

**EFFECTS OF WORKING CAPITAL CENTRALIZATION  
ON THE CASH FLOWS OF LISTED MANUFACTURING  
COMPANIES IN KENYA**

**BY**

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## **DECLARATION**

This research report is my original work and has never been previously presented in any other University or College for an award of degree.

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## **DEDICATION**

This research project is dedicated to my dear parents Mr. and Mrs. Cheme for laying a strong foundation to my life and my entire family for their support and encouragement. I am humbled to have you.

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## **ABSTRACT**

The objective of the study was to establish the effect of centralization of working capital management on the cash flows of quoted manufacturing companies in Kenya. Secondary data was collected from published financial statements of 7 quoted manufacturing companies for a period of 5 years between 2010 and 2014. Data was analyzed using Microsoft Excel 2013 data analysis tool. Regression and correlation analysis was used to determine the nature and strength of the relationship between independent and dependent variables. The study findings reveal that centralization of working capital is very significant in determining the cash flows of manufacturing companies in Kenya. This can be supported by the 27.4% variance of cash flow that is explained by centralization of working capital management. On the other hand lack of centralization of working capital leads half variance in cash flows as indicated by 12.2% that is explained by the net inventory; net accounts receivable; net accounts payable and net short-term loans.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

The business environment in which contemporary firms operate is more volatile and highly dynamic. This is a situation experienced by all organizations around the globe. This implies that business organizations need to establish mechanisms through which they can balance between spending for ongoing operations and setting aside some funds to be channeled towards other alternative purposes to be achieved by the organization. The amount of money invested in various operations within the organization will largely determine the cash savings that an organization is able to make at any given point in time. It also determines whether a firm is likely to face a financial crisis that may be as a result of poor cash flow (Protiviti, 2011).

In many industries, both debt and equity funding remain difficult to access. This creates a serious challenge for companies that require cash to remain competitive, maintain financial flexibility and pursue potential growth opportunities. While market trends change and customer preferences shift, one thing is immutable: cash remains important. Companies primarily focused on accessing that financing externally, however, may be overlooking a large, hidden source of capital which is their own balance sheets (Bryk, Lee, Thibault and Stewien, 2014). To be sure, accessing that cash requires organization-wide financial discipline and a clear working capital optimization strategy. On some level, most companies understand this. However, understanding is not the same as actively

implementing strategies for improving cash flow. If an organization does not have a formal working capital strategy, have not adopted appropriate drivers and metrics, or simply has not communicated clear policies across the organization, it may be missing out on opportunities to hit its free-cash targets, reduce costs, increase shareholder returns and fund growth (Bryk et al., 2014).

Management of working capital is a fundamental part of the overall corporate strategy to create value by aiming at maintaining an optimal balance between each of the working capital components, that is, cash, receivables, inventory and payables, and is an important source of competitive advantage in businesses (Deloof, 2003). In practice, it has become one of the most important issues in organizations with many financial executives struggling to identify the basic working capital drivers and the appropriate level of working capital to hold so as to minimize risk, effectively prepare for uncertainty and improve the overall performance of their businesses (Lieberman, 2009).

Companies operating as a group opt to centralize the working capital management activities or functions to a single hub so that the functions can be performed effectively and efficiently to enable the firm achieve its objectives. The structure of most Kenyan manufacturing firms is that where decision making relating to various operations is centralized. Working capital management is also largely centralized with specific hubs charged with the responsibility of developing and implementing strategies that are aimed at improving the cash flows of the firm. This form of working capital management enables a firm to take adequate control of its cash flows and makes it more focused in its transactions.

### **1.1.1 Working Capital Centralization**

CFA (2013) defines working capital as the short time investment and financing of a company. This comprises of Cash and cash equivalents, inventory, accounts receivable, accounts payable and short-term loans among others. The main objective of working capital is to provide adequate cash flow for operations and the most productive use of resources. CFA (2013) however argues that too much cash may result in the company putting too much investment in low and nonearning assets.

Hill (2013) asserts that the structure of working capital in any organization is determined by the purpose it performs in the organization. The purpose of working capital is to ensure that the operational cash transactions meant to support the demand for a firm's products and services actually takes place. He further confirms that on the demand side debtors and inventory that may comprise work in progress are the main components of working capital while on the supply side creditors form the main component of working capital.

Managing the firm's working capital is a day-to-day activity which ensures that the firm has sufficient resources to continue its operations. This involves a number of activities related to the firm's receipt and disbursement of cash (Ross, 2007). Most companies require certain levels of working capital to deal with variable and somewhat unpredictable financial inflows and outflows. Challenges such as disconnected supply chains processes, excessive stocks caused by non-bridged interfaces, inadequate trade credit terms, and suboptimal loan decisions require higher working capital than

necessary. While the latter two originate from the financial area, connecting supply chain activities and reducing stock and inventory belong to the operating area. Companies tend to try to have less capital tied up in non-productive stocks, shorten the collection period for account receivables, and stretch cash payments for accounts payable as far as possible. (Hoffmann, 2010).

Working capital management centralization involves creation of one central department that carries out all the working capital management tasks (Inventory, receivables, payables & short term borrowing management) for the entire group. Fully centralized working capital management involves centralized transaction processing; that means the control of all incoming and outgoing cash flows from one central location. (Polak, 2010).

Managers of multinational corporations face huge challenges in managing transactions across multiple locations. The greater the geographic reach of a company, the more difficult it is to access and track accurate and timely cash flow information. Medium sized companies growing in market value and size must decide how to implement the right solution for managing an increasing volume of transactions. Centralization of Working Capital management therefore offers these corporations the ability to achieve higher efficiency, greater transparency and access to real time information across a broad geographical area and many entities. (Polak, 2010).

Multinational manufacturing companies are increasingly recognizing the benefits they can gain from centralizing their working capital management by developing and using shared service centers. Shared service centers combine multiple tasks, processes and information technology infrastructures in one central location. One of the main advantages of the centralized working capital management is the ability to deliver

measurable, automated, unified, transparent, and efficient processes. Centralization pools highly qualified people, their skills and knowledge into one center that allows management to monitor and grow operations swiftly and efficiently. (Polak, 2010).

### **1.1.2 Cash Flows**

Cash flow is simply the flow of cash through the organization over time. In the case of businesses that are run for profit, cash is paid out in return for the labor and materials that are used to provide goods and services that can be sold. The revenues received provide cash that can then be used to finance further production and sales as well as increasing the organization's economic value. Cash flows are also essential for nonprofit organizations such as charities, schools, and hospitals that need to meet the various ongoing expenses associated with providing their services (Mason, 2012).

Cash flow management is very important for both nonprofit and for profit organizations. ASB (2013) asserts that cash flow management requires an organization to take into account very important steps. The first step involves preparation of a cash flow budget that will guide the cash flow requirements of an organization. The budget enables the organization to compare the actual versus the projected cash flows of an organization. ASB (2013) further argues that it is important for an organization to carry out forecasting of cash flow requirements. Forecasting enables an organization to think ahead and consider what the future holds.

### **1.1.3 Working Capital Centralization and Cash flows**

Mason (2013) asserts that many companies experience cash flow problems around the globe. The main reason why this happens is due to failure by these organizations to manage their working capital efficiently and effectively. Mason (2013) further argues that poor working capital management practices are more likely to lead to poor cash flows in an organization. Some practices such as centralization of working capital in an organization leads to better cash flows that enable the organization to meet its day to day transactions. Inability to meet the day to day transaction by an organization due to poor working capital management may make the organization lose its integrity among the key stakeholders.

Many organizations today are carefully re-examining their working capital metrics and where cash on the balance sheet is invested. These organizations wish to avoid punishing customers and suppliers while improving their cash flow. Key finance personnel in any organization are seeking new procedures and systems that provide fast, actionable information about current and future cash flows and working capital requirements. And they are increasingly eager to leverage information management and network innovations that can help them be opportunistic with cash flows. Optimizing working capital management and cash flow planning capabilities is both a challenge and a necessity for organizations. Concerns such as demand volatility, access to bank credit, and customer payment defaults or delays make working capital management and cash flow intelligence key strategic issues (Broxton and Mowbray, 2011).

Cash Flow management is an activity that benefits from economies of scale and process re-engineering. By centralizing its working capital management operations, a corporation achieves better management of its cash flows and pare operating costs. Through centralization of working capital management processes across a group, significant improvements can be obtained in terms of control and security of operating cash flows. Standardization and automation inherent in shared service centers offers an opportunity to streamline controls and management of processes, increase visibility over all company's cash flows, reengineer processes and build in desired efficiencies and controls. Centralization of Working capital Management in Corporations increase the awareness of the risks faced, particularly in the area of foreign exchange exposure and interest rate risks both on the parent and subsidiary side. (Polak, 2010).

#### **1.1.4 Manufacturing Sector in Kenya**

The manufacturing sector in Kenya is the second after agriculture in terms of its contribution to Gross Domestic Product. Kenya Vision 2030 identifies the manufacturing sector as one of the key drivers for realizing a sustained annual GDP growth of 10 per cent. The manufacturing sector has high, yet untapped potential to contribute to employment and GDP growth. Compared to the agriculture sector, which is greatly limited by land size, the manufacturing sector has high potential in employment creation and poverty alleviation since it is less affected by land size (Bigsten et al., 2010).

The manufacturing sector in Kenya however, faces some challenges that affect its growth. For instance private and public investment in Kenya has been too low to enable the manufacturing sector to take off. This situation has been in existence for some time.

Private investment is essential for firms to upgrade their technology and become efficient manufacturers. Public investment, notably in infrastructure, is important to reduce transaction costs. Without significant progress in these areas, Kenyan firms will not be able to compete internationally on a significant scale (GoK, 2008b).

Vision 2030 proposes a major increase in private sector investment as a key goal towards improving the manufacturing sector. There are also proposed policy interventions such as strengthening SMEs to improve their productivity and innovativeness, boosting science, technology and innovation in manufacturing by increasing R&D investment, increasing key infrastructure namely ports, rail and major roads, and energy distribution systems; and carrying out efficiency-improving institutional reforms. The financial service strategy has also focused on improving access to funds for investment through better management of specialized agencies, promotion of access to finance through different capital markets segments, enactment of a micro-finance bill, and maintaining low interest rates (GoK, 2008b).

## **1.2 Research Problem**

Working capital centralization is one of the strategies that firms employ in order to enhance their cash flows. It is considered one of the best practices among organizations that have achieved success in enhancing their cash flows (Stewien, 2014). Best practice organizations centralize and standardize financial transactions. They establish specialized offices that deal with large sums worth of transactions and provide directions that guide the other sections within the organization (Provit, 2011). In most companies around the globe, working capital centralization is becoming a common practice. Firms are quickly

embracing the practice because it provides greater control and creates value that is required in working capital management. When working capital is scarce it helps to create value and this is better achieved in a situation where centralization is practiced (Danielson and Wickstrom, 2014).

Manufacturing firms in Kenya face a number of challenges as mentioned earlier such as infrastructure that may greatly affect their working capital management practices. Studies conducted reveal that working capital centralization has positive results that can provide competitive advantage to the firm. Polak and Klusacek (2010) reveal that centralization of treasury activities including working capital management, offers companies the ability to achieve higher efficiencies, greater transparency and access to real time information across a broad geographic area, multiple time zones, and many entities. Danielson and Wickstrom (2014) also carried out a study on sustainable working capital management. The study established that different strategies for obtaining sustainable working capital management are found, where focus and commitment from the top management is suggested to be the glue that makes it last. It is furthermore suggested that managers have two main tools for creating and sustaining desired routines and practices. In Kenya Kiplimo (2010) carried out a study on the relationship between working capital management and profitability of state owned commercial enterprises. It was revealed that organizations in the same industry operating on shorter cash conversion cycles than their peers are able to report better returns.

The available literature (Polak and Klusacek, 2010; Danielson and Wickstrom, 2014; Kiplimo 2010) reveals that there are no known studies that specifically focus on working

capital centralization and its effect on cash flows. This is an area that has limited research activity hence more research needs to be done. In Kenya, Kiplimo (2010) focuses on working capital management and its relationship with profitability. This implies that no study has therefore attempted to establish the effect of working capital centralization on cash flows. This created a research gap that needed to be bridged. This study therefore sought to fill this research gap by seeking to answer the question: what is the effect of working capital centralization on the cash flows of manufacturing firms in Kenya.

### **1.3 Research Objective**

The objective of this study was to determine the effect of working capital centralization on cash flows of listed manufacturing firms in Kenya.

### **1.4 Value of the Study**

The findings of this study are of great benefit to a number of people. First there seems to be limited knowledge on the theoretical relationship between working capital centralization and cash flows. The findings from this study will provide more understanding on the effect of working capital centralization on cash flows. It will provide more information on the expected theoretical relationship between these two variables.

The management of manufacturing firms in Kenya also benefit from the findings of this study. They will be able to understand how centralization of working capital can affect their cash flows. This is specifically very important to the managers since they are the decision makers in the respective manufacturing companies. The findings will assist them

in making informed decisions that will improve their cash flows and achievement of company goals and objectives related to working capital management.

The findings of this study also are of much help to the policy makers especially in the manufacturing sector in Kenya. It has already been mentioned that this sector is second to agriculture in terms of its contribution to the gross domestic product of this country. The findings from this study will therefore assist the policy makers in developing appropriate policies that can enhance working capital management among the manufacturing firms in Kenya.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a review of relevant literature on working capital centralization and cash flows. The literature review is presented in the following order: section 2.2 has the theoretical literature which includes the theories that are relevant to the study; section 2.3 contains the empirical literature which is a review of studies that have been conducted on working capital centralization and cash flows; section 2.4 contains local studies on the topic under investigation whereas section 2.5 contains a summary of the chapter.

#### **2.2 Theoretical Literature Review**

This study is based on three theories: the working capital theory of the firm, the value based theory of the firm and transaction cost theory. These three theories are discussed next.

##### **2.2.1 Working Capital Theory of the Firm**

The theory of the firm assumes that there is no time difference between the time costs are incurred and the when revenue is earned by the organization. However, such an assumption is only true in perfectly functioning financial markets (Chan, 2010). This implies that this assumption may not be applicable to diverse situations. This assumption fails to capture the need for liquidity and therefore does not fully capture the effects of financial constraints on the dynamic behavior of the firm. The working capital theory of

the firm therefore captures the effects of financial constraints on the behavior of the firm that the standard theory of the firm would otherwise not capture (Chan, 2010).

The working capital theory of the firm posits that under very few assumptions, the dynamic model is easily tractable to a static solution. The model predicts that under financial constraints, firms would exhibit countercyclical investment behavior. Furthermore constrained firms are constrained particularly during times when there are positive price shocks and as such, this has large implications for growth (Chan, 2010). The theory further indicates that properly accounting for working capital and internal finance changes the predictions for firm behavior, especially those concerning the firm's response to demand shocks. Under financial constraints, the reallocation of financial resources between factors in response to shocks causes investment to be countercyclical. When current demand is high, constrained firms forgo investment to allocate scarce resources toward current production. When demand is low, firms produce less and have lower costs, relaxing the liquidity constraint and enabling them to allocate more resources to investment (Pavcnik, 2002).

### **2.2.2 Value Based Theory of the Firm**

This theory was developed by Alderson (1957) and later by Drucker (1973). The theory posits that that efficiency of reference activity within the framework of a reliable enterprise is evaluated on the basis of value-based monitoring instruments. Such instruments in total are a set of generalized and meaningfully considered notions forming a precise theory of value-based management. As a confirmation of this assertion, it would be enough to refer to the primary purpose of management which is just a rise in the value

of enterprise with simultaneous preservation of the enterprise value on the competitive market; otherwise, one may consider capitalization mechanism within the framework of transformation of future economic benefits into current value (Kopitov, 2010)

The theory further posits that all enterprises have both incoming and outgoing cash flows. The outgoing cash flows are essentially the inputs that are engaged by an organization in its activities whereas the incoming cash flows are the revenues earned by the enterprise. This means that such enterprises provide for a capital turnover either promoting or hampering their growth and productivity. The consideration of value-based theory of the firm when reference activity is described in terms of a precise theory is governed by a certain language which in itself is a set of assertions, meaningful from the viewpoint of creation of added cost (Kopitov, 2006). The cost of an enterprise is determined by the enterprise's capability of generating cash flow for a long period of time. Financing requirements with respect to an enterprise are connected with sustainable functioning of the enterprise.

### **2.2.3 Transaction Cost Theory of the Firm**

The transaction cost theory was first developed by Commons (1934) who recognized that the transaction is the basic unit of economic analysis in an organization. The theory seeks to explain why companies exist, and why companies expand or source out activities to the external environment. The theory postulates that companies try to minimize the costs of exchanging resources with the environment, and companies try to minimize the bureaucratic costs of exchanges within the company (Williamson, 2002). From time to time, companies seek for cheaper ways of exchanging resources with the environment,

against the bureaucratic costs of performing activities in-house. The theory perceives institutions and market as different possible forms of organizing and coordinating economic transactions. When external transaction costs are higher than the company's internal bureaucratic costs, the company will grow, because the company is able to perform its activities more cheaply, than if the activities were performed in the market (Williamson, 2002).

According to Coase (1937), every company will expand as long as the company's activities can be performed cheaper within the company, than by e.g. outsourcing the activities to external providers in the market. According to Williamson (1981), a transaction cost occurs when a good or a service is transferred across a technologically separable interface. Therefore, transaction costs arise every time a product or service is being transferred from one stage to another, where new sets of technological capabilities are needed to make the product or service.

The theoretical review above has focused on three main theories that are relevant to this study. The first theory is the working capital theory of the firm which emphasizes on the need for proper accounting of working capital since it affects the cash flow of an organization. The second theory reviewed is the value based theory of the firm. This theory emphasizes on the relationship between outgoing and incoming cash flows and capital management in a firm. The last theory reviewed in this study is the transaction cost theory of the firm. The theory focuses on the reasons why firms minimize the costs of exchanging resources in order to make transactions cheaper.

The main theory that informed this study was the transaction costs theory. Working capital centralization is one strategy that is employed by firms in order to reduce transaction costs and enhance cash flows.

### **2.3 Determinants of Firm Cash flows**

In a perfect Modigliani-Miller world, holding large amounts of cash is irrelevant because companies can easily go to capital markets to finance their profitable investment projects at negligible transaction costs. However, many international studies show that companies maintain important cash holdings. For example, Kalcheva and Lins (2003), find that companies hold on average 16% of their total assets in cash or cash equivalents, Ferreira and Vilela (2004) find an average cash ratio of 15%, and Guney et al., (2003) observe an average cash ratio of 14%.

There are many determinants of cash flows in an organization. One of these determinants relates to growth opportunities as perceived by the firm. One of the concerns of firms with strong growth opportunities is to guarantee their financing. Indeed, these firms can face two situations: either outside funds are inexistent or they are expensive when accessible. In such situations, these firms will be forced to forgo these projects. However, if firms hold sufficient cash levels, they can use it to seize all their profitable investment opportunities. This would lead firms to accumulate cash (Saddour, 2006).

The other factor that may determine the cash flows of a firm is the ease with which the firm can be able to dispose off its assets in order to obtain the required cash. It is sometimes very expensive to undertake this and firms opt to hold cash than to dispose of assets. The cash flows of a firm are also determined by the volume of dividends to be

paid to the shareholders by the firm as well as the need for the firm to undertake stock repurchases. A firm that needs to do these transactions may hold huge amounts of cash than one that has no plans to pay dividends and stock repurchases (Saddour, 2006).

## **2.4 Empirical Literature Review**

This section provides a review of the relevant studies that have been carried out in relation to centralization of working capital and its effect on cash flows of firms. The study reviews both international and local literature concerning the variables. Among the main areas of focus in the review are the research design, sample size, type of data that was collected and the data analysis techniques that were employed as well as the main findings.

Sayed (2011) carried out a study on effects of working capital management and liquidity. The main purpose of the study was to establish working capital management efficiency and maintaining liquidity on the profitability of corporation enlisted in the cement industry in Dhaka Bangladesh. The study took a longitudinal design where secondary data was utilized for the study. The data covered a duration of 5 years from the year 2005 to 2009 both years inclusive. The data was collected from firms that are listed in the Dhaka Stock Exchange. The reason for choosing firms listed in the Dhaka stock exchange is because of the reliability of data obtained from such companies. The study utilized both single and multiple regressions to determine the relationship between working capital management and profitability. The findings from the study reveal that there is negative relationship between cash conversion cycle and profitability of the cement firms. It was also established that there is a strong positive relationship of

profitability with the firms' cash holding position along with other indicators. The researcher recommends that the firms should forecast their sales and hold cash enough as according to their projected sales level, so that they are able to take advantage of the bargaining position while making purchases and thus reduce cost (Sayeda, 2011).

Zariyawati, Annuar and Abdul-Rahin (2007) discussed the relationship between cash conversion cycle and profitability by using a sample 1628 firm – year for the period of 1996 to 2006 they consists of six different economic sectors which are listed in Bursa Malaysia. The co- efficient results of pooled regression analyses provide a strong negative significant relationship between cash conversion cycle and firms profitability. This reveals that reducing cash conversion cycle results to profitability increases. Thus, in purpose to create shareholder value, firms manager should concern on shorten of cash conversion cycle till accomplished optimal level.

Agyemang and Asedu (2013) carried out a study on the relationship between working capital management and profitability of listed manufacturing companies in Ghana. The main purpose of the study was to investigate whether working capital management in any way influences the profitability of manufacturing firms. The study involved a correlative research design of manufacturing firms listed in the Ghana Stock Exchange and also based within the Accra conurbation. Secondary data was obtained from financial reports of these companies covering a period of five years from 2007 to 2011 both years inclusive. Multiple regression analysis was used to analyze the data that was collected. The findings from the study reveal that the major components of working capital

management such as inventory days, account payable and cash conversion cycle have influence on the profitability of manufacturing companies.

Samiloglu and Demirgunes (2008) also used a sample consisting of Istanbul Stock Exchange listed manufacturing firms in Turkey for the period of 1998 to 2007 under a similar regression model. It was found that accounts receivable period, inventory days, and leverage affects firm's profitability negatively, while growth (in sales) affects firm's profitability. They also went further to state that the firm's profitability can be increased by shortening accounts receivable and inventory periods. The negatively relationship between accounts receivable period and profitability may be due to that customers want more time to access quality of products they buy from firms with declining profitability.

It is evident from the empirical literature review above that there are a number of studies that have been carried out on working capital. Most of the studies have largely focused on working capital management and the liquidity of a firm. For instance Sayeda (2011) focuses on working capital management and firm liquidity; Zariyawati, Annuar and Abdul-Rahin (2007) focus on the relationship between cash conversion cycle and profitability and Agyemang and Asedu (2013) studied the relationship between working capital management and profitability of listed manufacturing companies. The findings from the studies reveal that there is a positive relationship between working capital management and the liquidity of the firm.

Locally there are few studies that have been carried out related to working capital management and cash flows. For instance Nzioki, Kimeli, Abudho and Nthiwa (2013)

conducted a study on management of working capital and its effect on the profitability of manufacturing companies in Kenya. The study specifically targeted manufacturing companies operating in Kenya and is listed in the Nairobi Securities Exchange. A total of 9 manufacturing companies were sampled and diagnostic research design was adopted. The study relied on secondary data that was collected from published financial statements of the said manufacturing companies. Multiple regression and correlation analyses were carried out to determine the relationships between components of working capital management and the gross operating profit of the firms. The results from the study revealed that gross operating profit was positively correlated with average collection period and average payment period but negatively correlated with cash conversion cycle. The relationship between inventory turnover in days and gross operating profit was insignificant (Nzioki et al, 2013).

Kiprotich (2011) carried out a study on working capital management practices on the financial performance of sugarcane out grower companies in Kenya. The main purpose of the study was to investigate the effect of working capital management practices on the financial performance of the said companies. The study took the form of a descriptive research design where a total of 30 managers from the ten out-grower companies were targeted by way of completing a standardized and semi-structured questionnaire. The primary data collected was analyzed using descriptive statistics and correlation analysis. The findings from the study indicate that sugarcane out-grower companies' working capital management practices were comparatively more conservative and as a result weakened the companies' financial performance indicators. Specifically, it was observed

that the companies' receivables were concentrated on loans advanced to members and accruing interests. However, trade receivables period was longer than payables period, indicating that the companies did not accelerate receivable periods to secure profitability.

A similar study was carried out by Gitau (2012). The purpose of the study was to establish the implication of working capital management on the liquidity risk of quoted commercial banks in Kenya. This study used a longitudinal research design since it involved taking repetitive measures overtime for the purpose of comparing returns over a specific period of time. The target population comprised of 9 NSE quoted commercial banks in Kenya. Secondary data was collected from published financial reports of these commercial banks covering ten years from 2002 to 2011. Descriptive statistics such as mean and standard deviation were used to measure variations. Statistical inferences were drawn using correlation and regression analysis in analyzing the data and testing of hypotheses. The research findings reveal that debtors' collection period and cash conversion cycle have significantly negative relationship with liquidity of quoted commercial banks and that creditors' payment period have significantly positive relationship with liquidity of quoted commercial banks.

Makori and Jagongo (2013) equally carried out a study on working capital management and firm profitability. The purpose of the study was to determine the influence of working capital on the profitability of manufacturing and construction firms that are listed in the Nairobi Securities Exchange in Kenya. This was a longitudinal study that covered a specific duration of time. The study utilized secondary data that was collected

from 5 manufacturing and 5 construction companies. The data was collected from the audited financial statements of the said companies. Pearson's correlation and Ordinary Least squares regression models were used to establish the relationship between working capital management and firm's profitability. The findings of the study reveal that there exists a negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of day's payable. It was further established that the financial leverage, sales growth, current ratio and firm size also have significant effects on the firm's profitability.

The review of local studies on working capital management reveal that there are a few studies that have been carried out in Kenya. It is evident from the studies so far conducted (Nzioki et al, 2013; Kiprotich, 2011; Gitau, 2012; Makori and Jagongo, 2013) that most of them have also focused on working capital management and its effect on either profitability, financial performance or liquidity of the firm. Thi implies that locally there are no studies that have focused on working capital centralization and cash flow of the firm.

## **2.5 Summary**

This chapter has explored three theories that are related to working capital centralization. The theories include the working capital management theory, the value based theory and the transaction cost theory. It has also presented a literature review covering empirical research on working capital centralization and cash flow in other parts of the globe. The findings from the empirical literature reveal that most studies have focused on the

relationship between working capital management and firm profitability. It has also reviewed local literature that is related to this topic under investigation.

What comes out clear is that there is expansive research on working capital management and profitability (Sayeda, 2011; Zariyawati, Annuar and Abdul-Rahin, 2007; Agyemang and Asedu, 2013 and Samiloglu and Demirgunes, 2008) but there is scarce research on the effect of working capital centralization and the cash flow of a firm. This leaves a significant research gap which this study seeks to bridge. This study therefore seeks to fill the gap by determining the effect of working capital centralization on the cash flows of manufacturing firms in Kenya.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the methodology that was adopted in studying the effect of working capital centralization on cash flows of manufacturing firms in Kenya. Among the items discussed in this chapter include 3.1 the introduction; 3.2 research design; 3.3 population and sample; 3.4 data collection instruments and 3.5 data analysis techniques.

#### **3.2 Research Design**

This was a quasi-experimental design as the findings on the impact of working capital centralization on cash flows was derived from actual measured data rather than from a theory or belief. Firms with decentralized working capital management provided the control data while firms with centralized working capital management provided the experimental data for comparison.

#### **3.3 Population and Sample**

A target population is a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common binding characteristic or trait. There were a total of 450 large scale manufacturing firms in Kenya. The 450 large scale manufacturing firms formed the target population of this study. The study sample comprised of 7 manufacturing firms listed in the Nairobi Securities exchange operating as a group. The decision to pick the 7

companies was informed by the fact that it would be easier to obtain reliable financial information about the companies than those not listed.

### **3.4 Data and Collection instruments**

This study utilized secondary data only. The secondary data to be collected was obtained from audited financial reports of the 7 listed manufacturing companies in Kenya. The data was collected using a data collection schedule that was developed by the researcher. Data for a duration of five years from 2010 to 2014 was used for this study.

### **3.5 Data Analysis**

Data collected was analyzed using multiple regression analysis and Pearson's correlation. The analysis comprised of a conceptual model and an analytical model:

#### **3.5.1 Conceptual Model**

The following conceptual model was applicable in analyzing the data that was collected covering the duration between 2010 and 2014:

$$CF = F(NI, NR, NP, NL)$$

The above conceptual model reflects the expected relationship between cash flow and working capital centralization. It reveals that the cash flow of an organization is function of a number of variables related to working capital centralization such as net inventory, net accounts receivable, and net accounts payable and net short-term loans.

### 3.5.2 Analytical Model

The following multiple regression equation was used to establish the relationship between working capital centralization and cash flow:

$$CF = \beta_0 + \beta_1NI + \beta_2NR + \beta_3NP + \beta_4NL + e$$

The regression model reflects the expected effect of working capital centralization on cash flows of manufacturing firms. The independent and dependent variables are defined further as follows:

CF represented the cash flow of manufacturing firms and this was measured using the operating cash flow ratio. The items  $\beta_0$  to  $\beta_4$  are the regression weights that are associated with the direction and extent to which each of the four independent variables influences the cash flows; NI represents net inventory and was measured using the change in stock at the end of each financial year; NR represents net accounts receivable and was measured using the change in value of debtors at the end of each financial year; NP represents net accounts payable and was measured using change in value of creditors at the end of each financial year; NL represents net short term loans at the end of each financial year and e is the error term.

A correlation analysis was carried out to analyze the relationship between cash flows and working capital management for firms with centralized working capital and those with decentralized working capital and their results compared. Test of significances was carried out for all variables using t-test at a 95% level of significance. Pearson's correlation coefficients were calculated to examine the relationship among the variables while the suitability of the regression model, variability of samples and the strengths of the relationship between the variables was measured by conducting an F-test.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter covers data analysis, the results and discussions. Among the items discussed in this chapter include 4.1 the introduction; 4.2 Summary statistics ; 4.3 Results of Diagnostic Tests; 4.4 Estimated Models ; 4.5 Discussion of research findings and 4.5 Summary.

#### 4.2 Summary Statistics

The study sought to establish the effects of working capital centralization on the cash flows of quoted manufacturing companies. The main reason was to assist the researcher compare the results of firms with decentralized working capital with those of companies that have centralized their working capital management. The findings are presented next.

##### 4.2.1 Decentralized Working Capital Descriptive Statistics

**Table 4.1 Decentralized Working Capital Descriptive Statistics**

	Minimum	Maximum	Mean	Std. Deviation	Variance
cash flow	-499182	846767	249276.4	371941.7	138,340,611,778
Net inventory	-776217	1056990	1389.24	286382.3	82,014,796,084
Net accounts receivable	-281224	658844	32990.24	182823.6	33,424,455,961
Net accounts payable	-1031864	1261476	52021.72	420182.9	176,553,669,324
Net short term loans	-223372	153937	1451.6	67103.55	4,502,886,229

The results from the descriptive statistics of firms with decentralized working capital reveal that the average cash flows for the 25 observations made from 5 companies for the years 2010-2014 is 249,276 a standard deviation of 371,941 with a minimum of -499,182 and maximum of 846,767. Net inventory, net accounts receivable, net accounts payable and net short term loans all had positive mean values.

#### 4.2.2 Centralized Working Capital Descriptive Statistics

**Table 4.2 Centralized Working Capital Descriptive Statistics**

	Minimum	Maximum	Mean	Std. Deviation	variance
cash flow	-4886831	7895115	196918.8	985466.4	9,711,440,965,405
Net inventory	-488876	3557907	940712.1	404790.7	1,638,554,941,994
Net accounts receivable	-1299205	1472620	452484.7	284270.5	808,097,357,978
Net accounts payable	-1843410	3659150	599342.7	496893	2,469,026,168,881
Net short term loans	-1097202	7594160	1201738.1	884752.1	7,827,863,380,570

The results on centralized working capital descriptive statistics reveal that cash flow had a mean value of 196,918. The independent variables that are determinants of working capital centralization all had positive mean values.

#### 4.2.3 Comparison of Descriptive Statistics for Decentralized and Centralized

When the results of table 4.1 are compared to the results of table 4.2 the mean, standard deviation and variance values for the independent variables are far much higher for

centralized firms than the ones for companies that have not centralized their working capital management.

#### 4.3.0 Results of Diagnostic Tests

The correlations between cash flow and net inventory, net accounts receivable, net accounts payable and net short term loans were carried out in order to establish the relation that exists between the variables for firms with decentralized working capital.

#### 4.3.1 Decentralized Working Capital Correlations

**Table 4.3 Decentralized Working Capital Correlations**

	cash flow	Net inventory	Net accounts receivable	Net accounts payable	Net short term loans
Pearson Correlation cash flow	1	-0.013	0.0617	-0.0551	0.263
Net inventory	-0.013	1	0.516	0.799	0.064
Net accounts receivable	0.0617	0.516	1	0.791	-0.046
Net accounts payable	-0.055	0.799	0.791	1	-0.107
Net short term loans	0.263	0.064	-0.046	-0.107	1

The findings as revealed from the table above show that there were weak positive and negative correlations between cash flows and the independent variables. However, there was a strong positive correlation of 0.79 between net accounts payable and net inventory and between net accounts payable and net accounts receivable. Another semi strong positive relationship of 0.516 between net inventory and net accounts receivable existed. This is an indication that one variable increases when the other increases.

### 4.3.2 Centralized Working Capital Correlations

**Table 4.4: Centralized Working Capital Correlations**

		cash flow	Net inventory	Net accounts receivable	Net accounts payable	Net short term loans
Pearson Correlation	cash flow	1.000	-0.166	0.324	0.330	-0.032
	Net inventory	-0.166	1.000	-0.335	0.162	0.737
	Net accounts receivable	0.324	-0.335	1.000	0.571	-0.389
	Net accounts payable	0.330	0.162	0.571	1.000	-0.193
	Net short term loans	-0.032	0.737	-0.389	-0.193	1.000

The correlation results for firms with centralized working capital reveal that there were strong positive relationship of 0.737 between net inventory and net short term loans and another semi strong correlation of 0.571 between net accounts receivable and net accounts payable.

### 4.3.3 Comparison of Correlations for Decentralized and Centralized

Results of table 4.3 compared to the results of table 4.4 above reveal that for both decentralized and centralized working capital management a strong positive correlation only exist between net accounts receivable and net accounts payables ;0.79 in decentralized against 0.571 of centralized. While a semi strong positive correlation of 0.516 exist between net accounts receivables and net inventory for decentralized working capital a semi weak negative relation exist in centralized working capital.

#### 4.3.4 Results of R<sup>2</sup> Tests for Decentralized Working Capital Management

**Table 4.5 Decentralized Working Capital Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.35	0.12	-0.0616	386773.9

The study established that a multiple regression analysis between the cash flows of companies that have not centralized their working capital management determinants; net inventory, net accounts receivable, net accounts payable and net short term loans produced a coefficient of determination (R<sup>2</sup>) with the value of 0.12. This is an indication that the four independent variables that are significant in working capital centralization explain 12% of the variance in cash flows of the companies. This implies that there is 88% variance that is not explained by these variables. The co-efficient of correlations (R=0.35) shows that there was a semi strong relationship between the y and x variables.

#### 4.3.5 Results of R<sup>2</sup> Tests for Centralized Working Capital Management

**Table 4.6: Centralized Working Capital Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.523	0.274	-0.451	3960439.669

The results of the multivariate regression analysis reveal that there is a coefficient of determination ( $R^2$ ) of the value 0.274. This is an indication that 27.4% of the variance in working capital management is explained by working capital centralization while 72.6% of cash flows is not explained by working capital centralization. The co-efficient of correlations ( $R=0.52$ ) shows that there was a semi strong relationship between the y and x variables

#### 4.3.6 Comparison of $R^2$ for Decentralized and Centralized

When the results of the multivariate regression in table 4.5 are compared to the results of table 4.6 its evident that for companies with decentralized working capital only 12.2% variations in the cash flows is attributable to working capital components while 27.4% variations in cash flows is attributable to the various working capital components where working capital is managed centrally.

#### 4.3.7 Results of ANOVA for Decentralized Working Capital

**Table 4.7 Decentralized Working Capital Analysis of results of Variance**

ANOVA<sup>s</sup>

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.98533E11	4	9.963E9	0.666	0.623
	Residual	2.84229E12	19	1.49594E+11		
	Total	3.24082E12	23			

To test if the mean of the sampled populations are equal an analysis of variance was conducted and the findings revealed that variation of the four working capital

components yielded an F of 0.666. The study also established that the results on analysis of variance reveal a significance of 0.623. This is an indication that we are 62.3% confident that working capital has an influence on the cash flows of a firm.

#### 4.3.8 Results of ANOVA for Centralized Working Capital

**Table 4.8: Centralized Working Capital Analysis of results of Variance**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.37021E+13	4	5.92553E+12	0.3777810	0.815
	Residual	6.27403E+13	4	1.56851E+13		
	Total	8.64424E+13	8			

The analysis of variance for firms with centralized working capital reveals that there is an F of 0.377 at 4 degrees of freedom when the variations of cash flows arise from only working capital components. The study also established that the results on analysis of variance reveal a significance of 0.815. This is an indication that we are 81.5% confident that cash flows are influenced by centralized management of the four explanatory variables in the regression.

#### 4.3.9 Comparison of ANOVA for Decentralized and Centralized

When the results of the Analysis of Variance in table 4.7 are compared to the results of table 4.8 it's evident that for companies with decentralized working capital the confidence levels are at 62.3% while the confidence levels for centralized working capital are 81.5%.

#### 4.4.0 Estimated Models

#### 4.4.1 Estimated Models for Decentralized Working Capital

**Table 4.9: Decentralized Working Capital Model Coefficients**

		Coefficients	Std. Error	T	P-value
1	(Constant)	257397.80	80698.19	3.1896	0.0048
	Net inventory	0.140	0.507340	0.2776	0.7842
	Net accounts receivable	0.835	0.797371	1.0482	0.3076
	Net accounts payable	-0.395	0.497473	-0.7956	0.4360
	Net short term loans	1.256	1.239842	1.0136	0.3234

The results on model coefficients where the working capital management is not centralized reveal that holding net inventory, net accounts receivable, net accounts payable and net short term loans to a constant zero the cash flows would be equal to 257,397. Only net account's payables had negative beta values. This is an indication that a unit increase in net accounts payables will lead to a 0.395 reduction in cash flows. Net accounts receivables, net inventory and short term loans all had positive beta values revealing that a unit increase in Net accounts receivables, net inventory and short term loans will lead to 0.835, 0.14 and 1.256 increase in cash flows respectively.

#### 4.4.2 Estimated Models for Centralized Working Capital

**Table 4.10: Centralized Working Capital Model coefficients**

		Coefficients	Std. Error	T	<i>P-value</i>
1	(Constant)	137062.3198	2158889.281	0.0634874	0.952424
	Net inventory	-1.707613413	1.956037504	-0.872996	0.431939
	Net accounts receivable	0.243814578	2.372844664	0.102752	0.923105
	Net accounts payable	1.040701705	1.293092925	0.804815	0.466040
	Net short term loans	0.695169687	0.855257275	0.812819	0.461929

From the above table the study on firms with centralized working capital found that holding net inventory, net accounts receivable, net accounts payable and net short term loans to a constant zero the cash flows would be equal to 137,062. A unit increase in net inventory would lead to a decrease in cash flow by a factor of 1.707 while a unit increase in net accounts receivables, net accounts payables and net short term loans would all increase a firms cash flows with the factors 0.24, 1.04, and 0.69 respectively.

#### 4.4.3 Comparison of Estimated Models for Decentralized and Centralized

Comparing results of the estimated models for Decentralized and centralized working capital in table 4.9 and table 4.10 reveals that holding net inventory, net accounts receivable, net accounts payable and net short term loans to a constant zero the cash flows of decentralized were 257,397 which was higher compared to 137,067 of the centralized firms. Of the four working capital components only net accounts payables had

an inverse relation with cash flows of -0.795 in decentralized working capital while in centralized working capital net inventory had an inverse relation of -1.707.

#### **4.4.4 Discussions of Research Findings**

Annand (2001) asserted that an individual company's investment in working capital will be related to the type of industry it operates in and the essential working capital policy each individual company adopts. Working capital investment decisions concerns how much of the firms limited resources should be invested in working capital. Companies can adopt any of these three distinct working capital policies; an aggressive policy, moderate policy and a conservative policy.

A conservative policy implies relative high investment in current assets in relation to sales. In a conservative approach stock and cash levels will generally be kept high to avoid stock out and illiquidity costs. There is also likely to be a sizeable investment in short-term bank deposits and other short-term liquid investments. Gitman (1997) contributed that an aggressive policy relies on minimum investment in current assets and is highly dependent on access to short-term financing. He stated that with an aggressive policy, total investment in current assets will be kept to a minimum. Gitman (1997) stated that a moderate or balanced capital falls midway between the aggressive and conservative policies. With a moderate policy, the level of investment in the current assets is neither lean nor excessive.

The study concludes that there exists a strong positive relationship between centralized working capital and cash flows explained by the more than 100% difference in R<sup>2</sup>.

While decentralized working capital had a  $R^2$  of 0.122 centralized working capital had a  $R^2$  of 0.274.

#### **4.5 Summary of Research Findings**

From the results it's possible to conclude that centralization of working capital is very significant in determining the cash flows of manufacturing companies in Kenya supported by the 27.4% variance of cash flow that is explained by centralization of working capital components. On the other hand lack of centralization of working capital leads to poor cash flows as indicated by the variance of 12.2% that is explained by the net inventory; net accounts receivable; net accounts payable and net short-term loans.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter provides the summary of findings, conclusion recommendation, limitations and recommendations for further research presented in the following order: section 5.1 introduction; section 5.2 Summary of the study; section 5.3 contains conclusion recommendation; section 5.4 limitations of the study whereas section 5.5 contains recommendation for further research.

#### **5.2 Summary of the Study**

First the researcher conducted a multivariate analysis between cash flows and the four independent variables for firms that have not centralized their working capital. The findings revealed that the four independent variables explained only 12.2% of the variance on cash flows of the companies that have not centralized their working capital management. This was an indication that non-centralization of working capital has a left a huge variance that was unexplained. The correlations obtained between cash flow and net inventory, net accounts receivable, net accounts payable and net short term loans reveal that strong correlations only exist between; net payable and net receivables; net inventories and net payables ; net inventory and net payables.

The findings from manufacturing firms that have centralized their working capital reveal that working capital management explains 27.4% of the variance on cash flows of these firms. This was an indication that centralization of working capital plays a significant role in determining the cash flows of these companies. It was further established that there

were strong positive relationship of 0.73 between net inventories and net short term loans receivable and another semi strong correlation of 0.57 between net accounts receivables and net accounts payable.

### **5.3 Conclusion**

The study findings lead to a conclusion that centralization of working capital is very significant in determining the cash flows of manufacturing companies in Kenya. This can be supported by the 27.4% variance of cash flow that is explained by centralization of working capital management. On the other hand lack of centralization of working capital leads to poor cash flows as indicated by the variance of 12.2% that is explained by the net inventory, net accounts receivable, net accounts payable and net short term loans.

The study recommends that manufacturing companies in Kenya should consider centralization of working capital as a best practice that has the potential of improving the their cash flows. Better cash flows will enable the firms to meet their transactions with minimal delays.

The study also recommends that there is need to carefully manage centralization of working capital since it largely determines the level of cash flows that can be achieved by the manufacturing firms in Kenya.

### **5.4 Limitations of the Study**

The study relied on secondary data which was collected from annual audited financial statement of companies, NSE database and CMA library. In as much as there are general guiding principle for the preparation and reporting of financial statements which are Generally Accepted Accounting Principle (GAAP) and International Financial Reporting

Standards. These companies use different accounting policies and therefore reliability and quality of data was not 100%.

The limitations of this study were some data was not readily available. This reduced the probability of reaching a more conclusive study. However, conclusions were made with the available data. The size of the sample could have limited confidence in the results and this might limit generalizations to other situations. The study was also limited to operating cash flows of a company. There are other factors that affect the cash flows of a company e.g. cash from financing and investing activities, non-cash adjustments, accruals and provisions among others.

Time constraint was also a major concern. The time taken to carry out this study was in no means sufficient for the amount of detail and analysis the study involved. With more time, detailed tests could be conducted to determine whether the same conclusion could be derived when more variables are in question.

The study also had a limitation in terms of the scope because it only concentrated on publicly listed firms and ignored private firms. This may limit fair findings that could have been gotten if a bigger number of observations could have been analyzed. Since the data used is mainly from financial statements of public companies, it's therefore not comfortable to conclude the case is the same as for all private companies and partnerships.

### **5.5 Recommendations for Further Research**

There is need to carry out a comparative study between manufacturing companies and other industries in order to ascertain whether there is uniformity or universality of the

findings. This will assist in drawing of more solid conclusions on the effect of centralization of working capital on cash flows of firms.

There is also need to carry out a survey that will involve all the manufacturing firms whether quoted or not quoted. This will provide a better and more accurate position on the effect of centralization of working capital management on cash flows of manufacturing firms in Kenya.

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## APPENDIX

### GROUP MANUFACTURING COMPANIES LISTED AT THE NSE

FLAME TREE, BOC GAS, CARBACID, EVEREADY, UNGA GROUP, BAT, EABL

Input Data

Y	X1	X2	X3	X4
CF	NI	NR	NP	NL
(26.700)	(49.952)	107.119	10.510	-
(20.063)	9.642	(128.919)	(29.684)	-
(6.013)	(10.40E)	64.119	43.720	-
24.604	14.27E	(71.632)	4.768	-
19.513	(36.39E)	(110.798)	(12.863)	-
478.153	5.314	(2.395)	(488.679)	-
406.611	(21.454)	75.994	49.145	-
379.167	12.75F	(103.056)	44.852	-
231.180	(41.03E)	87.482	48.000	-
572.310	8.914	(99.637)	34.490	-
742.813	(72E)	29.282	64.174	-
696.934	9.68C	(34.837)	20.454	-
424.470	(4.59E)	36.795	15.686	-
152.397	31.79E	147.593	28.549	-
-	-	-	-	-
(285.845)	57.484	18.849	(20.688)	153.937
(126.114)	(171.41E)	29.017	(30.239)	(128.139)
(342.903)	83.46E	(11.629)	234.739	52.610
(199.182)	(176.63E)	(65.372)	-	(223.372)
210.000	188.45E	20.578	-	77.081
046.767	(776.217)	(201.224)	(1.031.064)	95.706
619.073	1.056.99C	250.459	1.121.520	13.964
364.591	189.26E	658.844	1.261.476	-
810.635	(31.98C)	292.902	160.509	(5.608)
559.541	(312.59E)	(174.778)	(231.032)	31
(732.855)	1.474.86E	(542.104)	545.290	353.430
(293.503)	88.47E	1.010.676	(234.707)	453.471
156.132	18.812	378.298	948.643	16.576
1.942	1.402.01E	47.601	1.617.133	(531.394)
2.183	673.187	74.503	(199.663)	(820.202)
(657.025)	2.233.082	(1.299.205)	(1.843.410)	7.534.160
(4.886.831)	(486.66E)	826.017	(1.132.408)	(1.037.202)
(194.063)	3.557.907	1.123.732	1.746.079	4.818.572
678.105	934.311	1.472.620	3.659.150	1.229.970
7.895.115	(488.87E)	1.432.619	887.320	-