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# The Association between working capital management and financial distress by listed firms in Kenya.

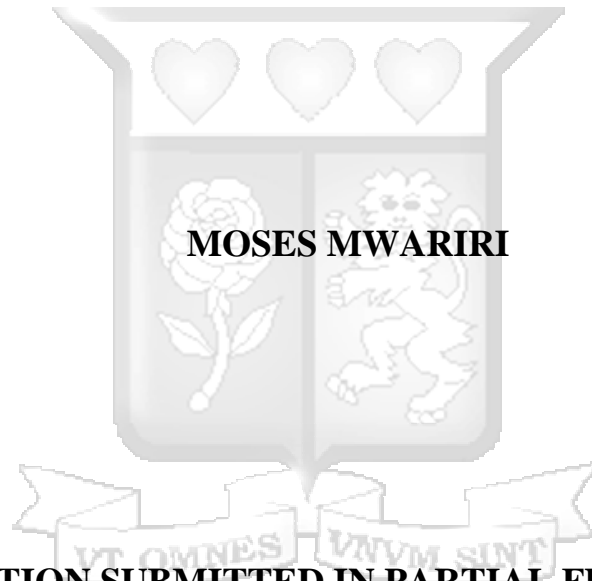
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**THE ASSOCIATION BETWEEN WORKING CAPITAL  
MANAGEMENT AND FINANCIAL DISTRESS BY LISTED FIRMS  
IN KENYA**



**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT FOR  
THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION AT  
STRATHMORE BUSINESS SCHOOL**

**JULY, 2020**

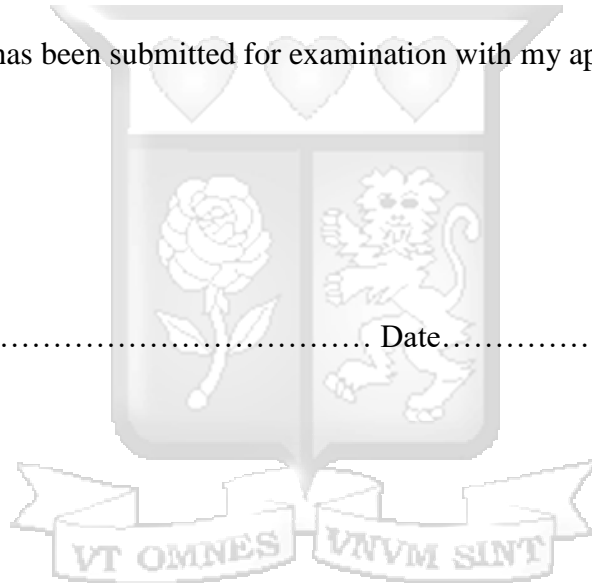
## DECLARATION

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

Signature..... Date.....

This dissertation has been submitted for examination with my approval as the University Supervisor.

Signature..... Date.....



## ABSTRACT

The objective of this study was to assess the association of working capital management practices and financial distress of firms publicly listed at the Nairobi Security Exchange (NSE). The specific objectives of the study was; to establish the influence of cash management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE), to determine the extent to which receivable management practices influence the financial distress of firms publicly listed in the Nairobi Security Exchange (NSE), to investigate the influence of payable management practices on the financial distress of firms publicly listed in the Nairobi Security Exchange (NSE) and; to determine the influence of inventory management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE). The total population of this study will be all the 67 publicly listed in Kenya. Purposive sampling was adopted in selection of 25 firms listed in manufacturing and related sectors. Collected data was analysed through descriptive and inferential statistics. Descriptive statistic included mean, minimum, maximum, standard deviation, skewness and kurtosis. Inferential statistics included Pearson correlation and regression modelling. Data was analysed using Stata 14. Study findings documented that cash conversion period had negative association with financial distress of listed companies in NSE. ARP had inverse and significant influence on financial distress of listed non-financial companies in NSE. Inventory conversion period had negative and significant association with financial distress of listed companies in NSE. Accounts payable period had positive and significant association with financial distress of listed companies in NSE. Control variables had mixed association with financial distress of listed companies with firm size, tangibility and annual growth rate affecting financial distress negatively while leverage and board size had positive association with financial distress. The study concludes that there is need for listed companies in NSE should increase their accounts payable periods should to minimize likelihood of facing financial distress. This approach would release financial resources to meet urgent needs, should decrease their inventory conversion period. This would aid in management minimizing storage costs though it may lead to stock-outs in situations when there is an increase in lead time. To enhance prompt payments of good and services listed companies should provide discounts and appealing terms to those paying in cash. There is need for listed companies to develop measures aimed at managing accounts receivables through creation of avenues for earlier repayment by invoice discounting and delayed payment to allow the company make short term investments which would be beneficial to respective companies. Prompt receipt of payments would enable listed company's opportunities to purchase short term treasury bills and corporate bonds which would diversify their investment portfolio and minimize risk. There is need for development of mechanism aimed at minimizing attributes of cash conversion cycle or increase of financial health status of listed companies. Listed companies should be encouraged on acquisition of assets, decrease in reliance with borrowed capital and decrease of their board size.

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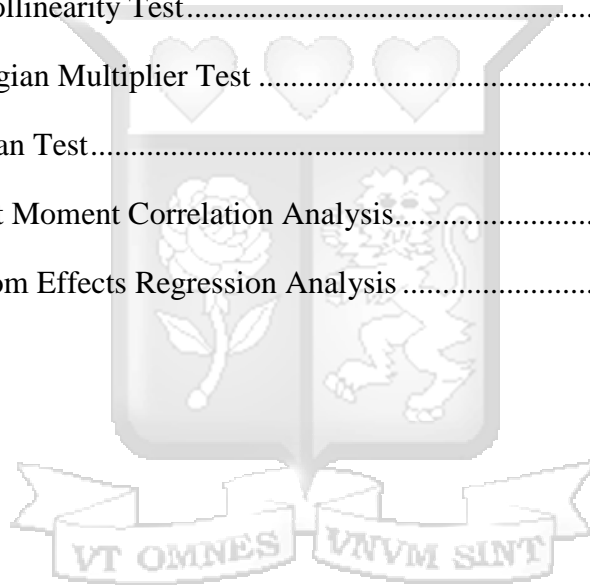
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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

It is worth noticing that the 2008 financial crisis reoriented on the way global and local businesses operated that changed the goal of working capital management from profitability-driven to performance-driven. The crisis caused companies to have difficulties in obtaining short-term bank loans. In such terms companies noticed the importance of having larger cash balances as a hedge against performance risk (Le Guyader 2011). Cash emerged as an important current asset to hold in times of financial crisis as it performed as a cushion against performance shortages (Parr, 2011). There is need to properly manage working capital to ensure that there is optimal working capital in the firm all the time to enhance profitability since majority of businesses tend to fail due to improper management of firm's working capital.

According to Ross, Westerfield & Jordan (2010) working capital management is the management of the short-term financing and investments of a firm It is the management of investments which are required in order to finance day to day operations of the firm (Nkwankwo & Osho, 2010). These investments are the current liabilities and current assets which can be liquidated within a year or less and they are very vital for firm's day-to-day operations (Gunay & Kesimli, 2011). The management entails planning and controlling of the current assets and current liabilities in a way that avoids unnecessary investments and eliminates the risk of failing to meet organizations short term obligation (Eljelly, 2004). Efficient management of working capital especially in many firms, where a significant part of the investments is composed of current assets is very vital.

Working capital management practice refers to the basic principles and guidelines that firms use when controlling their working capital. Financial risks of a firm can be minimized and overall performance improved if well thought working capital management practices are employed (Nazir & Afza, 2009). Pandey (2010) considered

working capital management practices as ways in which firms finance their current assets. Proper management of working capital guarantees a company sufficient cash flow to meet its operating expenses and short-term obligations (Waithaka, 2012). Therefore, executing an effective working capital management practice facilitates firms to improve their performance and earnings.

To ensure an ideal level of working capital is achieved, there are four management practices that can be considered: cash management, inventory management, account receivables management and account payables management practices. Cash management involves the determination of optimal cash to hold bearing in mind the tradeoff between cost of holding too little cash and the opportunity cost of holding too much (Ross et al., 2010). A firm should therefore monitor and plan its cash flows so as to determine the optimum cash to maintain (Atrill, 2006).

Inventory management is a set of controls and guidelines that monitor the levels of inventory and determine what levels should be held, when to replenish, and the quantity of each order (Chandra, 2008). Too much stock causes additional costs in form of potential spoilage, obsolescence and storage costs (Brooks, 2013).

Management of accounts receivable is crucial to a firm because investment in account receivables has both costs and benefits. A firm should therefore strive to maintain such a level of receivables that will achieve the twin objectives of profitability and performance (Dunn, 2009). Payables management entails the decision to balance the benefits of trade credit against the costs associated with the credit (Van-Horne & Wachowicz, 2004). Efficient management of accounts payables will optimize the cash outflow that will ensure the firm's performance is not adversely affected and ultimately the performance of the firm will not be affected in the long run (Uremadu, Egbide & Enyi, 2012).

### **1.1.1 Financial Distress**

Financial distress is one of the most significant threats for many firms globally despite their size and nature. The term financial distress is used in a negative connotation to

describe the financial situation of a company confronted with a temporary lack of liquidity and with the difficulties that ensue in fulfilling financial obligations on schedule and to the full extent (Outecheva, 2007). According to Brownbridge (1998), banks are financially distressed when they are technically insolvent and or illiquid. Insolvency is the inability of a business to have enough assets to cover its liabilities. A situation where a firm's operating cash flows are not sufficient to satisfy current obligations and the firm is forced to take corrective action.

The financial health of a firm is an important prerequisite for economic stability and growth. As a consequence, the assessment of firm's financial conditions is a fundamental goal for many stakeholders. The cost of firm's failure is colossal and hence ailing firms require quick action by supervisory authority to salvage them before they collapse (Cheserek, 2007). Due to this, many financially distressed firms never file for bankruptcy, due to privatization, whereas healthy firms often file for bankruptcy to avoid taxes and expensive lawsuits (Theodossiou et al., 1996). Financial distress can be subdivided into four sub-intervals i.e. decline in performance, failure, insolvency, and default. According Cheserek (2007) measures of financial distress like ROE, ROI, Business value, Profit before tax, Total Assets and Market share. Whereas decline and failure affect the profitability of the company, insolvency and default are rooted on liquidity (Outecheva, 2007). He also noted that, a firm can be distressed without defaulting as default and bankruptcy cannot occur without the preceding period of financial distress.

### **1.1.2 The Nairobi Securities Exchange**

The Nairobi Securities Exchange was constituted as Nairobi Stock Exchange in 1954 as a voluntary association of stockbrokers in the European community registered under the Societies Act. In Kenya, dealing in shares and stocks started in the 1920s when the country was still a British colony. However, the market was not formal as there were no rules and regulations to govern stock broking activities. Trading took place on a 'gentleman's agreement.' Standard commissions were charged with clients being

obligated to honor their contractual commitments of making good delivery and settling relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise. In 1951, an estate agent named Francis Drummond established the first professional stock broking firm. He also approached the then Finance Minister of Kenya, Sir Ernest Vasey, and impressed upon him the idea of setting up a stock exchange in East Africa. The two approached London Stock Exchange officials in July 1953 and the London officials accepted to recognize the setting up of the Nairobi Stock Exchange as an overseas stock exchange. ([www.nse.co.ke](http://www.nse.co.ke)).

There has been instance of listed companies facing financial challenges that have led to them being delisted. For instance, there is a case of Uchumi supermarkets that have been unable to meet rent charges to the extent being evicted from their business premises. These case may be attributes to quality of working capital management.

## **1.2 Statement of the Problem**

The concept of working capital is a key aspect of the corporate strategy and the creation of shareholder's value in the firm. The firms will endeavor to keep a level of working capital in order to ensure that there is maximum yield of the value (Akoto, Awunyo-Vitor & Angmor (2013). Actually, today the concept of working capital is a key aspect in the business environment in Kenya where managers are constantly aligning basic working capital drivers and an optimal level of working capital that will enable the firm to make good its short term obligations as and when they fall due. Recently, there have been cases of firms closing down due to performance problems. Most of these collapses have been very recent. For example, Mumias Sugar Company had temporarily halted its operations in 2018 for what the management described as acute cane shortage and poor financial management practices. The operations and performance of firms registered in Kenya have been a keen interest to the government of Kenya putting in places various measures and regulations to avoid firm closures.

Limited studies have been carried out locally and abroad on the various items effects of performance. Example of international studies include Almazari (2013) who did a study on the effectiveness of working capital and found out that it was of huge importance to both performance and the firm's performance. The study reported that the performance of the firm is disadvantaged in its operations efficiencies and other inefficiencies arise due to this inability to offset obligations. On the flip side, the firm will not be able to provide goods and services and moreover, it will not be able to secure inputs for producing these commodities. Raheman, Afza, Qayyum and Bodla (2010) examined the effect of working capital management on firm's performance in Pakistan and found that working capital management significantly affected the performance of the firms. The study found out a strong correlation between the management of working capital and the performance of the firms studied. In fact, there was a direct relationship between number of days' account payables and the performance of the firm (Lazaridis & Tryfonidis, 2006).

Locally, Mathuva (2009) examined the influence that working capital items have on corporate profitability by studying 30 firms listed the Nairobi Securities exchange for the period of 1993 to 2008 and his findings were that there was a strong direct relationship between the time taken to collect cash and the profitability of the firms. Many studies also targeted firms listed in stock exchange using secondary data only. In the literature, there is conflicting empirical evidence on association of WCM and firm profitability due to factors including size of the sample, proxy measures for variables under study and economic development of the country from which the sample is drawn. Due to these contradictory findings, it is very difficult to generalize the relationship between WCM and profitability.

Extent literature reveals that the studies on working capital management give conflicting results, some concluding that there is a significant effect of working capital management on financial distress, while others find that the effect was insignificant and others find that the effect varies from one industry to another therefore depicting a research gap. Past studies have methodological, conceptual and contextual gaps. Methodological gaps have been shown through use of classical modelling analysis in absence of diagnostic tests.

This may have increased the odds of fitting spurious model. Conceptual gaps indicate that past studies have not considered controlling effect of attributes. Further, controlling effect of variables on each attribute of working capital. Contextually studies have been carried out in developing economies hence their findings may not be generalized in Kenya. In the many registered firms, there is no study depicting the influence of Working Capital Management Practices on their financial distress in Kenya and this will be the uniqueness of this study. The intent of this study was to assess the influence of working capital management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE).

### **1.3 Objectives of the Study**

#### **1.3.1 General objectives**

The general objective of this study was to assess the association between working capital management practices and financial distress in publicly listed firms in Kenya.

#### **1.3.2 Specific Objectives**

This study was guided by the following specific objectives:

- i. To establish the influence of cash management practices on financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE).
- ii. To determine the extent to which accounts receivable management practices influence the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE).
- iii. To investigate the influence of accounts payable management practices on the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE).
- iv. To determine the influence of inventory management practices on financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE).

## 1.4 Research Questions

This study was by guided by the following research questions:

- i. What is the influence of cash management practices on financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE)?
- ii. What is the extent to which accounts receivable management practices influence the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE)?
- iii. What is the influence of accounts payable management practices on the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE)?
- iv. What is the influence of inventory management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE)?

## 1.5 Significance of the Study

This study may be significant to the following:

This study may contribute in adding into the existing pool of knowledge among the registered and potential in Kenya and more so to the firms listed with the NSE. In this case, the results of this study will help the management in these firms to realize issues arising from their working capital management practices and the way they influence the performance of their firms. Through this, they will be in a position to draw up the right strategies towards enhancing their performance through effective working capital management.

The study may inform policy makers and especially the ministry of trade the government regulatory arms on the signs of an impending illiquid firm. This will be of great importance as the required measures will be undertaken towards the operations of registered firms in Kenya. The study findings can also be used to regulate the minimum working capital requirements for registered firms especially the ones listed in the NSE.

This study will also be an important tool for the management, shareholders and other investors on the performance health of firms. This will aid in the decision making.

### **1.6 Scope of the study**

The overall population to be used in this study were publicly available data covering ten years for publicly listed firms at NSE in Kenya. Specifically, the study targeted the data covering ten years (2009-2018) from listed firms in Kenya. This information is published and disclosed in compliance with generally accepted accounting principles and NSE regulations.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter presents literature reviewed in regard to working capital management in firms both locally and internationally. Herein presented are arguments and reports by other authors and academicians. The chapter is divided into theoretical review and empirical review. Besides the chapter presents the conceptual framework, critical review of literature, summary of the reviewed literature as well as research gaps.

#### 2.2 Concept of Working Capital Management

Atrill (2012) defines net working capital as a net of the short-term assets and liabilities that continuously flow into and out of the business that are important for daily operations. Mukhopadhyay (2011) terms working capital as the life giving force of any business venture and states that for continued business operations then the current assets (bank, cash, marketable securities, payment of advance taxes, debtors and inventories) and current liabilities (short-term loans, creditors and advances) should be well managed.

Maintaining the working capital at an optimum is the main concern of working capital managers as a firm loses money in the form of interest on the blocked funds in case of holding excess working capital when there are inadequate opportunities. During periods of economic turbulence, the firms with reliable and efficient working capital management practices are able to survive (Reason, 2008). During periods of economic boom also, efficient management of working capital is important as it involves the management of both current assets and current liabilities (Emery, Finnerty & Stowe, 2014).

According to Darun (2011), working capital management is not only important in cases of financial distress but can be managed in the most efficient way to increase a firm's profitability and a competitive edge over the others. The processes of managing working capital involve significant decisions on various aspects- investment of available cash,

managing accounts receivable, maintaining an absolute level of inventories and the management of accounts payables (Darun, 2011). Gitman (2009) notes the main goal of working capital management as striving to reach and maintain an optimized balance between the various components of working capital, as the success of a business, according to Filbeck and Krueger (2015), depends heavily on the ability of financial executives to manage receivables, payables and inventory in the most efficient way.

## **2.3 Theoretical Review**

This study was guided by the four theories namely: Keynesian performance preference theory, financing advantage theory and transaction cost theory discussed below;

### **2.3.1 Keynesian Performance Preference Theory**

This theory was proposed by Keynes in 1936 and identified three reasons why cash management practices are vital for a firm. The theory argues that cash is required for precautionary, speculative and transaction motives. Precautionary motive is the need for a safety supply of cash and financial reserve. The speculative motive is the necessity to hold cash in order to take advantage of investment opportunities. Transaction motive is the requirement to have cash on hand to pay bills which include the payment of salaries, dividends, trade debts and taxes. Pandey (2010) supported this theory and suggested that the need for cash to run the daily operations of a firm cannot be ignored. Entities should therefore invest adequate available funds in current assets for the success of its operations. The theory highlights why different approaches are adopted in managing cash and therefore enables the study to establish how the various firms have utilized these approaches and its effect on their financial distress. However, this theory does not give the optimum amount of cash that can be held at a given time or a model that can be used to arrive at optimum amount.

The theory is appropriate for the study since there is need for an organization to manage its cash through methods that can easily allow it to convert it easily. Transaction,

speculation and precaution cash should be optimally managed so as to manage the cost of accessing cash for business utilization.

### **2.3.2 Financing Advantage Theory**

This theory was proposed by Schwartz in 1974 and guides managers in setting up an effective receivables management practice. The theory asserts that a supplier may have an advantage over traditional lenders by investigating the credit worthiness of his clients, monitoring the repayments and forcing repayment of credit in case of default. This may offer a number of cost advantages over financial institutions in lending to its customers which include salvaging value from existing assets, information acquisition and controlling the buyer (Joana, Vitorino & Moreira, 2011). A firm should therefore set up a creditors management practice that will ensure the recovery of the credit offered. The theory highlights different practices that can be applied in managing receivables. This enables the study to establish the approaches used by the various firms to manage their receivables and its effect on their financial distress.

The theory is appropriate since there is need for evaluation on sources of working capital in an organization. This would minimize the chances of facing hurdles while seeking for working capital financing. Further, there is need for evaluation of independent working capital items such as inventory, cash, receivables and payables so as to enhance the process of cash conversion cycle and minimize odds of being facing cash crunch.

### **2.3.3 Transactions Costs Theory**

Transactions Costs theory was proposed by Ferris in 1981. It asserts that payables management can lower the transactions costs of paying bills. A firm may wish to cumulate commitments and pay them on monthly or quarterly basis rather than paying them every time goods are delivered. This enables a firm to separate the payment cycle from the delivery schedule (Williamson, 2013).

Furthermore, the firm may have to build up large inventories through credit in order to maintain smooth product cycle. However, this attracts costs of warehousing the inventory and the cost of financing it. Managers should therefore design a strategy that will minimize costs and increase profits. The theory enables the study to find out the practices adopted by the various firms in managing their payables and inventories their effect on financial distress of the firms. The theory is fit for the study since there is need for evaluation of organization working capital principles and minimize odds of experiencing cash related challenges.

## **2.4 Working Capital Management Practices**

### **2.4.1 Cash Management Practices (Cash Conversion Cycle) and Financial Distress**

Cash management is the process of making sure that sufficient cash is available to meet the daily expenses and purposes to reducing the cash holding costs of a company (Naser, Nuseibel & Al-Hadeya, 2013). It involves the process of controlling and planning cash flows within, into and out of a firm and the cash balances held by the firm at a given point in time (Pandey, 2010). It also involves the determination of the ideal cash to hold in consideration to the tradeoff between the opportunity cost of holding too much cash and the trading cost of holding too little (Ross et al., 2010). Therefore, there is need for managers to careful plan and monitor the cash flows over time in order to determine the optimal cash to hold (Atrill, 2006). The key elements of cash management are administration of cash receipts, disbursements, balances and internal controls which include bank reconciliations (Gitman, 2009).

The cash conversion cycle can be defined as the length of time between cash payments for purchase of raw materials and the collection of receivable associated with the sale of finished goods. However, the cash conversion cycle focuses only on the length of time financial flows engaged in the cycle and does not consider the amount of fund committed to a product as it moves through the cash conversion cycle. CCC is a very important component of working capital management and financial distress because it directly affects the liquidity and profitability of the company. Cash conversion Cycle deals with

current assets and current liabilities. The traditional link between the cash conversion cycle and the firm's profitability is that shortening the cash conversion cycle increases firm's profitability i.e. you need to collect from debtors faster than you pay suppliers, holding optimal inventory level so as not to tie your cash etc. On the other hand shortening the cash conversion cycle could harm the firm's operations and reduce profitability. This could happen when taking actions to reduce the inventory conversion period, a firm could face inventory shortages; when reducing the receivable collection period, a firm could lose its good credit customers; and when lengthening the payable deferral period, a firm could harm its own credit reputation. However, identifying optimal levels of inventory, receivables, and payables where total holding and opportunities cost are minimized and recalculating the cash conversion cycle according to these optimal points provides more complete and accurate insights into the efficiency of working capital management (Karaduman, Akbas, Caliskan & Durer, 2011).

In this regard, most authors suggest an optimal cash conversion cycle as more accurate and comprehensive measure of working capital management. Efficiency of working capital management is based on the principle of speeding up cash collections as quickly as possible and slowing down cash disbursements as slowly as possible. This working capital management principal based on the traditional concepts of operating cycle, cash conversion cycle, weighted cash conversion cycle, and net trade cycle. The operating cycle of a firm is the length of time between the acquisition of raw materials and the collections of receivables associated with the sales of finished goods. Although the operating cycle considers the financial flows comes from receivables and inventory, it ignores the financial flows comes from account payables.

Gentry, Vaidyanathan and Wai (2010) suggest a weighted cash conversion cycle that takes into consideration both the timing of financial flows and the amount of fund committed to each stage of the cycle. The weighted cash conversion cycle can be defined as the weighted number of days' funds are committed in receivables, inventories and payables, less the weighted number of days' financial flows are deferred to suppliers. In addition to its' complexity, another limitation of the weighted cash conversion cycle is the

breakup of inventory into three components of raw materials, work in process, and finished goods is not available for outside investigators (Uyar, 2009).

Lazaridis and Tryfonidis (2006) argue that the cash conversion cycle is an additive concept where the denominators for the inventory conversion period, the receivable collection period, and the payable deferral periods are all different, making the addition of the cash conversion cycle components not really useful. They suggest equalizing the denominators of the inventory conversion period, the receivable collection period, and the payable deferral periods. The net trade cycle is basically equal to the cash conversion cycle where the three components of the cash conversion cycle (receivables, inventory, and payables) are articulated as a percentage of sales, this makes the net trade cycle easier to calculate and less complex comparing with the cash conversion cycle and the weighted cash conversion cycle.

Shin and Soenen (1998) also argue that the net trade cycle is a better working capital efficiency measure comparing with the cash conversion cycle and the weighted cash conversion cycle because it indicates the number of "day sales" the company has to finance its working capital and the working capital manager can easily estimate the financing needs of working capital expressed as the function of the expected sales growth. Although the operating cycle, the cash conversion cycle, the weighted cash conversion cycle, and the net trade cycle are powerful measures of working capital management and firm's liquidity comparing with the static traditional ratios such as the current ratio and the quick ratio that are inadequate and misleading in the evaluation of firm's liquidity, these cycles do not consider the optimal levels of receivables, inventories, and payables. The traditional link between these cycles (the operating cycle, the cash conversion cycle, the weighted cash conversion cycle and the net trade cycle) appears in the existing literatures and firm's profitability, market value and liquidity is that shortening these cycles increases firm's profitability, liquidity, and market value. For example; a short cash conversion cycle indicates that the company manage and process inventory more quickly, collects cash from receivables more quickly and slowing down cash payments to suppliers. This increases the efficiency of internal operations of a firm

and results on higher profitability, higher net present value of cash flows, and higher market value of a firm (Lazaridis and Tryfonidis, 2006). The success of a firm depends ultimately on its ability to generate cash inflows in excess of outflows. The cash flow problems of many businesses are caused by poor financial management and in particular the lack of planning for cash requirements (Caballero, Teruel & Solano, 2010).

#### **2.4.2 Accounts Receivable Management Practices and Financial Distress**

Selling on credit is inevitable to a firm as long as there is competition in the industry. If a firm does not extend credit to its customers it will definitely lose them to its competitors. Investment in receivables therefore might not be an issue of choice but a key matter for survival (Kakuru, 2011). To ensure optimal investment in receivables, a firm must have an appropriate receivables management policy. The policy gives the guidelines on how to decide the customers to be offered sales on open account, payment terms, set the limits on outstanding balances and how to handle delinquent accounts (Filbeck & Krueger, 2005).

#### **2.4.3 Inventory Management Practices and Financial Distress**

Inventories consist of raw materials, stores, spares, packing materials, coal, petroleum products, works-in-progress and finished products in stock either at the factory or deposits. It is absolutely imperative to manage inventories efficiently and effectively in order to avoid unnecessary investment in them. An undertaking neglecting the management of inventories will be jeopardizing its long run profitability and may fail ultimately. High inventory levels reduces the cost of possible interruptions in the production process or of loss of business due to the scarcity of products, reduces supply costs, and protects against price fluctuations, among other advantages (Blinder & Manccini, 2011).

Inventory is the stock procured with the aim of selling at a profit and represents the largest cost to a firm. Inventory consists of between 20% and 30% of the total investment in a firm (Garcia & Martinez, 2007). Efficient management of inventory is

therefore important in order to facilitate the firm's operations. Kwame (2007) established that most firms prepare inventory budgets and also review their inventory levels. Enhancing the inventory management enables firms to avoid tying excess capital in idle stock at the expense of other viable ventures (Lazaridis & Tryponidis, 2006).

According to Blinder & Manccini (2011) it is essential to have necessary inventories. Excessive inventory is an idle resource of a concern. The concern should always avoid this situation. The investment in inventories should be just sufficient in the optimum level. The excessive level of inventories consumes the funds of business, which cannot be used for any other purpose and thus involves an opportunity cost. The carrying cost, such as the cost of shortage, handling, recording and inspection, are also increased in proportion to the volume of inventories. This cost will impair the concern profitability further. On the other hand, a low level of inventories may result in frequent interruptions in the production schedule resulting in under-utilization of capacity and lower sales. The aim of inventory management thus should be to avoid excessive inventory and inadequate inventory and to maintain adequate inventory for smooth running of the business operations. Efforts should be made to place orders at the right time with the right source to purchase the right quantity at the right price and quality.

#### **2.4.4 Account Payable Management Practices and Financial Distress**

The most significant source of short-term finance is trade credit. It is relatively easy to obtain; varies with the amount granted; informal and unstructured source of finance. It does not also require any negotiations and form of agreement or restrictions which is common in other sources of finance (Gitman, 2009). A study by Mathuva (2010) on the influence of working capital management on corporate profitability of the listed firms in the NSE found that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers and profitability. The study explained that the more profitable firms take the shortest time to collect cash from the customers. The study further revealed that there exists a highly significant positive relationship between the inventory conversion period and profitability which is a

determinant of financial distress. It was explained that firms, which maintain sufficiently high inventory levels reduce costs of possible interruptions in the production process and loss of business due to scarcity and products. Finally, the study established that there exists a highly significant positive relationship between the average payment period and profitability. He held that the longer a firm takes to pay its creditors, the more profitable it is. In this study, a sample of 30 firms listed on Nairobi Stock Exchange for the periods 1993 to 2008 was used. Both the ported OLS and the fixed effects regression models were used.

#### **2.4.5 Financial Distress**

Financial distress is a condition where a company cannot meet or has difficulty paying off its financial obligations especially to its creditors. It means there is a tight cash situation and if prolonged may lead to bankruptcy and even liquidation. Foster (1986) notes that filing for bankruptcy has been the most commonly used criterion for corporate financial distress. He indicates that this is a legal event which is heavily influenced by the actions of bankers and or other creditors. He continues to define the term corporate financial distress to mean severe liquidity problems that cannot be resolved without a sizable rescaling of the entities. That is, operations or structure. According to Outecheva (2007), financial distress can be subdivided into four subintervals: deterioration of performance, failure, insolvency, and default. Whereas deterioration and failure affect the profitability of the company, insolvency and default are rooted in its liquidity. In general, financial distress is characterized by a sharp decline in the firm's performance and value. He also notes that, a company can be distressed without defaulting. However, he notes that, default and bankruptcy cannot occur without the preceding period of financial distress.

There are various causes of financial distress but Brownbridge (1998) attributed financial distress to insider lending, lending to high risk borrowers, macroeconomic instability, liquidity support and prudential regulation unlike Babalola (2009) who attributes bank distress to a chain of causation from non-panic related, observable, exogenous adverse

changes in the economic conditions of banks, to intrinsic weakening of bank condition, ultimately leading to bank failure. Managerial incompetence is the most common reason for a company's distress and possible failure according to Aasen (2011) but the ultimate cause of failure is often simply running out of cash and other liquid funds. Failure does not happen suddenly but it is a gradual process. As Outecheva (2007) points out, it's a dynamic process where a company moves in and out of financial trouble, as it passes through separate stages, each of which has specific attributes and consequently, 3 contributes differently to corporate failure. This means that financial distress is time varying and once a company enters it; it does not stay in the same state until it is liquidated or until it recovers.

Changes in financial conditions affect the transition from one state of financial distress to another. If financial conditions become aggravated, the company most probably will face bankruptcy. According to Aasen (2011) there are two types of financial distress costs. Direct bankruptcy costs include primarily legal and administrative costs while indirect bankruptcy costs reflect the difficulty of managing a company when it faces bankruptcy. According to Outecheva (2007), indirect costs are hidden and not as obvious as direct costs. He defines indirect costs as lost opportunities which the company misses as a result of a deteriorating solvency position. These costs are unobservable and difficult to estimate. Opler and Titman (1994) found out that total distress costs consist of three classes of factors causing losses in sales: Customer-driven losses which reduce the willingness of the customers to pay for its products and customers ceasing to do business with the distressed firm, causing sales to collapse. Competitor-driven losses which result to competitors pursuing an aggressive marketing and price strategy in order to attract the customers of the vulnerable company and, therefore, squeeze the troubled competitor out of the market. An employee-driven loss decreases the incentives of the employees to work hard and stimulates them to renegotiate their compensation packages or to leave the company.

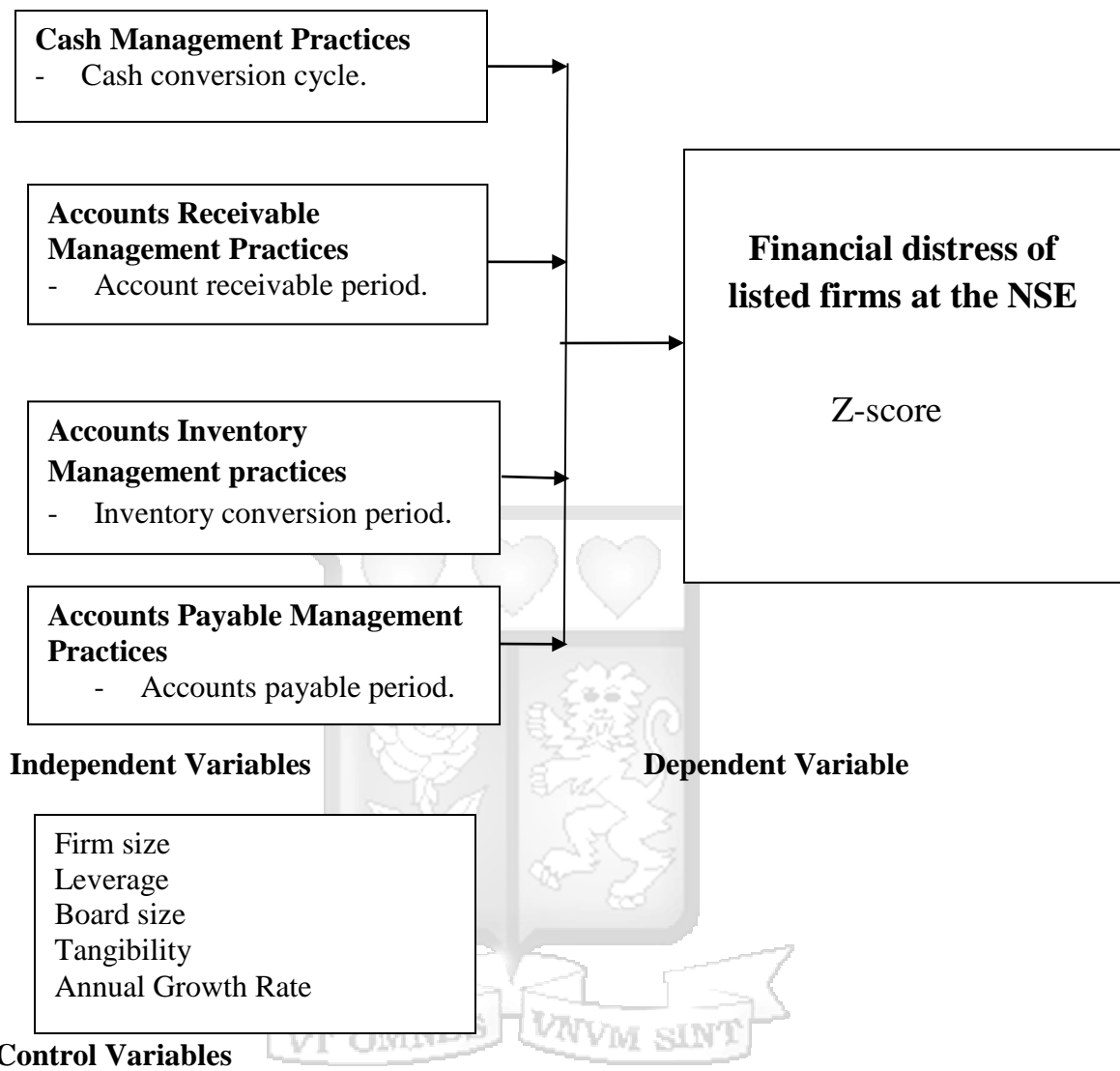
## 2.5 Research Gap

The theories on working capital management reveal that working capital management is an important element of corporate finance since it affects the performance and profitability of a firm. An optimal management of working capital contributes positively to firm's performance and creation of a firm's value. Existing literature also reveals that some of the studies suggested that working capital management significantly affects the performance of a firm. However, other studies observed that the impact of working capital management on corporate profitability is statistically insignificant while others concluded that working capital management influenced corporate profitability in variant proportions depending on the sector the firms operated. This therefore reveals that there exist conflicting findings from one study to another.

## 2.6 Conceptual Framework

Conceptual framework refers to diagrammatic presentation of relationship amongst study variables. In this study it's hypothesized that financial distress is affected by working capital management. These relationship is controlled by firm size, leverage, board size, tangibility and annual growth rate. The relationship is as shown in figure 2.1.





**Figure 2.1 Conceptual Framework**

Source; (Author, 2020)

**Table 2.1 Operationalization of Variables**

<b>Variable</b>	<b>Formula</b>
Financial Distress	$Z\text{-Score} = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$  Where:  $X_1 =$ working capital/total assets  $X_2 =$ retained earnings/total assets  $X_3 =$ profit before interest and tax/total assets  $X_4 =$ market value of equity/book value of total liabilities  $X_5 =$ sales/total assets
Cash Conversion Cycle (CCC)	$ARP + ICP - APP$
Accounts Receivable Period (ARP)	$(\text{Accounts receivables} * 365 / (\text{Credit sales}))$
Inventory Conversion Period (ICP)	$(\text{Inventory} * 365 / \text{cost of goods sold})$
Accounts Payable Periods (APP)	$(\text{Accounts payables} * 365) / (\text{Credit Purchases})$
Firm size	$\text{Ln}(\text{Total assets})$
Board size	Number of board members
Tangibility	$\text{Non-current assets} / \text{Total Assets}$
Annual Growth Rate	$\% \text{ growth in annual gross domestic product (GDP)}$

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter highlights the methodologies to be applied for the study. It illustrates the population of the study, research design, data collection methods, data analysis.

#### **3.2 Research Philosophy**

Research philosophy is knowledge foundation that perceive argues that there are important views that can be derived from the world though anchored on some assumptions. It can be broadly classified into epistemology and ontology. Ontology is further classified into subjectivism and objectivism. The latter perceives social objects exists in reality to external sociological actors and the former is based on sociological phenomena which are outcome of perceptions portrayed by social actors (Saunders, Lewis & Thornhill, 2014). Epistemological philosophical foundations are anchored on desire to expound acceptable knowledge in specific discipline. Here the study is based on understanding researcher and resources to be deployed in the research. It cements that there is need for perception of data in natural set up and its success is based on ability to align research participant's attitude with research at hand (Sekaran & Bougie, 2013). It is broadly classified into; positivism, realism and interpretivism.

In positivism research philosophy, research is based on capacity to gather and consolidate data necessary for hypotheses development. Stated hypotheses are tested for adoption or rejection based on data analyzed (Sekaran & Bougie, 2013). In this philosophy there is highly structured methodological approach adopted to test study hypotheses. It is mostly based on qualitative or quantifiable data which are subjected to rigorous statistical procedures (Saunders et al., 2014). Realism is based on scientific enquiry to unearth truth which may have dominated human mind. It is grouped into critical and direct realism. In the latter the researcher explains to confirm or contradict individual experiences in

comparison to what experienced by our senses (Kothari, 2014). Critical realism is based on explanation of differences observed through our senses in comparison to real world images. Successful realism philosophical adoption in study is based on capacity of the study to critically evaluate and incorporation of multilevel level research approach as per groups, individuals and organizations under examination (Saunders et al., 2014). In interpretivism research aims at exploring human differences as agents of social change. This study is executed amongst human beings as compared to experiments set ups. Social roles are presented and meaning drawn from them (Sekaran & Bougie, 2013). This study was based on positivism research philosophy. It may be the most optimal since the study studied causality between working capital management and financial distress of listed companies in NSE.

### **3.3 Research Design**

Research design is schematic guideline that is adopted while carrying out a study (Kothari, 2011). According to Creswell (2007) through research design it is easier to have a framework that can aid in identification of drift from odds of achieving study objectives. The study adopted causal research design since it aimed at examining the association between working capital management and financial distress by listed companies in Kenya. According to Oso and Onen (2009) causal research design is appropriate when the study seeks to examine causality between variables under examination.

### **3.4 Population**

Target population is complete count of elements under consideration (Kothari, 2011). In this study the target population was all manufacturing and related listed companies in Nairobi Securities exchange from 2009 to 2018. In this study the target population comprised of 67 listed companies as at December 2018.

### **3.5 Sampling Procedure and Sample Size**

Sampling procedure is the procedure of selecting a representative of the target population (Kothari, 2011). Sampling procedure can be probabilistic if all elements in the target have equal chances of being considered and subjective if there is a judgmental approach to be followed while selecting respondents in a study (Sekaran & Bougie, 2013). In this study purposive sampling was adopted in selection of 25 firms that were listed in manufacturing or related sectors since they had working capital operating cycle.

### **3.6 Data Collection Methods**

The researcher used desktop search to answer the research questions; what is the influence of cash management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE)? What is the extent to which accounts receivable management practices influence the financial distress of firms publicly listed in the Nairobi Security Exchange (NSE)? What is the influence of accounts payable management practices on the financial distress of firms publicly listed in the Nairobi Security Exchange (NSE)? What is the influence of inventory management practices on financial distress of firms publicly listed in the Nairobi Security Exchange (NSE)? A secondary data collection sheet was prepared to record measures on financial distress and cash conversion cycle, accounts payable, inventory conversion, firm size, leverage, board size, tangibility, annual growth rate covering the period 2009 until 2018 that was sourced from the publications of manufacturing and related firms listed in the NSE.

### **3.7 Data Analysis**

Data collected will be entered in Microsoft Excel and exported to Stata 14 that will be the main tool for data analysis. Quantitative data was analysed through use of descriptive statistics that included mean, standard deviation. Further, inferential statistics that included correlation to examine strength of association between working capital management and financial distress of non-financial companies listed in NSE. Further,

multiple regression model examined the strength of association between working capital management and financial distress of listed non-financial companies. Prior to modelling diagnostic tests on normality, heteroskedasticity, multicollinearity, autocorrelation, stationarity and granger causality was carried out. The model was of the form:

$$Y_{it} = \beta_0 + \beta_1ARD_{it} + \beta_2ICP_{it} + \beta_3APP_{it} + \beta_4CCC_{it} + \beta_{ij}controls + e_{it} \dots \dots \dots (3.1)$$

Where;

$Y_{it}$ =Financial Distress

In the current study financial distress was measured using Altman's Z score for both manufacturing. Altman's Z score for manufacturing companies ranges from 1.81 to 2.67, whereby any firm which scores less than 1.81 has high chances of financial distress, it will be in grey area if the score ranges from 1.81 to 2.67 and above 2.67 depicts safe zone. Altman's original Z-score equation was:

$$Z = 0.012X_1 + 0.014X_2 + 0.33X_3 + 0.006X_4 + 0.999X_5 \dots \dots \dots 3.2$$

Where:

$X_1$ = working capital/total assets

$X_2$ = retained earnings/total assets

$X_3$ = profit before interest and tax/total assets

$X_4$ = market value of equity/book value of total liabilities

$X_5$ = sales/total assets

$ARD_{it}$  - Accounts Receivable Days

$ICP_{it}$  -Inventory Conversion Period

APP<sub>it</sub>-Average Payment Period

CCC<sub>it</sub>-Cash Conversion Cycle

Controls Variables: Control variables to be used in the study like firm size, leverage, age, as seen tangibility. Study findings were presented in tables and figures.

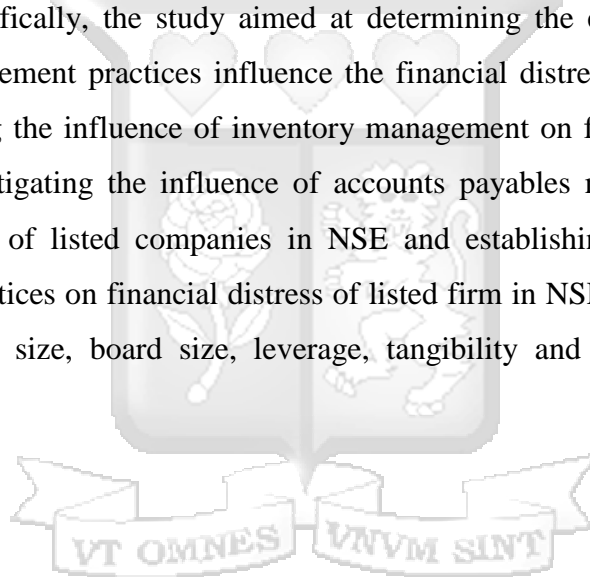


## CHAPTER FOUR

### FINDINGS AND DISCUSSION

#### 4.1 Introduction

In this chapter findings and discussions will be presented. Study findings will comprise of descriptive statistics, diagnostics tests, and correlation and regression analysis. The study data comprised of 178 unbalanced panels of listed non-financial companies as shown in Table 4.1. The main objective of the study was to assess the association between working capital management practice and financial distress of listed companies in publicly listed companies. Specifically, the study aimed at determining the extent to which accounts receivable management practices influence the financial distress of listed companies in NSE, establishing the influence of inventory management on financial distress of listed companies, investigating the influence of accounts payables management practices on financial distress of listed companies in NSE and establishing the influence of cash management practices on financial distress of listed firm in NSE. In addition, controlling effecting of firm size, board size, leverage, tangibility and annual growth rate was examined.



**Table 4.1 Response Rate**

<b>Company</b>	<b>Frequency</b>	<b>Percent</b>
Athi R.	4	2.2
Bamburi	5	2.8
BAT	8	4.5
BOC	9	5.1
Car and G.	10	5.6
Carbacid	10	5.6
Crown	4	2.2
EA Cables	5	2.8
EA Port	7	3.9
Eaagads Ltd	4	2.2
EABL	6	3.4
Eveready	9	5.1
Flame Tree Group Holdings Ltd	3	1.7
Kakuzi	10	5.6
Kapchorua	10	5.6
KenGen	5	2.8
Kenol K	6	3.4
Kenya P.	3	1.7
Limuru T.	4	2.2
Mumias	7	3.9
Rea V.	8	4.5
Sameer	4	2.2
Sasini	10	5.6
Total K	10	5.6
Unga	9	5.1
William T.	8	4.5
<b>Total</b>	<b>178</b>	<b>100</b>

**4.2 Descriptive Statistics**

Descriptive measures of central tendencies that included mean were used to examine average of working capital management practices. Dispersion was examined through minimum, maximum and standard deviation. Flatness was examined using skewness and kurtosis coefficient. Jarque Berra tested normality of the data. As shown in Table 4.2 average financial distress was 7.4, with a minimum of 0.5 and maximum of 46.5. This shows most of firms were not distressed. These findings mirrored Githira, Muturi and Nasieku (2019a) who documented that most companies which are listed in East Africa

securities exchanges were not financially distressed since they had Altman's Z score greater than 2.6 (in safe zone, Z score > 2.6, between 1.1 to 2.6 indicates grey area and Z < 1.1 shows financially distressed firms). Financial soundness of these listed companies could be attributes to their ability to respond to sporadic business environment.

The average receivables period was 49.4 days which translated to receipt of most payments within six weeks. The maximum period was 206.2 days which was almost nine months this may pose a threat to working management approach adopted by specific firm. Ultimately, these days may force listed companies to adopt conservative or matching working capital management strategies to optimize on benefits associated with each. The average inventory working capital practice was 29.5 days, this translated to incurrence of manageable storage costs, though it may be disadvantageous in situations when they may be distractions in lead time due to sporadic business environment. Some firms were disadvantaged since they had a maximum of 120.5 days of inventory management which may escalate likelihood of running out of raw materials. The average payment periods were 52.3 days which was higher than average receivable periods. This may constrain working capital management periods of listed companies since there may be payment frustration with at least three days as corporation anticipates to receive payments. The situation ought to be altered so as to minimize likelihood of financial distress. The average cash conversion cycle was 53.2 days with a maximum of 194.5 days. This indicates likelihood of listed companies incurring huge costs associated with working capital management owing to high number of days.

The average leverage of listed companies was 0.2, board size was 8, tangibility was 0.3 and average change in growth rate was 5%. Since growth rate was positive there were low chances of listed companies experiencing financial distress. Jarque-Berra tests assumes that data is normally distributed as compared to an alternative hypothesis that the data is not normally distributed. Since p value was less than 0.05, there was enough evidence to show that the data was not normally distributed. Non-normality of financial data was anticipated since listed companies of different size, hence their demand for working capital would differ. Also, these companies are listed in different sectors whose

financial needs differs. These results concurred with Githira, Muturi and Nasieku (2019b) who documented that firm financial characteristics of listed companies in Nairobi Securities Exchange were not normally distributed.

**Table 4.2 Descriptive Statistics**

	Z score	ARP	ICP	APP	CCC	Firm size	Leverage	Board size	Tangibility	GDP growth rate
Mean	7.4	49.4	29.5	52.3	53.2	15.2	0.2	7.8	0.3	0.05
Median	5.3	48.3	18.5	44.6	6.0	15.5	0.1	8.0	0.2	0.06
Maximum	46.5	206.2	120.5	203.0	194.5	21.1	1.0	13.0	0.8	0.08
Minimum	0.5	1.1	1.0	8.1	-157.0	3.5	0.0	3.0	0.0	0.00
Std. Dev.	7.6	36.4	30.6	41.1	76.7	2.7	0.2	2.3	0.1	0.02
Skewness	2.6	1.0	1.3	1.4	0.2	-1.9	1.3	0.0	1.9	-0.64
Kurtosis	11.0	4.7	3.7	5.4	2.6	9.3	4.6	2.6	7.5	2.67
Jarque-Bera	668.8	50.1	53.4	104.6	1.6	395.5	69.1	1.0	261.2	12.91
Probability	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.00
Observations	178	178	178	178	178	178	178	178	178	178

### 4.3 Panel Diagnostic Tests

Robustness of mobile fitted from panel data is inherent from panel diagnostic tests. Hence, stationarity test, serial correlation, heteroscedasticity, multicollinearity, Hausman test and Langragian multiplier test were carried and study findings presented as shows.

#### 4.3.1 Stationarity Test

Panel unit root test was carried to test stationarity of study variables. The null hypothesis of this test stated that the data was not stationary against an alternative that the data was stationary. Since the p value was less than 0.05, then Z score, accounts receivables practices, inventory management practices, accounts payables management, cash conversion cycle, firm size, leverage, board size, tangibility and annual GDP growth rate were stationary hence there was no need to differentiate them.

These findings were in agreement with Wairimu, Muturi and Olouch (2019) who reported that firm size, profitability, growth opportunities, tangibility and leverage of listed non-financial listed companies in Nairobi Securities Exchange were stationary. Also, Githira et al., (2019a) and Githira et al., (2019b) documented stationarity of firm value, financial health, liquidity, leverage and stock return of listed non-financial companies in East Africa Securities Exchanges and Nairobi Securities Exchanges.

**Table 4.3 Stationarity Test**

<b>Variable</b>		<b>Statistic</b>	<b>Value</b>	<b>p-value</b>
Z score	Inverse chi-squared	P	-5.59	0.000
	Inverse normal	Z	-1.59	0.000
	Inverse logit t	L*	41.18	0.000
	Modified inv. chi-squared	Pm	89.81	0.000
ARD	Inverse chi-squared	P	-3.55	0.000
	Inverse normal	Z	-1.98	0.000
	Inverse logit t	L*	47.15	0.000
	Modified inv. chi-squared	Pm	142.94	0.000
ICP	Inverse chi-squared	P	-43.22	0.000
	Inverse normal	Z	-10.21	0.000
	Inverse logit t	L*	75.44	0.000
	Modified inv. chi-squared	Pm	60.04	0.000
APP	Inverse chi-squared	P	-4.81	0.000
	Inverse normal	Z	-1.26	0.000
	Inverse logit t	L*	38.24	0.000
	Modified inv. chi-squared	Pm	104.54	0.000
CCC	Inverse chi-squared	P	-20.75	0.000
	Inverse normal	Z	-3.65	0.000
	Inverse logit t	L*	55.64	0.000
	Modified inv. chi-squared	Pm	53.84	0.000
Firm size	Inverse chi-squared	P	-9.04	0.000
	Inverse normal	Z	-2.35	0.000
	Inverse logit t	L*	47.99	0.000
	Modified inv. chi-squared	Pm	65.25	0.000
Leverage	Inverse chi-squared	P	-5.30	0.000
	Inverse normal	Z	-2.88	0.000
	Inverse logit t	L*	39.19	0.000
	Modified inv. chi-squared	Pm	52.19	0.000

Board size	Inverse chi-squared	P	-3.20	0.000
	Inverse normal	Z	-1.36	0.000
	Inverse logit t	L*	28.44	0.000
	Modified inv. chi-squared	Pm	74.38	0.000
Tangibility	Inverse chi-squared	P	-4.93	0.000
	Inverse normal	Z	-1.51	0.000
	Inverse logit t	L*	28.39	0.000
	Modified inv. chi-squared	Pm	64.71	0.000
GDP Growth rate	Inverse chi-squared	P	-15.06	0.000
	Inverse normal	Z	-6.51	0.000
	Inverse logit t	L*	101.05	0.000
	Modified inv. chi-squared	Pm	81.53	0.000

#### 4.3.2 Panel Serial Correlation

Serial correlation is a situation in which error terms of adjacent time periods are related. It is present in a data set if past observations has influence on subsequent ones. Although, serial correlation has no effect on unbiasedness of ordinary least squares estimators it affects their efficiency. Hence, it increases likelihood of rejecting null hypothesis when it is right (Baltagi, 2005). Wooldrige serial correlation test was adopted in this study, its null hypothesis stated that there was no serial correlation against an alternative that there was serial correlation. As shown in Table 4.4, there was no first order serial correlations since p value was greater than 0.05.

**Table 4.4 Panel Serial Correlation**

Test	F Statistics	P value
Wooldrige Serial Correlation	0.223	0.752

#### 4.3.3 Panel Heteroskedasticity

Classical regression modelling assumes that there is uniformity of error terms a condition referred as homoscedasticity. If this condition is violated, then there is heteroscedasticity. Heteroskedasticity was tested using Modified Wald test that assumed that the error term was homoscedastic. As shown in Table 4.5, there was heteroscedasticity hence since the

p value was less than 0.05. These findings were congruent to Githira et al., (2019a) and Wanjau, Muturi and Ngumi (2018) who documented that there was heteroscedasticity in financial data of listed companies in East Africa securities Exchange, hence they fitted regression models using robust standard errors. Muchiri, Muturi and Ngumi (2016) documented heteroskedasticity in their examination of the effect of financial structure on financial leverage of listed companies in East Africa securities exchange, consequently they fitted regression models using Feasible Generalized Least Squares (FGLS). This study fitted regression with robust standard errors.

**Table 4.5 Panel Heteroskedasticity**

<b>Test</b>	<b>Chi Square</b>	<b>P value</b>
Modified Wald Test	36.15	0.00

#### **4.3.4 Multicollinearity Test**

Independent variables should not be correlated with each other. Their degree of collinearity was evaluated using tolerance limits and variance inflation factor. According to Baltagi (2005) independent variables will be related if their tolerance limits are less than 0.1 and variance inflation factors greater than 10. As shown in Table 4.6, independent and control variables were not correlated hence there was no need to drop any variable or carry out model re-specification. These results confirmed Wanjau et al., (2018), Wanjau and Githira (2018) who found that corporate governance transparency, financial performance, leverage and micro-economic characteristics of listed companies in East Africa securities exchange were not correlated.

**Table 4.6 Multicollinearity Test**

	<b>Collinearity Statistics</b>	
	<b>Tolerance</b>	<b>VIF</b>
ARP	0.813	1.23
ICP	0.723	1.383
APP	0.837	1.195
CCC	0.722	1.385
Firm size	0.748	1.337

	<b>Collinearity Statistics</b>	
	<b>Tolerance</b>	<b>VIF</b>
Lev	0.727	1.376
Board size	0.878	1.139
Tangibility	0.875	1.143
Annual GD Growth	0.971	1.03

#### **4.3.5 Langragian Multiplier Test**

Langragian multiplier test aids in choosing between mutually exclusive models; random effects and ordinary least squares regression. The null hypothesis states that variances across entities are zero or there is no panel effect against an alternative that there are panel. As shown in Table 4.7, the p value was greater than 0.05, hence we rejected the null hypothesis and concluded that there was evidence of variations across companies hence OLS was not the most appropriate model to fit.

**Table 4.7 Langragian Multiplier Test**

<b>Test</b>	<b>Chi Square</b>	<b>P value</b>
Breusch and Pagan Lagrangian multiplier	15.09	0.068

#### **4.3.6 Hausman Test**

Hausman test was adopted to evaluate the optimal model to fit between fixed effects and random effects model. The null hypothesis for this test was that the most appropriate model to fit was random effects and the alternative was in favor of fixed effects. AS shown in Table 4.8, chi square statistics was 15.94 with a p value of 0.07. Since the p value was greater than 0.05, there was no enough evidence to warrant rejection of the null hypothesis hence we concluded that the most appropriate model to fit was random effects model.

These findings contradict Wanjau et al., (2018) who fitted fixed effects on examination of the influence of corporate transparency on financial performance of listed companies in East Africa Securities Exchange. The findings concurred with Muchiri et al., (2016) who

fitted random effects model on examination on the influence of financial structure on financial performance of listed companies in East Africa Securities Exchange. Also, the study contradicted Tarus and Omandi (2013) who investigated the effect of corporate governance transparency on financial performance of listed companies in NSE.

**Table 4.8 Hausman Test**

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
		15.94	9	0.07
Variable	Fixed	Random	Var (Diff.)	Prob.
ARP	-0.03	-0.04	0.00	0.01
ICP	-0.03	-0.04	0.00	0.06
APP	0.02	0.02	0.00	0.82
CCC	-0.01	-0.01	0.00	0.79
Firm size	-1.45	-1.45	0.01	1.00
Leverage	1.12	2.23	1.43	0.35
Board size	0.91	0.55	0.03	0.05
Tangibility	-1.58	-3.60	1.18	0.06
Annual growth rate	-22.72	-26.85	14.55	0.28

#### 4.3.7 Product Moment Correlation Analysis

Product Moment correlation analysis examined the strength of association between working capital management and financial distress of listed companies in Nairobi Securities Exchange. Findings in Table 4.9 documented negative and significant association between accounts receivables period and financial distress ( $\rho = -0.47$ ,  $p$  value  $< 0.05$ ). Inventory conversion period has negative and significant association with financial distress of listed companies in NSE ( $\rho = -0.47$ ,  $p$  value  $< 0.05$ ). Accounts payables period has positive and significant association with financial distress of listed companies in Nairobi Securities Exchange ( $\rho = 0.42$ ,  $p$  value  $< 0.05$ ).

Cash conversion cycle had negative and significant association with financial distress of listed companies in NSE ( $\rho = -0.47$ ,  $p$  value  $< 0.05$ ). Firm size had negative and significant association with financial distress of listed companies in NSE ( $\rho = -0.66$ ,  $p$  value  $< 0.05$ ). Leverage has positive and significant association with financial distress of

listed companies in NSE ( $\rho = 0.43$ ,  $p$  value  $< 0.05$ ). Board size had positive and not-significant association with financial distress of listed companies ( $\rho = -0.01$ ,  $p$  value  $> 0.05$ ). Tangibility has negative and significant association financial distress of listed companies in NSE ( $\rho = -0.34$ ,  $p$  value  $< 0.05$ ). Annual gross domestic product growth rate has negative and significant association with financial distress of listed companies in NSE ( $\rho = -0.17$ ,  $p$  value  $< 0.03$ ).

**Table 4.9 Product Moment Correlation Analysis**

	Z score	ARP	ICP	APP	CCC	Firm size	Leverage	Board size	Tangibility	Annual growth rate
Z score	1									
ARP	-0.47	1								
ICP	0.00	0.29	1							
APP	-0.47	0.00	-0.24	1						
CCC	0.00	0.42	0.36	-0.29	1					
Firm size	-0.47	0.00	0.00	0.00	0.24	1				
Leverage	0.00	0.12	0.00	-0.28	0.00	-0.24	1			
Board size	0.00	0.10	0.00	0.16	0.00	0.00	0.18	1		
Tangibility	0.43	-0.14	-0.38	0.11	-0.31	-0.24	0.02	-0.02	1	
Annual growth rate	0.00	0.06	0.00	0.36	0.08	0.00	0.00	0.83	0.05	1
	0.03	0.65	0.88	0.58	0.65	0.16	0.05	0.96	0.49	

#### 4.4 Random Effects Regression Analysis

In model 1, an F statistic of 2.75 and  $p$  value  $< 0.05$  indicates that CCC, firm size, leverage, board size, tangibility and annual growth rate had significant influence on financial distress. An R squared of 0.288, indicates that they account for 28.8% changes

in financial distress. CCC has positive and significant effect on financial distress ( $\beta = -0.01$ ,  $p$  value  $< 0.05$ ). The findings concur with Caballero et al., (2010) who argues that there is need for prudent cash management to minimize challenges associated with poor financial management. In agreement with Gentry et al., (2010) there is need for consideration of timing and amount of cash committed in different phases of cash conversion cycle to increase the odds of prudent financial management.

In model 2, an F statistic of 2.46 and  $p$  value  $< 0.05$  indicates that ARP, firm size, leverage, board size, tangibility and annual growth rate had significant influence on financial distress. An R squared of 0.319, indicates that they account for 31.9% changes in financial distress. ARP has inverse and significant effect on financial distress ( $\beta = -0.02$ ,  $p$  value  $< 0.05$ ). The findings supported Kakuru (2011) who argues that credit sales would increase organization sales and to support them there is need for development of robust credit management strategy that would optimize organization competitive advantage. Moreover, Filbeck and Krueger (2005) argues that organization credit sales program should guide on payment terms and set limits on how to settle outstanding balances.

In model 3, an F statistic of 2.357 and  $p$  value  $< 0.05$  indicates that ICP, firm size, leverage, board size, tangibility and annual growth rate had significant influence on financial distress. An R squared of 0.276, indicates that they account for 27.6% changes in financial distress. ICP has inverse and significant effect on financial distress ( $\beta = -0.01$ ,  $p$  value  $< 0.05$ ). The findings agreed with Blinder and Manccini (2011) who argues that inventory management policy should mitigate costs associated with stock. According to Lazaridis and Tryponidis (2011) optimal inventory management would minimize odds of holding excess working capital.

In model 4, an F statistic of 4.073 and  $p$  value  $< 0.05$  indicates that APP, firm size, leverage, board size, tangibility and annual growth rate had significant influence on financial distress. An R squared of 0.268, indicates that they account for 26.8% changes in financial distress. APP has inverse and significant effect on financial distress ( $\beta = -$

0.005,  $p$  value  $< 0.05$ ). Management of accounts payables involves the balancing of the benefits of trade credit against the costs of foregoing cash discounts, late payment penalties, opportunity cost associated with deterioration in credit standing and chance of increase in the price that can be imposed by the seller on the buyer (Van-Horne & Wachowicz, 2004). The ultimate effect of managing accounts payables efficiently is to maintain cash outflow which ensures a firm's performance is not adversely affected and consequently the firm's profitability also will not be affected (Uremadu et al., 2012).

In model 5 multiple regression analysis was adopted to examine the nature of association between working capital management and financial distress of listed companies in NSE. As shown in Table 4.9, there was significant association between working capital management and financial distress of listed companies in NSE,  $F$  statistics = 36.21,  $p$  value  $< 0.05$ . An  $R$  squared of 0.66, indicated that 66 percent of changes in financial distress of listed companies in NSE can be accounted for by working capital management, firm size, leverage, board size, tangibility and annual growth rate while the remaining percentage can be accounted for by other factors excluded in the model.

Accounts receivables period had negative and significant association with financial distress of listed companies in NSE ( $\beta = -0.04$ ,  $p$  value  $< 0.05$ ). This implies that unit increase in accounts receivables payment period reduces likelihood of financial distress by -0.04 units holding other attributes constant. Inventory conversion period had negative and significant association with financial distress of listed companies in NSE ( $\beta = -0.04$ ,  $p$  value  $< 0.05$ ). This implies that unit increase in inventory conversion period decreases likelihood of financial distress constant while holding other factors constant. Accounts payables period had positive and significant association with financial distress of listed companies in NSE ( $\beta = 0.02$ ,  $p$  value  $< 0.05$ ). This implies that unit increase in accounts payables period increases likelihood of financial distress by 0.02 holding other attributes constant. Cash conversion cycle has negative and significant association with financial distress of listed companies in NSE ( $\beta = -0.01$ ,  $p$  value  $< 0.05$ ). This implies that unit increase in cash conversion cycle decreases financial distress by 0.01 units while holding other factors constant.

Firm size has negative and significant association with financial distress of listed companies in NSE ( $\beta = -1.45$ , p value  $< 0.05$ ). This implies that unit increase in firm size decreases financial distress by 1.45 units. Leverage has positive and not significant association with financial distress of listed companies in NSE ( $\beta = 2.23$ , p value  $> 0.05$ ). Board size has positive and significant association with financial distress of listed companies in NSE ( $\beta = 0.55$ , p value  $< 0.05$ ). This implies that unit increase in board size increases financial distress by 0.55 units while holding other factors constant. Tangibility has negative and not significant association with financial distress of listed companies ( $\beta = -3.60$ , p value  $> 0.05$ ). Annual growth rate of gross domestic product has negative and not significant association with financial distress of listed companies in NSE ( $\beta = -26.85$ , p value  $> 0.05$ ).



**Table 4.10 Random Effects Regression Analysis**

Dependent Variable Independent variables	Financial Distress				
	Model 1	Model 2	Model 3	Model 4	Model 5
C	29.11 (.00)***	31.14 (0.00)***	29.62 (0.00)***	31.5 (0.00)***	29.56 (0.00)***
CCC	-0.1 (.034)***				-0.01 (0.00)***
ARP		-0.02 (0.01)***			-0.04 (0.00)***
ICP			-0.01 (0.00)***		-3.24 (0.00)***
APP				0.005 (.00)***	2.27 (0.02)***
Firm size	-1.25 (.007)***	-1.34 (0.00)***	-1.28 (0.01)***	-1.51 (.003)***	-1.45 (0.00)***
Leverage	1.681 (.587)	2.76 (0.37)	1.37 (0.67)	1.196 (0.709)	2.23 (0.25)
Board size	-0.197 (.544)	-0.2 (0.534)	-0.198 (.665)	-0.146 (.673)	0.55 (0.00)***
Tangibility	-0.698 (.882)	1.76 (0.706)	1.372 (.775)	3.093 (.515)	-3.60 (0.12)
Annual growth rate	-12.98 (.459)	-14.34 (0.416)	-11.02 (.533)	-13.541 (.442)	-26.85 (0.06)
R-squared	.288	0.319	0.276	.268	0.66
Adjusted R-squared	.265	0.304	0.254	.253	0.64
F-statistic	2.75 (.014)***	2.46 (.026)***	2.357 (.033)***	4.073 (.00)***	36.21 (.00)***
Durbin Watson	.653	0.634	0.666	0.671	1.45
n	178	178	178	178	178

Slope coefficient (P value) \*\*\*(significant at 5%)

## **CHAPTER FIVE**

### **SUMMARY CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents findings summary, conclusions and recommendations. Suggestions for future studies are documented and they are in line with gaps identified in line with the issues captured in the study.

#### **5.2 Summary of Findings**

The overall objective of the study was to examine association between working capital management and financial distress of listed companies in NSE. Also, controlling effect of firm size, leverage, board size, tangibility and annual growth rate was examined. To achieve the main objective descriptive research design and unbalanced panel data was gathered among registered listed companies in NSE. Secondary data was retrieved from annual financial statements from 2007 to 2016. Descriptive statistics that included measures of central tendencies and measures of dispersion were applied for data analysis. Panel diagnostic tests were used to evaluate the optimal model to be fitted to evaluate association between working capital management and financial distress of listed companies. Study findings were presented in tables.

##### **5.2.1 Cash Conversion Cycle and Financial Distress**

The first objective of the study aimed to establish the influence of cash management practices on financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE). Cash conversion period had negative association with financial distress of listed companies in NSE. Control variables had mixed association with financial distress of listed companies with firm size, tangibility and annual growth rate affecting financial distress negatively while leverage and board size had positive association with financial distress.

### **5.2.2 Accounts Receivable Payments and Financial Distress**

The second objective aimed to determine the extent to which accounts receivable management practices influence the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE). ARP had inverse and significant influence on financial distress of listed non-financial companies in NSE.

### **5.2.3 Inventory Conversion Period and Financial Distress**

The third objective sought to determine the extent to which accounts receivable management practices influence the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE). Inventory conversion period had negative and significant association with financial distress of listed companies in NSE.

### **5.2.4 Accounts Payable Period and Financial Distress**

The fourth objective sought to investigate the influence of accounts payable management practices on the financial distress of registered firms publicly listed in the Nairobi Security Exchange (NSE). Accounts payable period had positive and significant association with financial distress of listed companies in NSE.

## **5.3 Conclusion**

Based on study findings documented it is paramount to note that working capital management has significant association on financial distress of listed companies in NSE. The study concludes that there is need for listed companies in NSE should increase their accounts payable periods should to minimize likelihood of facing financial distress. This approach would release financial resources to meet urgent needs.

Listed companies in Nairobi Securities Exchange should decrease their inventory conversion period. This would aid in management minimizing storage costs though it may lead to stock-outs in situations when there is an increase in lead time. To prevent likelihood of halting production process listed companies should examine their market

capacity and optimal production capacity prior to alignment of their inventory conversion period to healthy state of financial distress.

Listed companies should seek measures aimed at minimizing accounts receivables periods. This would enable them to receive payments prior to receiving demands from providers of goods and services. To enhance prompt payments of good and services listed companies should provide discounts and appealing terms to those paying in cash.

Since cash conversion cycle has negative association with financial distress of listed companies in NSE. There is need for listed companies to develop measures aimed at managing accounts receivables through creation of avenues for earlier repayment by invoice discounting and delayed payment to allow the company make short term investments which would be beneficial to respective companies.

#### **5.4 Recommendations**

Based on study findings the following recommendation may be drawn. That listed companies in NSE should seek measures aimed at decreasing their accounts receivables period should enhance the strength of their financial soundness. Prompt receipt of payments would enable listed company's opportunities to purchase short term treasury bills and corporate bonds which would diversify their investment portfolio and minimize risk.

Since inventory conversion period had negative and significant association with financial distress there is need for management to develop healthy relationships with suppliers of good and services. This would minimize likelihood of running out of stocks and minimize stock costs. Also, management should develop accurate models of managing stock and create avenues for contingency planning which alleviate likelihood of stock outs.

Since accounts payables periods had positive and significant association with financial distress. There is need for listed companies to seek favorable credit terms with their

suppliers. This would alienate possibilities of facing cash crunch that would deny listed company benefit from viable short term investment opportunities. Also, listed companies should devise measures to minimize financial distress, this can be achieved through aggressive sales campaigns and diversification of marketing strategies so as to penetrate their rivals market and curb likelihood of market share cannibalization.

Cash conversion cycle has negative association with financial distress among listed companies in NSE. This calls for development of mechanism aimed at minimizing attributes of cash conversion cycle or increase of financial health status of listed companies. Listed companies should be encouraged on acquisition of assets, decrease in reliance with borrowed capital and decrease of their board size. Decreased board size would minimize agency and monitoring costs, decreased reliance with borrowed funds would minimize regular financial demands though it may disadvantage firm capacity to invest in new opportunities which can be easily ventured in presence of financial slack.

### **5.5 Suggestions for Further Studies**

The current study examined association between working capital management and financial distress of listed companies in NSE. Similar study should be carried among those companies which are not listed, this would aid in examining the role of public listing on working capital management. There is need for study to be carried for specific listing segments since the demand for working capital in agricultural sector would differ from manufacturing and allied companies. There is need to examine association between working capital and financial distress of financial companies listed in NSE, though their degree of regulation differs from non-financial companies. In addition to examination of controlling effect there is need to examine moderating effect of annual growth on association between working capital and financial distress. Also, alternative measures of financial distress should be adopted instead of using Altman's Z score.

## 5.6 Limitations of the Study

The study relied on annual financial statements to collect the data since the information was not prepared purely for this research some ratios were calculated to fit the current study. The study was limited to the period 2009 to 2018 and did not consider extraneous factors that may have altered working capital management strategy adopted by a firm. The study's reliance on static modelling may call for future study to examine the dynamic effect of working capital on financial distress of listed companies.



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## APPENDICIES

### Appendix I Introduction Letter

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29<sup>th</sup> January 2019

To Whom It May Concern,

Dear Sir/ Madam,

**RE: FACILITATION OF RESEARCH – MOSES MUTURI MWARIRI**

This is to introduce Moses Mwariri who is a Master of Business Administration student at Strathmore University Business School, admission number MBA/25614/16. As part of our MBA Program, Moses is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, he would like to request for appropriate data from your organisation.

Moses is undertaking a research paper on **“The Association Between Working Capital Management and Financial Distress by Listed Firms in Kenya”**. The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Caroline Tiara".

Caroline Tiara,  
Manager – Graduate Programs.

Association of African  
Business Schools



Strathmore Business School is a Proud member of



## Appendix II Data Collection Guide

		2	2	2	2	2	2	2	2	2	2
		0	0	0	0	0	0	0	0	0	0
Year		0	1	1	1	1	1	1	1	1	1
		9	0	1	2	3	4	5	6	7	8
Variable	Formula										
Financial Distress	$1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$										
X <sub>1</sub> = working capital/total assets											
X <sub>2</sub> = retained earnings/total assets											
X <sub>3</sub> = profit before interest and tax/total assets											
X <sub>4</sub> = market value of equity/book value of total liabilities											
X <sub>5</sub> = sales/total assets											
Cash Conversion Cycle (CCC)	$ARP + ICP - APP$										
Accounts Receivable Period (ARP)	$=(\text{Accounts receivables} * 365) / (\text{Credit sales})$										
Accounts receivables											
Credit Sales											
Inventory Conversion Period (ICP)	$=(\text{Inventory} * 365) / \text{cost of goods sold}$										
Inventory											
Cost of goods Sold											
Accounts Payable Periods (APP)	$=(\text{Accounts payables} * 365) / (\text{Credit Purchases})$										
Accounts Payables											
Credit purchases											
Firm size	Ln (Total assets)										
Board size	Number of board members										
Tangibility	Non-current assets/Total Assets										
Non-Current assets											
Total Assets											
Annual Growth Rate	% growth in GDP										

### Appendix III List of Registered Firms in Nairobi NSE

	<b>Agricultural</b>	38	E.A Portland Cement Ltd.
1	Eaagads Ltd.		<b>Energy &amp; Petroleum</b>
2	Kapchorua Tea Co. Ltd.	39	Kenol Kobil Ltd.
3	Kakuzi	40	Total Kenya Ltd.
4	Limuru Tea Co. Ltd.	41	KenGen Ltd.
5	Rea Vipingo Plantations Ltd.	42	Kenya Power & Lighting Co. Ltd.
6	Sasini Ltd.	43	Umeme Ltd
7	Williamson Tea Kenya Ltd.		<b>Insurance</b>
	<b>Automobiles &amp; Accessories</b>	44	Jubilee Holdings Ltd
		45	Sanlam Insurance Holdings Ltd.
8	Car & General (K) Ltd.	46	Kenya Re- Insurance Corporation Ltd.
	<b>BANKING</b>	47	Liberty Kenya Holdings
9	Barclays Bank Ltd.	48	Britam Holdings Ltd.
10	CFC Stanbic Holdings Ltd.	49	CIC Insurance Group Ltd.
11	I & M Holdings Ltd.		<b>Investment</b>
12	Diamond Trust Bank Kenya Ltd	50	Olympia Capital Holdings
13	HF Group Ltd.	51	Centum Investment Co. Ltd.
14	KCB Group Ltd.	52	Trans- Century ltd.
15	National Bank of Kenya Ltd.	53	Home Afrika Ltd
16	NIC Bank Ltd	54	Kurwitu Ventures
17	Standard Chartered Bank Ltd.	55	Nairobi Securities Exchange Ltd.
18	Equity Group Holdings		<b>Manufacturing &amp; Allied</b>
19	The Co-operative Bank Ltd	56	B.O.C Kenya Ltd
20	BK Groups PLC	57	British American Tobacco Kenya Ltd.
	<b>Commercial &amp; Services</b>	58	Carbacid Investments Ltd
21	Express Ltd	59	East African Breweries Ltd.
22	Kenya Airways Ltd.	60	Mumias Sugar Co. Ltd
23	Nation Media Group	61	Unga Group Ltd.
24	Standard Group Ltd.	62	Eveready East Africa Ltd.
25	TPS Eastern Africa (Serena) Ltd.	63	Kenya Orchards Ltd.
26	Scangroup Ltd.	64	A. Baumann Co. Ltd
27	Uchumi Supermarkets Ltd.	65	Flame Tree Group Holdings Ltd.
28	Hutchings Biemer Ltd.		<b>Telecommunication &amp; Technology</b>
29	Longhorn Publishers Ltd.	66	Safaricom Ltd.
30	Atlas Development and Support Services		<b>Real Estate Investment Trust</b>
31	Deacons (East Africa) Plc	67	Stanlib Fahari I-REIT
32	Nairobi Business Ventures Ltd.		
	<b>Construction &amp; Allied</b>		
33	Athi River Mining		
35	Bamburi Cement Ltd.		
36	Crown Paints Ltd		
37	E.A Cables Ltd.		

**Source: Nairobi Securities Exchange (2017-2018) NSE Handbook. Nairobi: Nairobi Securities Exchange**