skewness should be equal to zero while their kurtosis should be equal to three (Otieno, 2013). Table 4.1 indicated the summary for panel sample of non-financial firms listed at NSE in Kenya. The table indicated an unbalanced panel with a sample of 393 observations. The table indicated that on average a non-financial listed firm took 99.24 days in a year to convert inventory held into sale with a standard deviation of 70.47, 114.53 days to pay suppliers with a standard deviation of 78.66, 78.24 days to convert cash investments in supplies into

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cash receipts from customers for goods or services rendered with a standard deviation of 70.14, 93.49 days to collect cash from customers with a standard deviation of 64.77.

Table 4.1: Panel Variables Summary Statistics

Variable		Count	Mean	Std. Dev	Max.	Min.	Skewness	Kurtosis
Financial distress (z-score)		41	3.5794	3.2789	21.9157	-2.7237	1.8032	7.8906
Inventory collection period		41	99.24	70.47	337.10	0.0000	0.9610	3.6686
Days of payable outstanding		41	114.53	78.66	318.07	0.0000	0.7666	2.4439
Cash conversion cycle		41	78.24	70.14	341.27	0.7161	1.1345	3.7801
Average collection period		41	93.48	64.77	328.45	0.0000	1.2887	4.4422

Unbalanced panel of 41 non-financial firms observed for 10 years, Z-score is the index of financial distress derived from Altman's model; all other variables are in days.

Table 4.1 indicated the summary statistics for 393 observations for 41 firms over the period of analysis (2007-2016). The study findings indicate that non-financial firms

$$ICP = \frac{End\ period\ value\ of\ inventory}{cost\ of\ goods\ sold} * 365$$

listed in NSE had a mean Z-score value of 3.579. This indicated that a majority of non-financial firms listed in NSE during the study period were financially sound. This according to Altman (1968) is in relation to the Altman's distress zones (Z > 2.99, means safe; 1.10 < Z < 2.60 means gray area and Z < 1.11 means that the firm is in financial distress). However, the corresponding standard deviation of 3.279 showed variability of distress levels among the firms. This was indicated by extreme observations of 21.92 (NSE, 2015) and -2.724 (Express Kenya Ltd, 2014). These sample findings showed that while some firms were in severe distress, other firms were financially sound as portrayed under appendix 3

4.3 Panel Model Specification Tests

Regression can only be accurately estimated if the basic assumptions of multiple linear regressions are observed (Greene 2008). To determine the suitability of the panel data for statistical analysis, various tests were carried out and were aimed at investigating if the panel data fulfilled the essential requirements of classical linear regression analysis. These tests included: normality test, multicollinearity test, panel unit root test, test for autocorrelation, panel-level heteroscedasticity. Remedial measures were applied in case violation to these assumptions were detected. To establish if the variables used in the study had a long run association Panel co integration test was also conducted. To establish which estimation effects (between fixed and random) provided superior results for the study Hausman test was carried out for each of the specified panel regression models. This section presents the results and statistical interpretation of various diagnostic tests carried out on the data.

4.3.1 Testing for Multicollinearity

Bickel (2007) posits that multicollinearity occurs where two or more predictor variables in a multiple regression are highly correlated. There should not be perfect multicollinearity so that the model can estimate all the coefficients and that the coefficients will remain Best Linear Unbiased Estimates (BLUE) and that the standard errors will be correct and efficient (Golder and Golder, 2013). Table 4.2 showed the correlation matrix between primary and moderated variables.

Table 4.2: Pairwise Correlation Matrix Between Primary and Moderated Regression

Variable	Z	ICP	ICP*V	V	DPO*V	DPO	CCC*V	CCC	ACP	ACP*V
Z	1.000									
ICP	*-0.33	1.000								
ICP*V	**0.08	0.04	1.000							
V	0.06	-0.06	*0.95	1.000						
DPO*V	-0.02	-0.04	*0.94	*0.92	1.000					
DPO	*-0.72	*0.36	-0.06	-0.07	0.07	1.000				
CCC*V	**0.14	0.04	*0.95	*0.84	*0.86	-0.097	1.000			
CCC	0.006	*0.68	0.01	-0.05	-0.06	**-0.11	0.09	1.000		
ACP	*-0.52	0.08	***-0.1	-0.07	0.06	*0.71	-0.06	*0.21	1.000	
ACP*V	-0.04	**-0.11	*-0.76	*-0.71	*-0.89	**0.12	*0.79	-0.03	*0.23	1.000

*1% significance ** 5% significance *** 10% significance levels

The findings in Table 4.2 reveal that there was significant relationship between the primary variables. Despite the fact that there was some significant relationship between primary variables, multi-collinearity did not occur between the primary variables since the r-values were less than 0.8 as suggested by Tabachnick and Fidel (2001). However, there was strong multicollinearity among moderated variables. These moderated variables included ICP*V, DPO*V and CCC*V as shown by the

table. To deal with this problem, each highly collinear variable was dropped alternately and panel regression equation estimated again. Pairwise correlation was a pplied to establish the level of collinearity present among regressors. According to K anyugi (2016) correlation of greater than 0.9 for variables is deemed to be an indicato r of multicollinearity.

4.3.2 Normality Test

Skewness and Kurtosis values were used to study how well the data was distributed. Skewness measures the extent to which distribution deviates from symmetry. Data may be skewed positively or negatively. Data which is skewed is said not to be normally distributed. However, Kurtosis measures flatness of the curve. For a normal distribution, the values of skewness should be equal to zero but values ranging between -1 to +1 are acceptable. Kurtosis values should be equal to 3 for normally distributed data (Field, 2013). The study adopted Jarque-Bera (JB) test statistics to test for normality of data. Table 4.3 showed the JB statistics of the study variables

Table 4.3: Normality Test

Variable	Jarque-Bera Statistics	P-value
Financial distress (z-score)	604.62	0.0000
Inventory collection period	67.81	0.0000
Days of payable outstanding	43.56	0.0000
Cash conversion cycle	94.26	0.0000
Average collection period	142.86	0.0000

From the table all the variables had a significant JB statistics. This resulted into the rejection of the null hypothesis that the data was normally distributed. Statistical tests called linear models which include the t-test, correlation, ANOVA, and linear

regression have a normality assumption. These tests are said to be appropriate only when the dependent variable is normally distributed. This assumption is critical for small samples but is irrelevant above a certain sample size (Sainani, 2012). Even with extreme deviations from normality, a sample size of approximately 80 is usually enough to run a t-test (Sainani, 2012). For small samples with large deviations from normality, linear models may lead to incorrect inferences. With large enough sample sizes (> 30 or 40), the violation of the normality assumption should not cause major problems (Ghasemi & Zahediasl, 2012). This implies that we can use parametric procedures even when the data are not normally distributed (Ghasemi & Zahediasl, 2012). If we have samples consisting of hundreds of observations, we can ignore the distribution of the data. The current research studied 41 non-financial firms for a period of 10 years leading to 393 observations. According to the central limit theorem, in large samples (>30 or 40), the sampling distribution tends to be normal, regardless of the shape of the data ((Ghasemi & Zahediasl, 2012).

`4.3.3 Testing for Autocorrelation

Durbin Watson (DW) statistic was employed to test for autocorrelation. The results for both models indicated that the DW statistics was close to 0. This meant that the null hypothesis of no autocorrelation was rejected and therefore the study concluded that the panel data had an evidence of autocorrelation. Table 4.4 showed that DW for both models were close to zero. To fix this problem the study adopted Feasible Generalized Least Squares technique to estimate the regression models.

Table 4.4: Durbin Watson Test for autocorrelation

Model	DW Statistic
1	1.188
2	1.451

4.3.4 Panel Unit Root Test

From the results on table 4.5 based on Fisher-type ADF and Fisher-type PP panel unit root test procedures corresponding to 5 variables used in the study. The null hypothesis was rejected because the associated p-values were less than the conventional 1%. Therefore, all the variables used in the study were stationary.

Table 4.5: **Panel Unit Root Test Results**

Variable	Test	Statistic	p-value	Statistic	p-value
				With trend	
Without trend					
Z-score	Fisher-type -PP	-29.44	0.0001	-7.7584	0.0000
	Fisher-type - ADF	-13.2847	0.0000	-7.8609	0.0000
Average Collection Period (ACP)	Fisher-type - PP	-31.93	0.0000	-9.4908	0.0000
		-20.1127	0.0000	-6.2775	0.0000
	Fisher-type - ADF				
Inventory Collection period (ICP)	Fisher-type -PP	-36.40	0.0001	-8.6700	0.0000
	Fisher-type - ADF	-2.3102	0.0015	-6.0951	0.0000
Days of Payable (DPO)	Fisher-type -PP	-35.95	0.0000	-7.5781	0.0000
	Fisher-type - ADF	-24.63	0.0000	-5.4405	0.0000
Cash Conversion Cycle (CCC)	Fisher-type -PP	-49.5958	0.0001	- 10.3332	0.0000
	Fisher-type - ADF	-16.1922	0.0000	-7.0860	0.0073

4.3.5 Panel-level Heteroscedasticity Test

From table 4.6 the findings indicated that the chi-square statistics obtained for both models 1 and 2 were significant at 5% level. Therefore, the null hypothesis of homoscedasticity was rejected for both models. This showed the existence of panel-level heteroscedasticity in the panel data as recommended by Wiggins and Poi (2001). To correct the violation of this classical linear regression assumption in the model, the study used the Feasible Generalized Least Squares (FGLS) estimation technique as opposed to the ordinary least squares method as recommended by Muigai (2016).

Table 4.6: Test of Heteroscedasticity

Panel model	Chi –square statistic	p-value
1	106.40	0.0000
2	102.95	0.0000

Heteroscedasticity test: White

Null Hypothesis: Homoscedasticity

4.3.6 Panel Cointegration Test

The results of Johansen test for cointegration laid out on table 4.7 and table 4.8 showed that trace statistics exceeded the corresponding 5% critical values at all levels of variable combination. This suggested that the null hypothesis of no cointegration could be rejected at all levels of variable combinations (maximum ranks). From the results, the null hypothesis was rejected since both trace and max statistics exceeded their corresponding critical values at 5% significance level. The results implied that the variables were cointegrated and had a long-run association.

Table 4.7: Panel Regression Model 1 Johansen Test for Co-integration Output

Hypothesized No. of Cointegrated equations	Eigen value	Trace stat.	5% crit. value	Prob.	Max. eigen – stat.	5% crit. value	Prob.
0	0.7050	711.52	69.82	0.0000	463.93	33.88	0.0000
1	0.2398	247.59	47.86	0.0000	104.17	27.58	0.0000
2	0.1646	143.42	29.80	0.0000	68.35	21.13	0.0000
3	0.1037	75.07	15.49	0.0000	41.59	14.26	0.0000
4	0.0843	33.48	3.8415	0.0000	33.48	3.8415	0.0000

Variables: Z-score, cash conversion cycle (CCC), inventory collection period (ICP), average collection period (ACP), days of payables outstanding (DPO)

Null Hypothesis: No Cointegration among variables

Table 4.8: Panel Regression Model 2 Johansen Test for Cointegration Output

Hypothesized No. of Cointegrated Equations	Eigen value	Trace stat.	5% crit. value	Prob.	Max. eigen stat.	5% crit. value	Prob.
0	0.7050	711.52	69.82	0.0000	463.93	33.88	0.0000
1	0.2398	247.59	47.86	0.0000	104.17	27.58	0.0000
2	0.1646	143.42	29.80	0.0000	68.35	21.13	0.0000
3	0.1037	75.07	15.49	0.0000	41.59	14.26	0.0000
4	0.0843	33.48	3.8415	0.0000	33.48	3.8415	0.0000

Variables: Z-score, cash conversion cycle (CCC), inventory collection Period (ICP), average collection period (ACP), days of payables outstanding (DPO)

Null Hypothesis: No Cointegration among variables

4.3.7 Causality Tests

Granger causality test was used to show if the independent variables predicted financial distress. This was done using E-views software. The output was presented in table 4.9

Table 4.9: Causality Test

Null Hypothesis	Observations	F-statistic	Probability
Z does not Granger cause average collection period	380	2.7269	0.0667
		3.3426	0.0403
average collection period does not Granger cause Z			
Z does not Granger cause cash conversion cycle	380	1.3934	0.2495
		2.8492	0.005
cash conversion cycle does not Granger cause Z			
Z does not Granger cause days of payables outstanding	380	2.3485	0.0969
		5.5427	0.0042
days of payables outstanding does not Granger cause Z			
Z does not Granger cause inventory collection period	380	0.1049	0.9004
		6.9326	0.0025
inventory collection period does not Granger cause Z			

Table 4.9 showed a unidirectional granger causality test between the dependent variable and independent variables. Since the probability of 0.0403 was less than 5% the null hypothesis that average collection period does not Granger cause Z was rejected at 5% level. The findings implied that average collection period granger causes Z significantly and hence average collection period can predict Z. However, the findings indicated that Z does not cause average collection period. In all the results there was no established causality from the dependent variable to the independent variables. But at 5% level there was a significant causality from all the

independent variables to the dependent variable. This was due to the reason that the respective probabilities were less than the 5% α-level.

4.3.8 Hausman Test

Hausman specification test results for panel regression as shown in Table 4.10 indicated that for both models 1 and 2 chi-square statistics was statistically significant at 5 % level as supported by the p-value of 0.0000 and 0.0001 for models 1 and 2 respectively. Therefore, the null hypotheses for both models were rejected that the random effects estimation was appropriate for the model at 0.05 significance level.Hence, Fixed Effects Model was used for the panel data.

Table 4.10: Hausman Test

Model	Degrees of freedom	Chi-square statistic	p-value
1	4	34.33	0.0000
2	9	33.96	0.0001

4.4 Regression Analysis

 A correlation coefficient shows the relationship between variables; it does not indicate any causal relationship between variables (Mugenda and Mugenda, 2003). Hence the need for further statistical analysis such as regression analysis to help establish specific nature of the relationships. Regression analysis is a statistical tool that establishes whether there exist relationships between variables.

The general objective of the present study was to establish the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. To achieve the objective, the study estimated panel regression equation 1 for fixed effects as supported by the Hausman test. However, to fix panel-level heteroscedasticity and serial correlation detected in the panel data, Feasible Generalized Least squares (FGLS) estimation technique instead of Ordinary Least

Squares (OLS) technique was applied since it provided consistent estimators (Torres-Reyna, 2007). To run the data, the E-views version 10 software was used to analyze the panel data for the 393 firm observations, which represented 41 non-financial firms over a 10 year period. The regression estimation result was shown in table 4.11 where financial distress measured by Altman's Z-score was regressed on Cash Conversion Cycle (CCC), Average Collection Period (ACP), Inventory Conversion Period (ICP) and days of payables outstanding (DPO).

Table 4.11 showed results of regression analysis of working capital management and financial distress without moderator.

Table 4.11: Overall FGLS Panel Regression Analysis - Working Capital Management and Financial Distress without Moderator (Model 1)

Panel regression equation 1:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	*6.1070	0.3048	20.04	0.0000
Inventory Collection Period	*-0.1419	0.0435	-3.2582	0.0012
Days of Payables Outstanding	*0.1217	0.0435	2.8014	0.0054
Cash Conversion Cycle	*0.1422	0.0434	3.2743	0.0012
Average Collection Period	*-0.1446	0.0434	-3.3333	0.0010
Statistics				
R^2	0.7978			
Adjusted R-squared	0.7722			
S.E of regression	1.5625			
F-statistic	31.2065			
Prob (F-statistic)	0.0000			

*1% significance level

From Table 4.11 a linear regression model of the form, $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_{2+} \beta_3 X_3 + \beta_4 X_4 + e_{it}$ was fitted as follows:

$Y = 6.1070 + 0.1422 X_1 - 0.1419 X_2 - 0.1446 X_3 + 0.1217 X_4$

This indicated that holding all independent variables constant the value of Z- score, a measure of financial distress was 6.1070. Hence, in the study period, non-financial fi rms were not financially distressed when all working capital management variables were held constant given that 6.1070>2.99. A Z-score greater than 2.99 implies that t he company is financially health (Mahama, 2015). The model showed that holding al l other independent variables constant, a one unit increase in cash conversion cycle re sults into a 0.1422 increase in Z-score (a proxy of financial distress), a one unit incre ase in inventory collection period results into 0.1419 decrease in Z- score, a one unit increase in average collection period results into 0.1446 decrease in Z-score and a on

e unit increase in days of payable outstanding results into 0.1217 increase in Z-score.

During the study period, the findings indicated that increase in cash conversion cycle increased the non-financial listed firm's Z- score and hence reduced the chances of the undergoing financial distress. Moreover, the findings showed that increasing the non-financial listed firm's inventory collection period reduced the firm's Z-score and hence driving the firm into financial distress. In the same vein the results indicated that an increase in average collection period of a non-financial listed firm led to a decline in the firm's Z-score resulting into financial distress of the firm. In addition, the findings showed that an increase in days of payables outstanding of a non- financial listed firm gave rise to an increase of Z- score of the firm thereby reducing the possibility of the firm being in financial distress.

The findings showed that working capital management variables jointly account for 79.78% of total variation in financial distress of non-financial firms listed at NSE in Kenya. This was based on the coefficient of determination (R^2) whose value was 0.7978. This reflected a good measure of fit for the variables included in the model. Moreover, the F- statistic whose p-value was 0.0000 indicated that the coefficients of the four variables were jointly statistically different from zero at 99% confidence level. Hence, all the beta coefficients were significant at 1% significance level.

4.4.1 Cash Management

This analysis was carried out in order to examine the relationship between cash management and financial distress. A linear regression analysis for the relationship between cash management measured by cash conversion cycle (CCC) and financial distress measured by Z-score was summarized on table 4.12

Table 4.12: Regression coefficients – FGLS Financial Distress and Cash Management

Variable	coefficient	Standard error	t-statistic	Prob.
Cash conversion cycle	0.003873	0.000788	4.915469	0.0000
constant	3.276335	0.070106	46.73418	0.0000

From table 4.12 a linear regression model: $Y_{it} = \beta_0 + \beta_i X_{it} + e_{it}$ was fitted as:

$$Y = 3.2763 + 0.0039X.$$

The results showed that cash management was significant at 5% level. This was due to the fact that the p-value was 0.0000<0.05. Moreover, the beta coefficient for cash management was positive. Therefore, the study results showed that cash management had a positive and significant influence on financial distress of non-financial firms listed at NSE. The results showed that a 1% increase in cash conversion cycle resulted into an average of 0.4% decline in financial distress. This was on the premise that as cash conversion cycle increased so did the Z-score and thereby reducing financial distress. The study findings are in tandem with the research results by Falope and Ajilore (2009) who examined the relationship between working capital management and profitability of firms in Nigeria Stock Exchange in the period from 1995 to 2005. The study results showed that higher cash conversion cycle results into higher profitability and vice versa. Moreover the current study is in consonance with the study carried out by Gill et al. (2010) on the relationship between working capital management and firm's profitability in New York Stock Exchange. The study's findings indicated that cash conversion cycle had a significant and positive relationship with firm's profitability. However, the present study's findings contradicts that by Jakpar et al. (2017) who found that cash conversion cycle has no control over the firm's profitability. Moreover, the study findings are in contravention of findings by Samiloglu and Demirgunes (2008) who found that the cash conversion cycle has no influence on profitability of firms.

Table 4.13: ANOVA: Cash Management and Financial Distress

Source of Variation	Sum of Squares	df	Mean Square	F	Probability
Regression	1636208	3	545402.8	726.2	0.0000
Residual	292161.5	389	751.06		
Total	1928370	392	4919.311		

The ANOVA table 4.13 showed that the F test statistic of 726.2 was significant at 1% level. This was because the p value 0f 0.0000 was less than 1%. The implication of this finding was that the model used was significantly a good fit that could be used for making predictions. Moreover, since the P value was less than 1% the null hypothesis that $\beta_0 = \beta_1 = 0$ was rejected in support of the alternative that at least one coefficient of the regression model was greater than zero. The findings indicated that cash management had a statistically significant influence on financial distress of non –financial firms listed at NSE in Kenya.

Table 4.14: Model Summary – FGLS Cash Management and Financial Distress

R-squared	Adjusted R-square	Std. error of regression	Sum of squared residual	F-statistic	Prob. F-stat.
0.8056	0.7829	1.8283	1173.2	35.48	0.0000

The findings on table 4.14 indicated that the F-statistic was 35.48 which was significant at 5% significance level as evidenced by a p-value of 0.0000. This showed that the model was a good fit. Brook (2008) suggested that to determine whether the regression line fits the data well one has to look at the value of R^2. A value of adjusted R^2 close to 1 indicates that the model explains nearly all of the variability of dependent variable about its mean value, while a value close to zero

indicates that the model fits the data poorly Tesfamariam (2014). From the results on table 4.14 the adjusted R^2 of 0.7829 meant that 78.29% of the variation in the dependent variable can be explained by a change in the independent variable. Hence, 78.29% of total variability in financial distress of the non-financial firms was accounted for by cash management.

RELATIONSHIP BETWEEN CASH MANAGEMENT AND FINANCIAL DISTRESS OF NON-FINANCIAL FIRMS LISTED IN NSE, KENYA

Table 4.11 showed that cash conversion cycle had a positive and significant coefficient of 0.1422 implying that increase in cash conversion cycle leads to a decline in financial distress of non-financial firms listed in NSE. Moreover, the coefficient was significant at 5% level as evidenced by its p-value of 0.0012 which was far less than 5%. This implied that cash management had a positive and statistically significant influence on financial distress of non-financial firms listed at NSE. The study findings echo that by Falope and Ajilore (2009) who examined the relationship between working capital management and firm's profitability in Nigeria Stock Exchange for the period 1995 to 2005. The study results revealed that higher cash conversion cycle will lead to higher profitability and vice versa. Moreover, the present study is in agreement with the study by Gill et al. (2010) on the relationship between working capital management and firm's profitability in New York Stock Exchange. The results of the study showed that cash conversion cycle had a significant and positive relationship with profitability of firms. However, the study findings contradict that by Jakpar et al. (2017) who found that cash conversion cycle doesn't have control over the firm's profitability. Moreover, the study findings are in conflict with the findings by Samiloglu and Demirgunes (2008) who concluded that the cash conversion cycle has no influence on firm's profitability. Further the findings are in contravention with those of Mawutor (2014) who found that cash conversion cycle had a significant negative relationship with profitability of listed manufacturing firms in Ghana

HYPOTHESIS TESTING: CASH MANAGEMENT

According to Gujarati (2003) hypothesis testing is a process whereby the researcher generalizes the findings of sample data on the larger population based on a presupposition made prior to commencement of research. Hypothesis testing was performed by determining statistical significance of the coefficients of independent variables. A t- test is employed to test a hypothesis about any individual partial regression coefficient (Gujarati, 2003). This was done by using the two-tailed t-test statistic and the corresponding *p*-values at 5% level. The decision to use a two-tailed test was based on the fact that the alternative hypothesis of the study was composite rather than directional (Gujarati, 2003). This procedure was carried out against the null hypotheses enumerated in section 1.4 of chapter one. In all the tests, the decision rule was that: if the *p*-value obtained is less than the significance level, then the null hypothesis is rejected and if the obtained *p*-value is greater than significance level, the null hypothesis is not rejected.

Ho$_1$: Cash Management has no Statistically Significant Relationship With Financial Distress of Non-Financial Firms Listed at NSE in Kenya

The findings on table 4.11 indicated that cash management has a statistically significant relationship with financial distress of non-financial firms listed in NSE at 1% significant level. This was supported by a regression coefficient of 0.1422 whose p-value was (p = 0.0012). Since this p-value was less than 1% the null hypothesis that cash management has no statistically significant influence on financial distress of non-financial firms listed at NSE in Kenya was rejected at 99% confidence level. By rejecting the null hypothesis the study concluded that cash management has a statistically significant influence on financial distress of non-financial firms listed at NSE in Kenya.

4.4.2 Inventory Management

The study sought to establish the relationship between inventory management and financial distress. A linear regression analysis for the relationship between inventory

management measured by Inventory collection period (ICP) and financial distress measured by Z-score was summarized on table 4.15

Table 4.15: Regression coefficients –FGLS Inventory Management and Financial Distress

Variable	coefficient	Standard error	t- statistic	Prob.
Inventory collection period	-0.003443	0.000688	- 5.006923	0.0000
constant	3.921087	0.074179	52.85954	0.0000

Table 4.15 showed a linear regression model: $Y_{it} = \beta_0 + \beta_i X_{it} + e_{it}$ fitted as:

$Y = 3.921087 – 0.003443X$.

Inventory management was found to be significant at 1% significance level as evidenced by the p-value which was $0.0000 < 0.01$. From table 4.15 the Z-score and inventory management were negatively related as supported by the beta coefficient of -0.003443. Therefore, increase in inventory collection period led to decrease in Z-score and vice versa. The results indicated that a 1% increase in inventory collection period resulted into 0.34% increase in financial distress. This is due to the fact that as inventory collection period increased, the Z-score (a measure of financial distress) decreased. Hence, inventory collection period and financial distress were inversely related. The findings are in consonance with Garcia et al. (2007) who found that profitable firms convert the inventories into finished goods within a short period. Moreover, the results are in line with (Capkun et al., (2009); Chen et al. (2005); Koumanakos (2008); Swamidass, (2007) who found that shorter inventory holding periods improve liquidity and better firm financial performance.

Table 4.16: ANOVA: Inventory Management and Financial Distress

Source of Variation	Sum of Squares	df	Mean	F	Probability

			Square		
Regression	1645128	3	548376.1	707.8	0.0000
Residual	301377.4	389	774.75		
Total	1946506	392	4965.58		

Significance level 1%

The ANOVA table 4.16 showed that the F test statistic of 707.8 was significant at 1% level. This was because the p value 0f 0.0000 was by far less than 1%. The implication of this finding was that the model used was significantly a good fit that could be used for making predictions. Moreover, since the P value was less than 1% then the null hypothesis that $\beta_0 = \beta_1 = 0$ was rejected in support of the alternative that at least one coefficient of the regression model was greater than zero. This meant that management of inventory had a statistically significant relationship with financial distress of non –financial firms listed at NSE in Kenya.

Table 4.17: Model Summary – Inventory Management and Financial Distress

R-squared	Adjusted R-square	Std. error of regression	Sum of squared residual	F-statistic	Prob. F-stat.
0.82057	0.7996	1.8439	1193.386	39.151	0.0000

The coefficient of determination of 0.82057 in table 4.17 showed that 82.06% of total variability in financial distress of non-financial firms was accounted for by inventory management. The F-statistic obtained was 39.151 and was significant at 1% significant level as evidenced by a p-value of 0.0000. This indicated that the model was a good fit.

RELATIONSHIP BETWEEN INVENTORY MANAGEMENT AND FINANCIAL DISTRESS OF NON-FINANCIAL FIRMS LISTED AT NSE, KENYA

In order to investigate the relationship between inventory management and financial distress of non-financial firms listed at NSE in Kenya, the researcher adopted inventory collection period as a measure of inventory management. The regression results presented on table 4.11 indicated that the coefficients of inventory collection period whose value was -0.1419 was negative and statistically significant at 1% level since its p- value of 0.0012 was less than 1%. The finding indicated that during the period of analysis, increasing the inventory collection period plunged non-financial firms listed in NSE into financial distress significantly.

The findings are in tandem with the study by Vahid et al., (2012) who studied 50 different companies listed in the TSE during the period 2006 to 2009 using a multi-regression model. The study showed that there is a negative and significant relationship between inventory turnover and the performance of firms listed in Tehran Stock Exchange. Moreover, the findings are in tandem with the findings by Kazim (2008) who noted that to outrival in aggressive environment, firms have to design and operate stock management and product distribution functions effectively. The findings also agree with Kotler & Keller (2006) who revealed that inventories are a significant portion of the current assets of any business as business firms hold inventory to ensure uninterrupted operations and that there is need for proper management as it is one of the largest assets of a business. However, the study conflicts with that by Jakpar et al. (2017) who examined the effects of working capital management on firm's profitability. The study carried out for 5 years from 2007 to 2011 sampled 164 manufacturing firms listed on the Main Board of Bursa Malaysia to conclude that increasing inventory conversion period increases performance of firms. In addition, the study contradicts a study by Kamara (2014) who studied 7 agricultural firms quoted at the NSE. Based on panel data set for the period 2009-2013 the study found that increase in inventory turnover, increases financial performance. Moreover, Mawutor (2014) found a positive relationship between inventory turnover days and profitability of manufacturing firms qu

oted in Ghana.

HYPOTHESIS TESTING: INVENTORY MANAGEMENT

Ho$_2$: **Inventory Management has no Statistically Significant Relationship With Financial Distress of Non-Financial Firms Listed at NSE in Kenya**

The results shown in table 4.10 indicated that inventory management had a statistically significant relationship with financial distress of non-financial firms listed in NSE at 1% significant level. This is supported by the p-value corresponding to inventory management variable (p = 0.0012). Since the p-value was less than 1% the null hypothesis that inventory management has no statistically significant influence on financial distress of non-financial firms listed at NSE in Kenya was rejected at 99% confidence level. In rejecting the null hypothesis the study's conclusion was that inventory management has a statistically significant influence on financial distress of non-financial firms listed at NSE in Kenya.

4.4.3: Receivables Management

The study sought to determine the relationship between receivables management and financial distress. The regression analysis for the relationship between receivable management measured by average collection period (ACP) and financial distress measured by Z-score was shown on table 4.18

Table 4.18: Regression Coefficients – FGLS Receivables Management and Financial Distress

Variable	coefficient	Standard error	t-statistic	Prob.
Average collection period	-0.01380	0.002307	-5.9817	0.0000
constant	4.8697	0.2335	20.85	0.0000

Table 4.18 indicated that a linear regression model of the form $Y_{it} = \beta_0 + \beta_i X_{it} + e_{it}$ was fitted as:

$$Y = 4.8697 - 0.0138X.$$

The table showed that receivables management was a significant variable at 1% significance level. This finding was supported by the p-value of 0.0000<0.01. Moreover, the regression coefficient for receivables management was found to be negative. Therefore, the study findings indicated that receivables management had a negative and statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya. The study findings showed that a 1% increase in average collection period resulted into an average of 1.4% increase in financial distress. This was because as average collection period increased the Z-score declined. Hence, average collection period and financial distress were found to be inversely related. The study findings were in consonance with prior studies; Deloof (2003), Raheman and Nasr (2007), Gill et al. (2010). The studies found that average collection period (a measure of accounts receivables) has a significant negative relationship with the firm's profitability. Moreover, the present study's findings were consistent with the trade − off theory. If the trade-off theory holds, then profitability should be negatively correlated with the firm's liquidity which is measured by average collection period (Jakpar et al., (2017).

Table 4.19: ANOVA: Receivables Management and Financial Distress

Source of Variation	Sum of Squares	df	Mean Square	F	Probability
Regression	1411409	3	470469.7	784.5	0.0000
Residual	233273.0	389	599.67		
Total	1644682	392	4195.62		

The ANOVA table 4.19 showed that the F test statistic of 784.5 was significant at 1% level. This was because the p value of 0.0000 was less than 1%. The implication of this finding was that the model used was significantly a good fit that could be used for making predictions. Moreover, since the P value was less than 1% the null hypothesis that $\beta_0 = \beta_1 = 0$ was rejected in support of the alternative that at least one coefficient of the regression model was greater than zero. This meant that receivables management had a statistically significant relationship with financial distress of non –financial firms listed at NSE in Kenya.

Table 4.20: Model Summary – FGLS Receivables Management and Financial Distress

R-squared	Adjusted R-square	Std. error of regression	Sum of squared residual	F-statistic	Prob. F-stat.
0.7372	0.7065	1.7737	1104.24	24.013	0.0000

From table 4.20 the coefficient of determination of 0.7372 indicated that 73.7% of total variation in financial distress of non-financial firms was accounted for by receivables management. The F-statistic obtained was 24.013 and was significant at 1% significance level as evidenced by a p-value of 0.0000. This indicated that the model was a good fit.

RELATIONSHIP BETWEEN RECEIVABLES MANAGEMENT AND FINANCIAL DISTRESS OF NON-FINANCIAL FIRMS LISTED AT NSE, KENYA

In seeking to determine the relationship between receivables management and financial distress of non-financial firms listed at NSE the study used average collection period to measure receivables management. As displayed on table 4.11 average collection period had a negative and significant relationship with financial distress of non-financial firms listed in NSE. The coefficient of -0.1446 was significant as supported by a p-value of 0.0010 and indicated that an increase in average collection period results to an increase in financial distress significantly at 1% significance level. These findings were in tandem with those by Deloof (2003), Mawutor (2014), Reheman and Nasar (2007) and Gill et al. (2010) who found that average collection period had a significant negative relationship with firm's profitability. Moreover, the findings from the study corroborate those of Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009) and Mathura (2009). However, the study is the opposite of that by Jakpar et al. (2017) who found that average collection period had a significant and positive relationship with the firm's profitability.

HYPOTHESIS TESTING: RECEIVABLES MANAGEMENT

Ho₃: Receivables Management has no Statistically Significant Relationship With Financial Distress of Non-Financial Firms Listed at NSE in Kenya

The regression result shown in table 4.10 showed that receivables management has a statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya at 1% significant level. This is supported by the p-value corresponding to receivables management variable (p = 0.001). Since the p-value was less than 1% the null hypothesis that receivables management has no statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya was rejected at 99% confidence level. Rejecting the null hypothesis implied that receivables management has a statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya.

4.4.4 Payables Management

The study sought to examine the relationship between payables management and financial distress. The linear regression analysis for the relationship between the payables management variable measured by the days of payables outstanding (DPO) and financial distress measured by Z-score was summarized on table 4.21

Table 4.21: Regression coefficients – FGLS Payables Management and Financial Distress

Variable	coefficient	Standard error	t- statistic	Prob.
Days of payables outstanding	-0.016377	0.000833	- 19.65519	0.0000
constant	5.455019	0.100608	54.22040	0.0000

From table 4.21 a linear regression model: $Y_{it} = \beta_0 + \beta_i X_{it} + e_{it}$ was fitted as:

$Y = 5.455 – 0.0164X$.

Payables management was found to be significant at 1% significance level as supported by the p-value which was 0.0000<0.01. From table 4.21 Z-score and payables management were negatively related as supported by the beta coefficient of -0.0164. Therefore, as the days of payables outstanding increased Z-score decreased and vice versa. The results indicated that a 1% increase in days of payable outstanding leads to 1.64% increase in financial distress. This is because as the days of payables outstanding increased, the Z-score (a measure of financial distress) decreased. Hence, increase in days of payables outstanding drove non-financial firms more into financial distress.

The present study found that shorter days of payables outstanding reduces financial distress. The findings are in tandem with Deloof (2003) who found that less profitable firms stretch their accounts payable. Moreover, the current study echo that

by Garcia et al. (2007) who found that profitable firms take less time to pay their dues early. However, the present study contravenes that by Nobanee and AlHajjar (2009) who found that extending the payables deferral period could increase profitability.

Table 4.22: ANOVA: Payables Management and Financial Distress

Source of Variation	Sum of Squares	df	Mean Square	F	Probability
Regression	2155436	3	718478.6	1036.2	0.0000
Residual	269716.1	389	693.36		
Total	2425152	392	6186.6		

The ANOVA table 4.22 showed that the F test statistic of 1036.2 was significant at 1% level. This was because the p value 0f 0.0000 was less than 1%. The implication of this finding was that the model used was significantly a good fit that could be used for making predictions. Moreover, since the P value was less than 1% the null hypothesis that $\beta_0 = \beta_1 = 0$ was rejected in favour of the alternative hypothesis that at least one coefficient of the regression model was greater than zero. This implied that payables management had a statistically significant relationship with financial distress of non –financial firms listed at NSE in Kenya.

Table 4.23: Model Summary – FGLS Payables Management and Financial Distress

R-squared	Adjusted R-square	Std. error of regression	Sum of squared residual	F-statistic	Prob. F-stat.
0.8581	0.8415	1.5063	796.43	51.76	0.0000

Table 4.23 showed that the coefficient of determination was 0.8581 indicating that 85.81% of total change in financial distress of non-financial firms was accounted for by payables management. The F-statistic obtained was 51.76 which was significant at 1% significant level as evidenced by a p-value of 0.0000. This indicated that the model was a good fit.

RELATIONSHIP BETWEEN PAYABLES MANAGEMENT AND FINANCIAL DISTRESS OF NON-FINANCIAL FIRMS LISTED AT NSE IN KENYA

The study sought to examine the relationship between payables management and financial distress of non-financial firms listed in NSE using days of payables outstanding as a measure of payables management. From table 4.10 DPO had a positive coefficient of 0.1217. Therefore, an increase in days of payables outstanding by 1% led to an average reduction in financial distress (measured by Z- score) by 12.17% of non-financial firms listed in NSE. The coefficient had p-value of 0.0054 which was less than 1%. This showed that DPO was statistically and significantly related with financial distress of non-financial firms listed at NSE over the study period. The results are in agreement with Alipour (2011) who established a positive significant relationship between number of days accounts payables and profitability. However, the study conflicts with that by Mawutor (2014) and Kamara (2014) who found a significant negative correlation between accounts payable period and profitability. Furthermore, the study findings contradicts the studies by Lazaridis and Tryfonidis (2006), Raheman and Nasr(2007) and Juan and Solano (2007) who

reported negative correlation of accounts payable and profitability. Moreover, Gill et al. (2010) found no significant relationship between accounts payable and profitability.

HYPOTHESIS TESTING: PAYABLES MANAGEMENT

Ho$_4$: Payables Management has no Statistically Significant Relationship With Financial Distress of Non-Financial Firms Listed at NSE in Kenya

The analysis result in table 4.11 indicated that payables management was positive and significantly related with financial distress of non-financial firms listed at NSE in Kenya at 1% significant level. This finding is supported by the p-value corresponding to payables management variable (p = 0.0054). Since the p-value was less than 1% the null hypothesis that payables management has no statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya was rejected at 99% confidence level. By rejecting the null hypothesis the study concluded that payables management has a positive statistically significant relationship with financial distress of non-financial firms listed at NSE in Kenya.

4.4.5 Moderating Influence of Firm Value on Financial Distress of Non-Financial Firms Listed at NSE in Kenya

The study sought to establish the moderating influence of firm value on the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. A Moderator variable is one that potentially influences the nature of the relationship between dependent variable and independent variables in empirical research. Moderation refers to interaction effect, where introducing a moderating variable changes the direction or degree of the relationship between the dependent and independent variables (Saunders et al., 2007). According to Fairchild and MacKinnon (2009) moderation could either be enhancing; where increasing the moderator variable increases the primary effect of the predictor variable on the outcome variable, buffering, where increasing the moderator decreases the primary effect of the independent variable on the dependent variable or

antagonistic; where increasing the moderator reverses the primary effect of the explanatory variable on the explained variable

The value of the firm was determined by the sum of market value of equity and market value of debt. Panel data regression using fixed effects model as tested using Hausman test was run, first without moderator and second with moderator. This was done in order to establish whether the effect of different components of working capital management on financial distress changes with the input of interaction between working capital management and firm value variables. The study then compared the panel regression results of the two models to determine whether moderation occurred. As recommended by Fairchild and MacKinnon (2009) moderating effect is deemed significant if the regression coefficients of the moderated variables are statistically significant and the predictive power (R^2) of the moderated regression equation is higher than that of the initial model. Since some moderated variables were highly collinear, the researcher used step-wise panel regression for panel model 2. The results were presented in table 4.24

Table 4.24: Step-wise FGLS Panel regression results for fixed effects with moderator (Model 2)

Panel regression equation 2:			
Panel regression equation	2a	2b	2c
variables	Coefficient(p-value)	Coefficient(p-value)	Coefficient(p-value)
constant	*6.02(0.00)	*6.02(0.00)	*6.02(0.00)
Inventory collection period	*-0.15(0.0003)	*-0.15(0.0003)	*-0.15(0.0002)
Inventory collection period *V		**-5.41E-11(0.058)	*-3.60E-10(0.0000)
Firm value (V)	**-3.90E-09(0.14)	**-3.90E-09(0.14)	**-3.90E-09(0.14)
Days of payables outstanding	*0.13(0.002)	*0.13(0.002)	*0.13(0.0015)
Days of payables outstanding *V	**-5.23E-11(0.0596)		*-4.13E-10(0.00)
Cash conversion cycle	*0.14(0.0004)	*0.14(0.0004)	*0.14(0.0003)
Cash conversion cycle *V	*3.61E-10(0.0000)	*4.14E-10(0.00)	
Average collection period	*-0.15(0.0002)	*-0.15(0.0002)	*-0.15(0.0002)
Average collection period *V	**-5.291E-11(0.055)	*-1.06E-11(0.002)	*-3.08E-10(0.0000)
Statistics			
R^2	0.832	0.832	0.832
Adjusted R-squared	0.808	0.808	0.808
S.E of regression	1.435	1.434	1.435
F-statistic	35.30	35.30	32.28
Prob (F-statistic)	0.0000	0.0000	0.0000

* 1% ** 5% significance levels

The study sought to establish the effect of firm value on the relationship between working capital management and financial distress of non-financial firms listed in NSE. The panel regression results in table 4.24 showed that firm value had a negative and insignificant coefficient of -3.90E-09 as supported by p-value of 0.14 which was greater than 1%. This finding showed that firm value was not an independent variable but a moderating variable. Moreover, the R^2 for model without moderation (model 1) was 0.7978 while the R^2 for the model with moderation (model 2) was 0.832 which was higher than the model 1 counterpart. This showed that the predictive power (R^2) of the moderated regression equation was higher than that of the model 1 indicating presence of moderation (Fairchild & MacKinnon, 2009). In addition, the F-statistic for non-moderated equations was statistically significant indicating that the study variables were together statistically significant, as was observed in the moderated equation. Moreover, the findings indicated that the regression coefficients of interactive variables (the product terms) in the moderated equation were all significant at 1% and 5% levels. This finding implied that the interaction between firm value and working capital management had a statistically significant moderation effect on financial distress of non-financial firms listed at NSE in Kenya.

In particular, the study findings showed a significant and negative relationship between the interaction of inventory collection period and firm value and financial distress of non-financial firms listed at NSE in Kenya. This finding indicated that shortening the inventory collection period increased the value of the Z- score used to measure financial distress. This implied that among highly valued non-financial firms listed at NSE, shortening the inventory collection period reduced financial distress. Similarly, for low valued non-financial firms shortening the inventory collection period reduced financial distress. The result was different between the primary effect and moderated effect of inventory collection period since the magnitude of the effect reduced with the introduction of moderation as supported by the values of the beta coefficients.

Further, the results indicated a significant and negative relationship between the interaction of days of payables outstanding and firm value and financial distress. The primary effect of days of payables outstanding was positive and significant. This implied that among the highly valued non-financial listed firms, increasing the days of payables outstanding led to the increase in financial distress as it lowered the Z-score. However, for low valued non-financial firms, increase in the days of payables outstanding led to the reduction in financial distress as it resulted in an increase in the Z- score of the firms.

The results also showed a significant and positive relationship between the interaction of cash conversion cycle and firm value and financial distress of non-financial firms listed at NSE considering that the primary effect of cash conversion cycle on financial distress was also positive and significant. However, the magnitude of moderation was less than that obtained under the primary regression equation. Although the findings showed that increase in cash conversion cycle led to a decline in financial distress, the degree of reduction in financial distress is higher among the low valued non- financial firms trading on NSE in Kenya.

The results also found a significant and negative relationship between the interaction of average collection period and firm value and financial distress of non-financial firms trading on NSE in Kenya. The primary effect of average collection period on financial distress of non-financial firms trading on NSE was negative and significant. This implied that increase in the average collection period resulted into increase in financial distress among high valued firms. In the same vein, for firms with low value, increase in the average collection period led to increase in their financial distress also since it led to reduction in the Z- score value for the low valued firms. However, the effect was reduced with the introduction of the moderator as evidenced by the beta coefficients.

HYPOTHESIS TESTING: MODERATING INFLUENCE OF FIRM VALUE ON THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND FINANCIAL DISTRESS OF NON-FINANCIAL FIRMS LISTED AT NSE IN KENYA

Ho$_5$:.Firm Value Has no Statistically Significant Moderating Influence on the Relationship Between Working Capital Management and Financial Distress of Non-Financial Firms Listed at NSE in Kenya

The regression results in table 4.10 and table 4.23 showed that the predictive power (R^2) of the moderated regression equation was higher than that of the model 1. In addition, the F-statistic for the moderated equation was statistically significant indicating that the variables used were together statistically significant, as was observed with the moderated equation. Moreover, the findings indicated that the regression coefficients of interactive variables in the moderated equation were all statistically significant at 5% level. This finding meant that the interaction between firm value and working capital management had a significant moderation effect on the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya. Consequently, the null hypothesis that firm value has no statistically significant moderating influence on the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya was rejected.

4.5 Hypothesis Testing About the Overall Significance of the Panel Regression Model

The joint hypothesis H$_o$: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ can be tested by the analysis of variance (ANOVA) technique (Gujarati, 2003). If the F value computed exceeds the critical F value at α percent level of significance, the null hypothesis is rejected. Alternatively, if the p-value of the observed F is sufficiently low, the null hypothesis can be rejected (Gujarati, 2003). From table 4.10 the results showed that the panel regression model was

$Y = 6.1070 + 0.1422X_1 - 0.1419X_2 - 0.1446X_3 + 0.1217X_4$

The results showed that the F- statistics was statistically significant as supported by a p-value of 0.000000. Consequently, the null hypothesis that all the panel regression coefficients were zero was rejected.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In tandem with the general objective of the study which was to establish the effects of working capital management on financial distress of non-financial firms trading on NSE in Kenya, this chapter gives a summary of the results of the results arrived at after testing the study's hypotheses presented in chapter 1 from secondary data. On the basis of these results, conclusions are arrived at fore each of the research objectives. Based on the study results and limitations experienced, policy recommendations and suggestions for further research bare given at the end of the chapter.

5.2 Summary

The study was based on deficiency of clarity as to whether and how working capital management affect financial distress of non-financial firms quoted on NSE in Kenya. Given the research problem, five objectives were derived. The objectives were evaluated over a ten-year period between 2007 and 2016. The target population consisted of all the 41 non –financial firms listed at NSE. The study adopted quantitative research design which used secondary data collected from financial statements of the firms. To establish various aspects of the research objectives the study used both descriptive and inferential statistics.

In inferential statistics, both multiple linear regression and simple linear regression were used to estimate working capital management from financial statements for each of the companies under study. Panel data estimation technique was used to test the effect of working capital management on financial distress of the firms. The following sub-sections provide a summary of the various study objectives and the results of the study's hypotheses.

5.2.1 The Overall Effects of Working Capital Management on Financial Distress of non-financial firms listed at NSE in Kenya.

The study's general objective was to establish the effects of working capital management on financial distress of non-financial firms trading on NSE in Kenya. The study adopted inventory management, cash management, payables management, and receivables management as proxies of working capital management while the Altman's Z-score index of financial distress was used to measure financial distress. The F-test results established that the four working capital management variables together had a significant effect on financial distress of non-financial firms trading on NSE in Kenya. This finding thus indicated that working capital management had a strong effect on financial distress of non-financial firms trading on NSE in Kenya.

5.2.2 Effects of Cash Management on Financial Distress of Non-financial Firms Trading on NSE in Kenya.

The first objective of the study was to examine the effects of cash management on financial distress of non-financial firms trading on NSE in Kenya. This objective was achieved by analyzing the effect of cash conversion cycle (used to measure cash management) on the Z- score index of financial distress. The descriptive statistics indicated that the maximum and minimum in days were 341.27 and 0.7161 days respectively. This showed that non-financial firms listed at NSE take at most 341.27 days and at least 0.7161 days to buy raw material, convert to finished goods, sales products, and collect accounts receivables. The mean of 78.24 indicated that on average a non-financial firm listed at NSE takes 78.24 days to buy raw material, convert the raw material into finished goods, sell the product and finally collect accounts receivables. The standard deviation of 70.14 showed high variability in cash conversion cycle of non-financial firms listed at NSE in Kenya.

The inferential statistics indicated that cash conversion cycle is related with financial distress positively and significantly. The study rejected the null hypothesis that cash management has no statistically significant effect on financial distress of non-financial firms trading on NSE. The positive effect of cash management was

indicated by a positive coefficient of cash conversion cycle (a proxy of cash management) of 0.1422. Hence higher cash conversion cycle reduces financial distress. A reduced cash conversion cycle is an indicator of poor working capital which leads to financial distress. The results indicated that non-financial firms trading on NSE whose cash management was poor were financially distressed.

5.2.3 Effects of Inventory Management on Financial Distress of Non-financial Firms Trading on NSE in Kenya.

The study sought to establish the effects of inventory management on financial distress of non-financial firms trading on NSE in Kenya. To meet this objective the influence of inventory collection period (a measure of inventory management) on Z – score measure of financial distress was analyzed. It took on average 99.24 days to convert inventory held into sale with a maximum of 337.10 days and a minimum of 0.000 days. The standard deviation of inventory collection period was 70.47 which showed a high variability in inventory collection period of non-financial firms quoted on NSE in Kenya.

The results indicated that inventory collection period had a significant and negative relationship with financial distress of non-financial firms trading on NSE in Kenya. This led to the rejection of null hypothesis that inventory management has no statistically significant effect on financial distress of non-financial firms quoted on NSE in Kenya. The negative coefficient of -0.1419 showed that increase in inventory collection period led to reduction in financial distress. The findings indicated that inventory management is a negative predictor of financial distress.

5.2.4 Effects of Receivables Management on Financial Distress of Non-financial Firms Trading on NSE in Kenya.

The study attempted to determine the effects of receivables management on financial distress of non-financial firms trading on NSE in Kenya. The study adopted average collection period as a proxy for receivables management. The descriptive statistics indicated that on average a non-financial firm trading on NSE took 93.48 days to

collect cash from customers with a standard deviation of 64.77. The maximum and minimum days taken by the firms to collect cash from customers were 328.45 days and 0.000 days respectively.

The panel regression results showed that the average collection period had a negative and significant coefficient of -0.1446 at 1% significance level. The null hypothesis that receivables management has no statistically significant effect on financial distress was rejected. The findings portrayed that increasing average collection period significantly enhances financial distress of non- financial firms trading on NSE in Kenya.

5.2.5 Effects of Payables Management on Financial Distress of Non-financial Firms Trading on NSE in Kenya.

The fourth objective of the study was to examine the effects of payables management on financial distress of non-financial firms trading on NSE in Kenya. To meet the objective, days of payables outstanding was used to proxy payables management. The findings of descriptive statistics indicated that a non-financial firm quoted on NSE in Kenya took an average of 114.5 days to pay suppliers with a standard deviation of 78.66. The firms took at most 318.97 days and at least 0.000 days to meet their maturing obligations.

 The inferential statistics reflected a coefficient of 0.1217 for days of payables outstanding. The coefficient was positive and significant at 1% significance level. Hence, the null hypothesis that payables management has no statistically significant effect on financial distress of non-financial firms trading on NSE was rejected at 1% significance level. The findings of study reflected that, during the study period, an increase in days of payables outstanding resulted into a significant decline in the magnitude of financial distress of non-financial firms trading on NSE in Kenya.

5.2.6 Moderating Effect of Firm Value on the Effect of Working Capital Management on Financial Distress of Non-financial Firms Trading on NSE in Kenya.

The fifth study objective was to establish the moderating effect of firm value on the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya. The study adopted the market value of equity as a proxy for firm value. The study results showed that the moderated model (model 2) had a higher predictive power (R^2 = 81.85%) than model 1 (R^2 = 79.78%). The coefficients of interactive variables in the moderated equation were all statistically significant at 5% significant level. Hence the null hypothesis that firm value has no statistically significant moderating effect on the effect of working capital management on financial distress of non-financial firms quoted on NSE was rejected. The findings revealed that firm value had a statistically significant moderating effect on the effects of working capital management on financial distress of non-financial firms trading on NSE in Kenya.

5.3 Conclusion

On the Basis of the findings of the study and in tandem with the objectives of the study, the study came up with a number of conclusions concerning the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya. These conclusions include:

5.3.1 Cash Management and Financial Distress of Non-financial Firms Trading on NSE in Kenya

The first objective of the study was to examine the effects of cash management on financial distress of non-financial firms listed at NSE in Kenya. In the overall regression model the findings indicated that cash conversion cycle had a positive and significant effect on financial distress. Moreover, from the bivariate regression cash conversion cycle was also found to have a positive and significant effect on financial distress. Hence the analyzed panel data and the test of hypothesis indicated that cash

management had a significant and positive effect on financial distress of non-financial firms trading on NSE in Kenya. The conclusion drawn from the findings was that a well-managed cash through increase in cash conversion cycle reduces financial distress of non-financial firms listed at NSE in Kenya.

5.3.2 Inventory Management and Financial Distress of Non-financial Firms Trading on NSE in Kenya

The second objective was to establish the effects of inventory management on financial distress of non-financial firms trading on NSE in Kenya. The overall regression analysis showed that inventory collection period (a measure of inventory management) had a negative and significant effect on financial distress of non-financial firms quoted on NSE. The findings were echoed by the bivariate regression in which inventory collection period was found to have a negative and significant effect on financial distress of non-financial firms quoted on NSE in Kenya. On the basis of the findings the null hypothesis that inventory management had no statistically significant effect on financial distress of non-financial firms listed at NSE in Kenya was rejected. Hence the study concluded that reduction in inventory collection period reduces financial distress of non-financial firms trading in NSE in Kenya.

5.3.3 Receivables Management and Financial Distress of Non-financial Firms Trading on NSE in Kenya

The third objective of the study was to determine the effects of receivables management on financial distress of non-financial firms listed at NSE in Kenya. The findings were made in two levels. The first level was in the overall regression model in which average collection period was found to have a negative and significant effect on financial distress of non-financial firms trading on NSE. The second level was in the bivariate regression where average collection period was also found to have a negative and significant effect on financial distress of non-financial firms quoted on NSE in Kenya. Therefore, the study findings portrayed that average collection period has a significant and negative effect on financial distress of non-

financial firms trading on NSE in Kenya. Consequently, the study concluded that a robust receivables management through reduction in average collection period reduces financial distress of non-financial firms trading on NSE in Kenya.

5.3.4 Payables Management and Financial Distress of Non-financial Firms Trading on NSE in Kenya

The fourth study hypothesis was that payables management has no statistically significant effect on non-financial firms listed at NSE in Kenya. In the overall regression model days of payables outstanding was found to have a positive and significant effect on financial distress of non-financial firms trading on NSE in Kenya. However, the bivariate regression model indicated that days of payables outstanding has a negative and significant effect on financial distress of non-financial firms trading on NSE in Kenya. On the basis of the overall regression model the study found a significant and positive relationship between payables management and financial distress of non-financial firms trading on NSE in Kenya. Therefore, the null hypothesis that payables management has no statistically significant effect on financial distress of non-financial firms listed at NSE was rejected. Consequently, the study concluded that good payables management through increase in days of payables outstanding can reduce financial distress of non-financial firms trading on NSE.

5.3.5 Moderating Effect of Firm Value on Relationship Between Working Capital Management and Financial Distress of Non-financial Firms Trading on NSE in Kenya

The fifth hypothesis of the study was that firm value has no statistically significant moderating effect on the relationship between working capital management and financial distress of non-financial firms listed at NSE in Kenya. The objective was achieved by regression model 2 of the study. From the model firm value had insignificant effect on the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya at 1% significance level but a significant effect on the relationship between the interaction terms and

financial distress. The insignificant effect of firm value in the model without moderator (model 1) indicated that firm value was not an independent variable. In particular, firm value was a moderator variable occasioned by a higher value of coefficient of determination under the moderated model than that obtained under the model without moderator. Based on the findings the study concluded that firm value had a statistically significant moderating effect on the relationship between working capital management and financial distress of non-financial firms trading on NSE in Kenya.

5.4 Recommendations

Based on the findings and conclusions obtained from the study, several recommendations were proposed at two levels. First, the recommendations were based at managerial level. Here the recommendations provided policy directions to managers of non-financial firms on how corporations should man their working capital in order to mitigate the effects of financial distress and subsequent bankruptcy. Secondly, at regulatory level, the recommendations seek to arouse the need to institute appropriate regulatory mechanisms to cushion investors from loss of their investments and hence restore confidence in the bourse.

5.4.1 Cash Management and Financial Distress of Non-financial Firms Listed at NSE in Kenya

The study recommends that management of quoted firms should increase the period of time from buying raw materials, converting to finished goods, sales products, and collecting accounts receivables. This would in effect increase cash conversion cycle of non-financial firms trading on NSE in Kenya. Consequently, financial distress of the firms would decrease. This is premised on the study findings revealing that cash conversion cycle had a positive and significant effect on financial distress of the firms. Moreover, the Capital Markets Authority (CMA) should further tighten the regulations and oversight aspects on working capital management of non-financial firms trading on NSE. This would be through increasing liquidity in the capital market, lowering cost for non-financial firms to trade with ease at NSE, reducing

political instability and economic instability in order to instill investor confidence in the non-financial firms trading on NSE.

5.4.2 Inventory Management and Financial Distress of non-financial Firms trading on NSE in Kenya

The study also recommends that managers of quoted non-financial firms should reduce the period taken to change inventory held into sales. This would be through crafting firm level policy framework that can enhance sales. This would be through extending discounts, favorable price reductions, provision of quality products. This is based on the study's findings that inventory collection period was significantly and negatively related with financial distress of the firms.

5.4.3 Receivables Management and Financial Distress of non-financial Firms Trading on NSE in Kenya

The study further recommends that non-financial quoted firms should reduce the time taken to collect cash from customers for goods sold to them on credit. This is through reducing the firms' average collection period. This is because the study findings revealed that average collection period was significantly and negatively related with financial distress of the firms. Firms that take too long to collect receivables may end up into bad debts which is an expense.

5.4.4 Payables Management and Financial Distress of non-financial Firms Trading on NSE in Kenya

Moreover, the study recommends that management of quoted firms should take longer to meet their maturing obligations. This is through increase in days of payables outstanding. From the study findings payables management had a positive and significant effect on financial distress of non-financial firms trading on NSE. Delaying payment to creditors would allow the firms to fully utilize the funds since payables are sources of short term finance. However management should not take too long to meet the obligations as this can negatively affect their credit rating.

5.4.5 Moderating Effect of Firm Value on the Relationship Between Working Capital Management and Financial Distress of non-financial Firms Trading on NSE in Kenya

The managers of non-financial firms trading on NSE should formulate policies that can increase firm value. This would be through upholding a policy that increases dividend payout. High dividend payment increases share price and ultimately the market value of equity (Walter, 1963). Market value of equity was used as a proxy of value of a firm. However, too highly valued firms were found to be vulnerable to financial distress. This was because highly valued firms indicated low z-score values probably because of diseconomies of scale related to working capital management.

The study findings showed a significant and negative relationship between the interaction of inventory collection period and firm value and financial distress of non-financial firms listed at NSE in Kenya. This implied that among highly valued non-financial firms listed at NSE, shortening the inventory collection period reduced financial distress. Similarly, for low valued non-financial firms shortening the inventory collection period reduced financial distress. The magnitude of the effect reduced with the introduction of moderation as supported by the values of the beta coefficients.

The results indicated a significant and negative relationship between the interaction of days of payables outstanding and firm value and financial distress. This implied that among the highly valued non-financial listed firms, increasing the days of payables outstanding led to the increase in financial distress as it lowered the Z-score. However, for low valued non-financial firms, increase in the days of payables outstanding led to the reduction in financial distress as it resulted in an increase in the Z- score of the firms.

The results also showed a significant and positive relationship between the interaction of cash conversion cycle and firm value and financial distress of non-financial listed at NSE. Although the findings showed that increase in cash conversion cycle led to a decline in financial distress, the degree of reduction in

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financial distress is higher among the low valued non- financial firms trading on NSE in Kenya.

The results also found a significant and positive relationship between the interaction of average collection period and firm value and financial distress of non-financial firms trading on NSE in Kenya. This implied that increase in the average collection period resulted into reduction in financial distress among high valued firms. However, for low valued firms, increase in the average collection period led to increase in their financial distress also since it led to reduction in the Z- score value for the low valued firms.

5.5 Suggested Areas for Further Research

The study was plagued by a number of limitations which may require further studies to address them. Firstly the study considered non-financial financial companies quoted in Kenya only. Hence the study neglected working capital management and financial distress aspects of companies in other countries of East African Community. A study to investigate the effects of working capital management on financial distress among firms in East African Community is recommended given that there are deliberate efforts towards integration of business activities among member states of East African community namely; Tanzania, Uganda, Kenya, South Sudan, Rwanda and Burundi.

Secondly, the study was confined to non-financial firms listed at NSE where only 41 firms at the bourse were studied. This limited the study population to 41 firms which are large in size. The study overlooked working capital management and financial distress of small and medium sized firms in Kenya. Since most firms in Kenya are not quoted this suggests a study on the effects of working capital management on financial distress of small and medium size enterprises. The results from the study could be compared to those of the present study to check for significant differences between working capital management and financial distress of quoted and unquoted companies as well as large and small firms in Kenya.

Thirdly, the study was also confined to four variables namely inventory management, cash management, receivables management and payables management. Further empirical work is encouraged to test other measures like market demand conditions, political stability and financial contagion.

Lastly, the study was done in Kenya. This was due to the budget and time implications of the study. Thus, the applicability of the study findings may be limited to Kenya. Therefore, a comparative study on the effects of working capital management on financial distress of non-financial firms listed in other countries should be carried out.

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APPENDICES

Appendix I: Secondary Data Collection Sheet

VARIABLE	DESCRIPTION										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

ALTMAN
SCORE

Z $Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.010X_5$

Cash management

Cash Conversion cycle = ICP + ACP - DPO

Inventory
management

Inventory collection period (ICP) =

$$\frac{End\ period\ value\ of\ inventory}{cost\ of\ goods\ sold} * 365$$

145

Receivables

Average collection period (ACP)

Management	$= \dfrac{Average\ accoun\,ts\ receivable}{credit\ sales} * 365$

Payable management	Days of payables outstanding
	(DPO) $\quad = \dfrac{Payables\ outstanding}{credit\ purchases} * 365$

Appendix II: Non-Financial Firms Listed at NSE in Kenya

FIRM	FIRM CODE
WILLIAMSON TEA	1
CAR & GENERAL K LTD	2
MARSHALLS (EA) LTD	3
KAKUZI LTD	4
KAPCHORUA LTD	5
LIMURU TEA	6
SASINI LTD	7
SAMEER AFRICA	8
SAFARICOM LTD	9
EXPRESS KENYA LTD	10
KENYA AIRWAYS LTD	11
LONGHORN KENYA LTD	12
NATION MEDIA GROUP LTD	13
SCAN GROUP LTD	14
STANDARD GROUP LTD	15
TPS EASTERN AFRICA	16
UCHUMI SUPERMARKET LTD	17
ATHI RIVER MINING LTD	18
BAMBURI CEMENT COMPANY LTD	19
CROWN PAINTS KENYA LTD	20
EA CABLES LTD	21
EA PORTLAND CEMENT	22
KENGEN CO LTD	23
KENOL KOBIL LTD	24
KENYA POWER & LIGHTING CO LTD	25
TOTAL KENYA LTD	26
CENTUM INVESTMENT CO LTD	27
OLYMPIA CAPITAL HOLDINGS LTD	28
TRANS-CENTURY LTD	29
BOC KENYA LTD	30
BRITISH AMERICAN KENYA LTD	31
CARBACID INVESTMENT	32
EA BREWERIES LTD	33
EVEREADY EA LTD	34
MUMIAS SUGAR LTD	35
UNGA GROUP LTD	36
REA VIPINGO PLANTATIONS	37
EAAGADS CO LTD	38
CMC	39
NSE	40
KENYA ORCHADS	41

Source: Nairobi Securities Exchange, 2016