EFFECT OF LIQUIDITY MANAGEMENT ON EFFICIENCY OF MANUFACTURING FIRMS LISTED AT NAIROBI SECURITIES EXCHANGE

BY

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D63/39309/2021

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE FINANCE DEGREE UNIVERSITY OF NAIROBI.

OCTOBER 2022

DECLARATION

I declare that this research project is my original work and has not been presented to any other university for the award of a degree or for any other purpose.

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ACKNOWLEDGEMENT

I am exceedingly grateful to my God for sustaining my life and enabling me to successfully complete this project.

My sincere gratitude goes to my supervisor Dr. Okiro for his sincere devotion, motivation, advice, corrections, guidance and critical comments without which this work would not have been accomplished. I also appreciate his lessons on Working Capital which provided good background of my liquidity management knowledge upon which my project foundation was laid

DEDICATION

It is my pleasure to dedicate this study to my family members, greatly my parents Mr and Mrs. Joash and my aunt Collate who have offered motivational, material and moral support towards the completion of this project.

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LIST OF ABBREVIATIONS AND ACRONYMS

ATS	Automated Trading System
CCC	Cash Conversion Cycle
CDS	Central Depository System
CMA	Capital Market Authority
GDP	Gross Domestic Product
GSE	Ghana Stock Exchange
NSE	Nairobi Securities Exchange
ROA	Returns on Assets
ROE	Returns on Equity
SPSS	Scientific Package of Social Sciences
USD	United States Dollar

ABSTRACT

Manufacturing firms are very concerned of their liquidity levels since the management in such firms need to make decisions in regard to the level of liquidity that they should maintain to take advantage of interest earned from investments while at the same time maintaining enough cash to meet their obligations as and when they fall due. This study therefore undertook a study to determine the effect of liquidity management on efficiency of manufacturing firms listed at the NSE. Liquidity was the key independent variable but other factors that were related to liquidity but also were considered to have an influence on efficiency of manufacturing firms were accounts receivable turnover ratio, accounts payable turnover ratio, inventory period, and age of the firm. The efficiency of manufacturing firms was determined by inventory turnover ratio that measured the number of times a company was able to manufacture and sell all the inventory manufactured. Liquidity on the other hand was determined by current ratio which is the ratio of current assets over current liabilities. The study was undertaken for all listed manufacturing firms in Kenya for a period of 10 years (2012-2021). Regression analysis was adopted by the study to determine the relationship between the independent variables and the dependent variables. The R squared indicated that the regression model could predict 57.4% of the changes in the dependent variable which indicates a strong model. However, the adjusted R square was less than R square indicated that some independent variables in the study did not have significant contributions to the model. The F test had a p-value of less than 0.05 indicating that the null hypothesis was rejected and therefore there was a significant effect of liquidity management on efficiency of manufacturing firms listed at the NSE. The regression co-efficient indicated that both accounts

receivable turnover ratio and age of the firm did not have significant effect on efficiency and therefore they did not have significant contribution to the model. However, current ratio, accounts payable ratio, and inventory period ratio had significant effect and contribution to the model. Liquidity ratio that was determined by the current ratio has a significant positive impact on efficiency. The co-efficient of current ratio is 4.92 that indicates that if all factors are held constant and current ratio (liquidity) is increased by one unit, then efficiency of manufacturing firms (measured by inventory turnover ratio) would increase by 4.92. Accounts payable turnover ratio has a significant positive effect on the model and therefore if all factors are held constant and accounts payable turnover is increased by one unit, then efficiency would increase by 3.963. This indicates that manufacturing firms should increase the period of time it takes them to pay their suppliers as it improves liquidity and therefore improving efficiency for the firm. Average inventory period has a negative significant effect on the model, indicating that if all the other factors are held constant and average inventory period is increased by one unit, then efficiency of the firm would decrease by 4.065. This means that manufacturing firms should ensure that they decrease the number of days they hold inventory, and therefore they ensure that they sell their products as fast as possible, without them taking too long, as it would increase efficiency of the firm.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Liquidity is a key factor in working capital management as well as the overall objective of revenue optimization that leads to profitability in a firm. Every firm therefore seeks to ensure that it adopts an aggressive liquidity management approach to sustain business operations as well as planned capital expenditures (Waswa, Mukras & Oima, 2018). Manufacturing firms in Kenya are vulnerable to high operational risks, as prices of inputs, raw materials and labour fluctuate from time to time. Management must therefore be able to ensure that they design their operations in such a way that they do not maintain so much free cash flow that they are able to grab available investment opportunities, but on the other hand maintain adequate liquidity to caution against operational and other risks (Waswa et al., 2018).

The study is anchored on dynamic capabilities theory where managers are in position to develop working strategies that can easily adopt to external changes that would adversely affect business operations, but at the same time ensure that they enhance their operations to remain competitive. The theory was proposed by Teece, Pisano and Shuen (1997). The other anchor theory is the Pecking Order theory, proposed by Donaldson in 1961 though modified through the works of Myers and Majluf (1984) who postulated that matters of financing a firm follow a certain order, where preference is accorded, retained earnings, then equity and then followed by debt financing. Cash conversion cycle (CCC) theory pronounced by Richards and Laughlin (1980) will also guide this study. The theory is based on the importance of working capital management where it considers the time

period from the time a firm pays its suppliers of raw materials, to the time the company is able to receive cash from the credit sales made from the final product.

Manufacturing firms like many business entities exist for the purpose of maximizing the value of the shareholders' investment. The attainment of this objective requires sound financial strategy coupled with responsive adoption techniques that are well coordinated. According to Gitman, Megginson and Smart (2008) there is need for a firm to balance between its total liquidity as well as investment decisions it takes that influence its profitability. This ensures that the firm is able to meet its short-term obligations and ascertain continuity in business that is guaranteed by the ability to enhance its profitability. Attaining this balance among the manufacturing firms in Kenya has been elusive as the pressure from huge investments made in working capital, requires them to maintain cash and cash items that they would use in making such investments. On the other side, keeping cash assets enhances their liquidity and reduces their liquidity risks, but reduces their earnings on interests if the cash was to be held in fixed interest earning accounts. Lazaridis and Tryfonidis (2006) assert that adequate inventory management ensures that the firm does not tie so much cash on idle stock that takes up space and cash that would have been properly used for other short-term investments that would bring more cash to the firm.

1.1.1 Liquidity Management

Liquidity is a term used to refer free cash flow or liquid cash that a firm utilises while meeting its current as well as future obligations and therefore reduces its risk exposure. Liquidity management, therefore, aims at ensuring that a business has enough cash

available to meet daily obligations which can be achieve by managing the liquidity as effective and efficiently as possible (Lazaridis and Tryfonidis, 2006). Proper management of liquidity requires a firm to possess optimal amount of cash, just enough to meet ordinary as well as unexpected needs of reasonable quantity as it affects a firm's creditworthiness which is one of the determinants of success or failure of a business (Waswa, Mukras & Oima, 2018). Liquidity management therefore shows the financial health and provides a clear indication on the ability of a firm to afford current and future debts, short-term investments, and obligations.

However, high liquidity in a firm indicates that management is not responsive enough to available opportunities and it is very risk averse. It becomes an indicator that the performance of such a firm is likely to below expectations as they are not willing to risk its free cash flows to available opportunities that would generate more returns for the shareholders (Ismail, 2016). Therefore, techniques such as cash flow modelling are used to provide the full visibility over the liquidity of the firm to the management. The management can have visibility over the lines of credit available for short-term borrowing, balances and limits. Liquidity as well involves management of risk that that a company may lack enough liquidity required to meet its upcoming obligation on time Ayako, Kungu & Githui, 2015). Liquidity management is measured as a free cash flow by businesses which are normally indicated in the annual financial reports of a company.

1.1.2 Efficiency

Efficiency refers to the peak level of performance that is achieved using the least inputs to achieve the highest amount of output. It requires reduction of the unnecessary

resources used to provide a given output which also include energy and time. Efficiency can also be defined as the ability to accomplish a certain task with the use of minimum expenditure of time, effort and resources. It is also the ability to avoid material wastage in terms of energy, efforts, money and time in producing a desired result (Ayako, Kungu & Githui, 2015).

Proper management of liquidity ensures that operations within the firm are steady and efficient as well as all financial obligations are met. Proper allocation of the resources within a firm ensures that the utility of these resources is fully utilized. Financial efficiency measures the outcome of a firm operations and policies in monetary terms. The accounting profitability of a firm is revealed by these outcomes which include the return on investment, return on equity or return on asset. The subjective measure of the efficiency of a firm to generate more revenue from the resources at its disposal and create value for its shareholders enhances its performance which shows how efficient a business is (Makori & Jagongo, 2013).

Efficiency is measured by determining the ratio of useful output to total input. This indicates that increase in output when the input remains constant reveals an increase in efficiency. Increase in efficiency minimizes the wastage of resources which include physical materials time and energy to accomplish a given output (Aggrey, Eliab & Joseph, 2010). This study therefore seeks to identify the ability of the management of manufacturing firms to effectively manage liquidity in their firms to enhance efficiency. The study implies that it is more focused on operating efficiency than financial efficiency, operating efficiency is better expressed by inventory turnover ratio. This is because the firm seeks to produce as much as possible inventory, while at the same time

ensures that all the inventory produced is sold as soon as possible. Operating efficiency would therefore be defined by the extent to which a firm is able to produce inventory and convert the inventory to sales (Lundvall & Battese, 2000).

1.1.3 Liquidity Management and Efficiency

Liquidity being the ability of a firm to honour all cash payment commitments as they fall due, a firm is said to be efficient if it possesses only enough cash flow to meet its daily obligations. Such a company does not invest all its cash in long term investment since it will have inadequate free cash flow to meet its short-term needs (Makori & Jagongo, 2013). It will be forced to convert its assets into cash. Some assets can be readily converted to cash but the long- term investment may take longer to convert, while if it is sold quickly to cover an unexpected shortfall, the firm may end up losing some of its value (Lundvall & Battese, 2000). On the other hand, for a firm to be efficient it can only retain the necessary liquidity and if it retains more than it's required, it means that the firm is not exploiting fully its opportunities and optimal revenue is not realized thus limits its performance.

1.1.4 Manufacturing Firms Listed at NSE

The Manufacturing sector in Kenya majorly contributes to the economic development of the country. According to Kenya Association of Manufacturers (2016) in 2016, the manufacturing sector was among the first three leading sector contributing 11% of the GDP in Kenya. However, the manufacturing sector has experienced fluctuations over the years due to different financial conditions causing some of the firms to collapse and others to emerge accordingly. The vision 2030 identified manufacturing sector as one of

the key drivers in the economic pillar which would realize a sustained GDP growth of 10% which would make Kenya qualify to be a middle-income country (Njoroge, 2015).

Nairobi Securities Exchange (NSE) has encouraged savings and investments since it was founded in the year 1954. It is one of the leading exchanges in the Eastern Africa which is based in Kenya. It has 66 firms that had been quoted by end of December 2019. It has a daily trading volume of approximately USD 10 million with a total market capitalization of approximately USD 23 billion. The exchange started automation with KenGen bond in 2009 and the bond market has improved to an average daily trading approximated at USD 10 million. It started Automated Trading System (ATS) in 2006 to enhance trading in securities. The ATS allows matching of orders automatically and gives stockbrokers chance to execute the orders on first come first serve basis. It has also been linked with the Central bank of Kenya and Central Depository System (CDS) accounts which has been necessary to ensure electronic trading of government bonds (Ayako, Kungu & Githui, 2015).

Enhancing trading at the exchange and to ensure that foreign investors are encouraged to invest in the country, restriction on foreign ownership were lifted in July 2015 and provided foreigners to own up to 75% of companies quoted at NSE. The change of the equity settlement cycle from the previous T+4 to T+3 ensured that investors were able to obtain cash 3 days after the shares were sold instead of previous four days. The buyers of these shares on the other hand would have their CDS accounts credited with these shares at the same time (Makori & Jagongo, 2013).

1.2 Research Problem

When a firm increases its liquid cash, it means that it has less chance of being illiquid but on the other hand, it misses out on interests that it would have earned if it placed the cash in a profit earning investment. Similarly, if a firm increases the level of its inventory, it reduces risk of stock outs and loss of clients as a result, but on the other hand it increases its operational costs on storage fees, increases risks of stock redundancy, stock handling costs among other increased costs (Ayako, Kungu & Githui, 2015). It therefore implies that firms must ensure that they ensure that they reach optimal balances on inventory, cash, receivables, and payables, since extremes on both sides would end up in huge losses.

Manufacturing sector is a growing sector with great potential for promoting economic growth and competitiveness in Kenya attracting local and foreign investors. However, most of manufacturing firms are in the growing stage facing paradoxical challenges where they are characterized by high sales requiring more investment and expenses increases leading to inadequate liquidity while cash is needed most in this stage. These expenses strain the cash flow and offset the balance resulting to challenges in meeting the short-term operating cost and short- term debt obligations (Njeri, 2014). A firm struggling to manage its liquidity can only survive but not thrive since thriving and surviving depend on profitability and liquidity. Firms that are highly profitable and liquid thrive while the ones that see a dip in profit but can maintain a healthy level of liquidity for the operations can only survive (Lwiki et al., 2013).

The effect of liquidity Management on financial efficiency is a topic that has attracted a number of scholars to carry out studies in different contexts. Njuguna (2015) carried out a study to establish how the profitability of manufacturing firms in Kenya is affected by liquidity management. Kyule (2015) did a study on the impact of liquidity and solvency on financial performance focussing on listed firms in Kenya. Another study done by Nizigiyimana (2014) established how listed cement manufacturing companies are affected by liquidity management. These studies reveal conceptual and contextual gaps which the current study seeks to address. It will therefore be answering the following research question: What is the effect of liquidity management on efficiency of manufacturing firms listed in Nairobi Securities Exchange?

1.3 Research Objective

The objective of this study is to establish the effect of liquidity management on efficiency of manufacturing firms listed in Nairobi Securities Exchange.

1.4 Value of the Study

The study will be significant to policy makers. The policy makers in the top management for firms listed at NSE would find the study important as it would provide crucial information regarding liquidity management and how it impacts financial performance and efficiency of their companies. This study would therefore provide important insight onto the liquidity management strategy that would improve the financial performance leading to efficiency of the company and would therefore enhance value creation to the shareholders.

The study will also be significant to government and the regulator such as the Capital Markets Authority (CMA) who would produce regulation on the minimum acceptable liquidity ratios such as working capital ratio that should be maintained by listed companies. The study would also provide insight on the best practice that would enhance ideal liquidity management strategy that would enhance profitability and survival of manufacturing firms.

The study will also be of significance to academicians and future researchers. Future researchers and academicians will use the findings of this study to develop their literature review and will also be significant in identifying knowledge gaps that would help them advance and improve the findings of the study. The study will therefore be important in creating new knowledge, developing theories, or providing necessary critiques for existing theories and ideologies that would therefore be vital in generating new knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Literature review is composed of the relevant theories in the study. The theories are explained and discussed on their relevance to the study. They provide the existing knowledge about liquidity management and efficiency. The findings of this study would seek to either support the proposition of these theories or would seek to critique them. The chapter will also contain other factors affecting efficiency that will be described appropriately. The empirical review will also enhance the literature review and the pictorial relationship of the variables in the study will be represented in the conceptual framework.

2.2 Theoretical Framework

There are various theories that have been proposed regarding liquidity management as well as efficiency. The key theories underpinning the study are dynamic capabilities theory, pecking order theory and cash conversion cycle theory.

2.2.1 Free Cash Flow Theory

Free cash flow theory was first proposed by Jensen (1986) who defined free cash flow as the portion of cash flow that remains after all the net present value projects have been undertaken. Free cash theory was therefore developed from pecking order theory and agency theory intertwined. Myers (2001) brings out the pecking order theory that suggest that firms have preference on form of financing. Internal financing is preferred, and management would only revert to external financing (use of debt and equity) after

exhausting internal financing. However, there is no free flow of information between lenders and borrowers that brings out increased cost of external financing as lenders are not sure whether the management will not misuse the funds, they lend to them and consequently become difficult for them to repay. This brings out provisions of agency cost theory, where the principal is not sure whether the agent will act on his best interests. As a way of caution or forcing the agent to act on his best interests, he incurs cost referred as agency cost (Mehran, 1992).

Management desires to have free cash flow as it would help them to take advantage of projects with positive NPV. Free cash flow cautions the firm from increased exposure to liquidity risk that would affect the performance of the firm. However, on the other hand, the shareholders would desire that the management reduces the available free cash flow, as the free cash flow is subject to misuse by the management. It is also seen as the inability of management to come up with investment opportunities that they would undertake thereby increasing profitability of the firm. Free cash flow also provides cheaper source of capital rather than from obtaining the funds from external sources (equity and debt) (Modigliani & Miller, 1963).

This theory is related to the study as it stipulates the advantages and disadvantages of holding free cash flow in firms. The theory also brings into perspective provisions of agency theory as well as pecking order theory. Free cash flow measures liquidity in the firm and the theory presents how free cash flow is viewed by shareholders as well as how it is viewed from the point of view of the management. The provisions by Donaldson (1961) in regard to signalling theory may also be impacted by free cash flow theory, as excess free cash flow gives signals to the market that may influence prices of securities of

the firm. The theory however, does not stipulate on the efficiency of management as a result management of the free cash flow maintained by the firm.

2.2.2 Pecking Order Theory

The theory was first introduced by Donaldson (1961) and was then modified by Myers and Majluf (1984) who postulated that the cost of financing a firm is directly influenced by asymmetric information. A firm can be financed from three sources which include internal equity, debt and new equity. Many firms prefer internal financing first then may go to debt and finally raising equity is treated as the last option. Debt is only used when the internal finance is depleted and when using debt become less sensible equity is issued. This theory asserts that firms adhere to the hierarchy of financing sources. This shows that the form of debt used for financing may act as a signal of the firms' need for external finance. The hierarchy in making financial decisions in a company as well as maximizing the value of a firm through a systematic and strategic decision made by the firm to finance new investment using the cheapest available source of fund forms the basis of this theory.

This theory is related to our study in that the theory suggests that the cheapest source of finance for managers is the retained earnings. In this case managers are able to obtain increased retained earnings if they work on their liquidity management strategies. Good cash management practices increase the liquidity of the firm, profitability is also enhanced by good liquidity management that leads to increased earnings for the firm.

Pecking order theory has a number of criticisms which include the following: firstly, pecking order theory cannot make practical application because of its theoretical nature.

It limits the type of funding and new types of funding cannot be included in the theory. Another limitation of this theory is that it is not valid for high- and low- leverage firms. High-leverage firm prefer equity financing ant high investment levels when internal financing is unavailable while low-leverage firms prefer to borrow as their first choice (Yıldırım & Çelik, 2021).

2.2.3 Cash Conversion Cycle Theory

The provisions of the theory were first brought out by Richards and Laughlin (1980) who in their seminal paper identified that a manager spends most of his/her time in managing issues related to working capital. This means that they spend considerable time in activities that include, the management of debtors, monitoring cash movement, sourcing for short term finance, or negotiating credit terms with suppliers (Aminu & Zainudin, 2015). Cash conversion cycle theory suggest minimizing the time taken by the firm from the moment the firm makes payments for raw materials to the moment the firm sells the final products and receive cash from those sales. Proponents of this theory suggest that it is superior method of identifying liquidity in a firm rather than use of liquidity ratios such as current ratio or acid test ratio, that considers liquidity under conditions of liquidation of firm assets, rather than during normal operations of the firm and therefore through the going concern situation that is depicted by the theory.

CCC is brought out as one of the best measures of managerial effectiveness in a firm. It determines the extent to which managers are able to collect receivables, whether the managers are able to take advantage of cash discounts, and the time period taken to convert products to sales. This is a measure that can be used to compare the effectiveness

of one firm to another since, the decisions required are similar, but different firms undertake different decisions that would mean one firm would be more effective than the other one (Sooner, 1993). CCC is comprised of debtor management, payables management as well as inventory management which are working capital measures in a firm. CCC is therefore critical in determining liquidity of a firm, and evidence from previous studies indicate that maintaining an ideal level of liquidity, enhances the shareholder's value (Deloof, 2003). The theory is therefore related to this study as it points out liquidity measures, while at the same time compares the liquidity with enhancing shareholder's value

2.3 Determinants of Efficiency

The section discusses the various determinants that would influence efficiency. The efficiency discussed in the study entails operating efficiency that seeks to identify the extent to which an individual firm is able to use its resources effectively to ensure production and sales of inventory as many times as possible in the year. The general assumption of the study is therefore informed by the fact that the more a firm produces and sells product, the higher the efficiency of the firm. The determinants of efficiency have therefore been described as liquidity as measured by current ratio, accounts receivable turnover. Accounts payable turnover, Inventory period and age of the firm.

2.3.1 Liquidity - Current Ratio

The current ratio which is also referred to as working capital ratio is a measure of the business capacity to meet its short-term obligations that are due within a period of one year (Pandy, 2005). The ratio indicates the financial health of a firm, and it can maximize

the liquidity of its current assets to settle debt and meet other obligations. The ratio considers the weight of the total current assets versus total current liabilities. An acceptable current ratio varies from one firm to the other. A firm may want to impress its creditors who prefer high current ration to low current ratio because they indicate that a company is more likely to pay its debt. On the other hand, high current ratios do not portray a good sign to investors since they indicate that the firm is not efficient in using its current assets or its short-term financing facilities. It is given by dividing total current assets by current liabilities (Owolabi, 2012).

In cases where the current liability exceeds the current assets the current ratio is less than one. This indicates that a firm may be facing challenges in meeting its short-term obligations. It is possible for some firms to operate with current ratio that is less than one if the inventory turns in to cash more quickly before the account payable becomes due. Similarly, firms that collect cash from their customers long before they are required to pay their suppliers can operate with low current ratios (Loth, 2012).

2.3.2 Accounts Receivable Turnover

The accounts receivable turnover measures the number of days that a firm takes before it receives cash from credit sales. It therefore implies that the more the number of days, the less efficient the firm is. The risk of bad debts also increases with the number of days a firm is able to allow its customers. A firm that is not able to collect its accounts receivable in good time also runs the risk of liquidity problems. It may not be able to meet its short-term obligations as and when they fall due. However, applying increased pressure on credit customers would on the other hand reduce sales as the customers

would be unwilling to buy goods, when they do not have readily available cash. The decrease in sales, would have an adverse effect on efficiency (Ogundipe, 2012).

2.3.3 Accounts Payable Turnover.

Accounts payable is also an important factor that may influence efficiency of the firm. The period of time a firm takes before paying its suppliers is very crucial in determining whether the firm is credit worthy to be supplied with more goods and service on credit terms. It is also crucial since the firm can decide to use the cash it has to undertake other investments with positive NPV, while at the same time get possession of the desired raw materials, goods and services. Subsequently, paying in good time, allows the firm to enjoy cash discounts that would save the company from excessive costs. The firm should therefore ensure that it balances between paying accounts payable very early or paying accounts payable very late. A balance that supports strategic position of the company, should be adopted, in enhancing efficiency of the firm (Ogundipe, 2012).

2.3.4 Inventory Turnover

Inventory turnover ratio refers to the ratio at which inventory is sold and replaced. It is usually calculated by dividing the cost of goods by average inventory for the same period. A higher inventory turnover ratio indicates that inventory is sold and replaced more often, and therefore indicates a better performance in form of sales revenue. On the other hand, a small inventory turnover ratio indicates that it takes a while to replenish stock. This indicates a lower performance in form of sales revenue while also implies that there is increased costs as a result of inventory storage and handling costs. A low turnover ratio would indicate that the business is rarely out of stock and do not suffer

from stock-out periods that may affect business operations and reduce customers' loyalty. A balance is therefore needed, where management ensures that it does not buy excess inventory, that it incurs huge storage and handling costs, while at the same time losing out on much needed liquidity. The business should also ensure that it does not order for too low stock levels that it increases its risk of stock-out periods that would affect sales negatively and increase ordering costs (Kolias et al., 2011).

2.3.5 Age of the Firm

The age of the firm is crucial in defining the effectiveness and efficiency of a firm. The learning curve principle indicates that with increased time, a process improves because of learning and increased proficiency (Yelle, 1979). Experience is a great factor that determines the efficiency with which a person can execute different tasks. The learning curve effect means that with time a person can receive learning and increased proficiency that enables a person to execute the tasks in less time and using less effort. Similarly, a firm that has enough experience can execute its roles and responsibilities with more precision and accuracy, and therefore can be able to achieve higher efficiency than a new firm with low experience. It is therefore possible that age of the firm would have an impact on efficiency of manufacturing firms.

2.4 Empirical Studies

Locally Nizigiyimana (2014) used purposive sampling design to carry out an investigation on listed cement manufacturing companies in Kenya in regard to liquidity management. The study utilized secondary data from the annual financial statements from NSE database. Multiple regression analysis and descriptive statistics were used in

data analysis. The findings showed that cement manufacturing companies may face challenges in meeting their short-term obligations when current ratio was used. Quick ratio showed that the companies were doing very well. The study also revealed that cash conversion cycle influenced liquidity measured by current ratio. Conceptual gap as identified in the study as it did not relate liquidity management and performance. Similarly, the study was not focused on listed firms at the NSE.

Kinyua and Fredrick (2022) used descriptive research design on a population of all listed manufacturing firms in NSE to examine how financial performance is affected by liquidity risk. Secondary data and edited through Microsoft Excel sheets. The study used panel regression analysis on cross sectional and time series data collected using STATA software package. Inferential and descriptive statistics was analysed. The study findings indicated that financial leverages, inflation rate. Capital adequacy and asset tangibility had a positive influence on financial performance. The study focused on liquidity risk unlike the current study that focuses on liquidity management.

A descriptive research design was used by Kyule (2015) to investigate the effect of liquidity and solvency on financial performance of listed firms in Kenya. The study relied on secondary data collected from annual reports which were obtained from NSE database. Microsoft Excel 2010 and SPSS version 21 were used for data analysis where descriptive and inferential statistics were analysed. The study applied regression analysis model to establish the relationship between the variables. Capital adequacy, operational efficiency, and liquidity were found to have a positive effect on performance. Solvency, size of the firm and financial leverage had negative effect on performance. Liquidity, Capital adequacy, financial leverage had no statistical significance at 5% level while

operational efficiency and size of the firm were found to have a statistically significant at confidence level. There exist conceptual gaps where this study seeks to establish the effect of liquidity management on efficiency.

Njuguna (2015) as well used a descriptive approach to establish the relationship that existed between liquidity management and profitability in the context of cement manufacturing firms in Kenya. The study collected secondary data from financial statements and was analysed using SPSS then results were tabulated. The regression analysis results revealed a significant relationship between liquidity management and profitability. Results from correlation analysis revealed that liquidity management had a moderate positive relationship with profitability. This study considered cement manufacturing firms in Kenya which is different from the current study.

An international study undertaken by Dadepo and Afolabi (2020) on 10 manufacturing firms in Nigeria for a period of five years, from 2012 to 2016, and sought to establish the effect of liquidity management on performance. The study relied on secondary data from annual reports. In the analysis correlation, regression and descriptive statistics were analysed. The current ratio revealed a negative and significant effect on profitability. Quick and cash ratios had positive insignificant relationship with performance. This study was done in Nigeria while the current study will be done in Kenya.

Azhar (2015) sought to establish the influence of liquidity and management efficiency on profitability. The study was done on a number of selected power distribution utilities in India. A sample of 23 power distribution utilities was selected and the study was carried for ten years. Primary data was collected through panel observation of 230. The study

used return on capital to measure profitability. A generalized least square regression was adopted for analysis. The results of the study showed that debtor turn over, interest coverage ratio and collection efficiency had a significant impact on profitability. Absolute liquid ratio, quick ratio and credit turnover ratio had an insignificant effect on profitability. The study was undertaken on power distribution utilities revealing a contextual gap that will be addressed by the current study that would focus on listed firms at NSE.

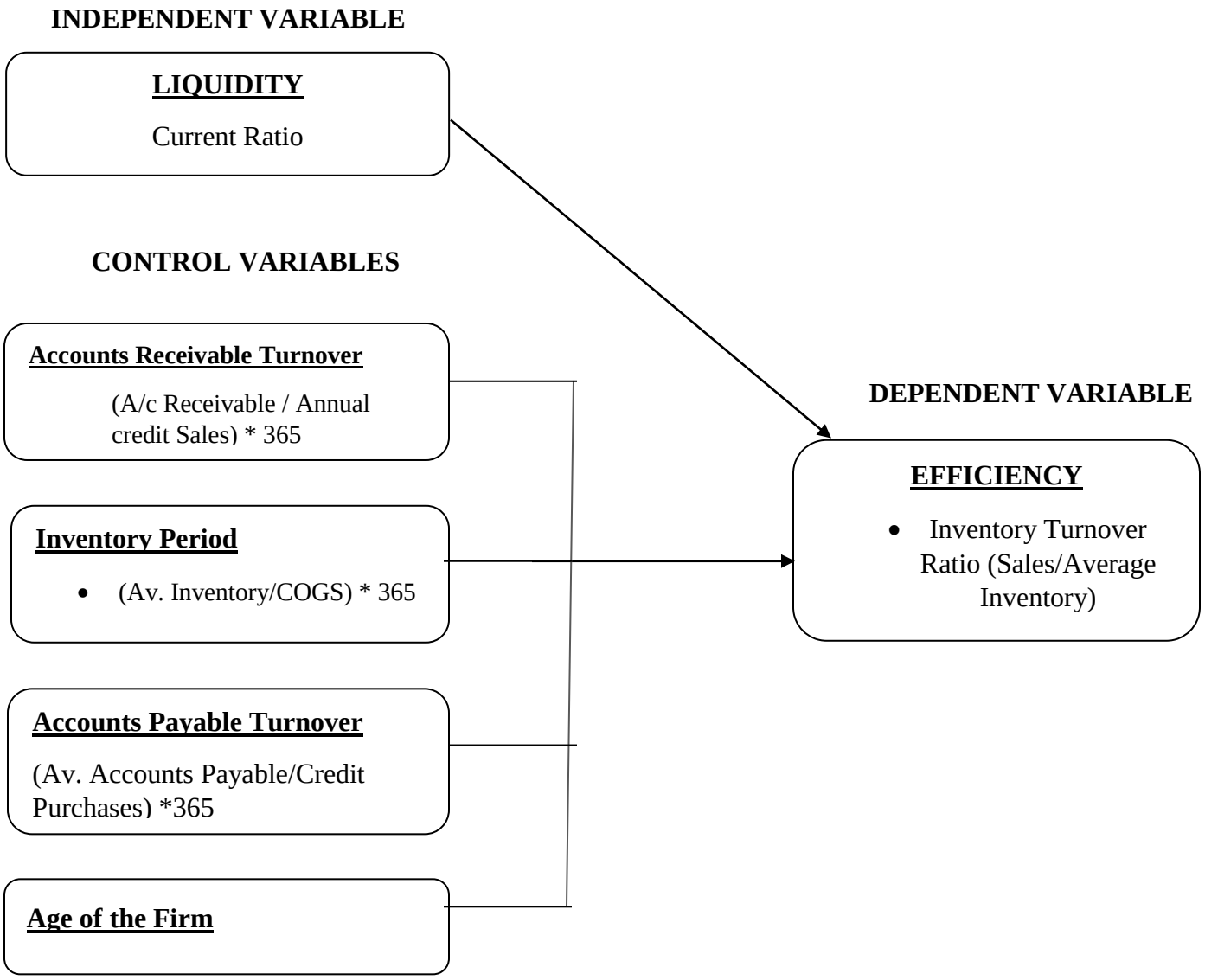
Thuraisingam (2015) as well carried out an investigation on Sri Lankan listed companies examining how firm profitability is affected by liquidity management for a period of five years from the year 2008 to 2012. Different tools were used to collect data and descriptive, correlation and regression analysis techniques were applied for data analysis. The findings of this research indicated no significant relationship between liquidity and profitability. There exists a contextual gap where this study focuses on these variables as they apply in Kenya.

Another international study done by Li et al. (2020) targeting all the non- financial firms that are listed on the Ghana Stock Exchange with an aim of determining the nexus between liquidity and financial performance. The study relied on panel data obtained from annual reports of a sample of 15 firms which was taken for a period of 10 years from 2008 to 2017. The study applied the generalized least square regression in the analysis of the data. The results revealed a significant negative impact of liquidity on firm performance using the return on equity but had an insignificant positive effect on performance using return on equity surrogated by cash flow ratio. This study reveals a conceptual and contextual gap that will be addressed by the current study.

2.5 Conceptual Framework

Conceptual framework is an analytical tool that illustrates the relationship between the study variables. It indicates a pictorial relationship of the study variables, where the independent variable comprised of liquidity management exerts its influence on efficiency of firms. Efficiency is therefore the dependent variable of the study. The control variables of the study are debtors turnover ratio, creditors turnover ratio, inventory period and age of the firm.

Figure 2. 1: Conceptual Framework



2.6 Summary of Literature Review

Literature review section comprised of theories free cash flow theory, pecking order theory and cash conversion theory. These theories are related to the study of liquidity management and its impact on efficiency of the firm. They make the anchor theories of the study, where the study will borrow significant impact of liquidity management on efficiency. The empirical studies are also reviewed in the chapter, where international and local studies are assessed. The international studies had glaring contextual gaps together with some conceptual gaps as discussed, Local studies had significant methodological gaps, where the methodology used in these studies is significantly different from the methodology proposed in this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter research design used in this study is described. The chapter also discusses the population targeted, the data collection methods and method that was used for analysis. Diagnostic test and analytical model are also well explained.

3.2 Research Design

Research design is defined as a conceptual structure outlining the way research is taken. Lavrakas (2008) defines research design as a strategic plan followed when conducting a research study to arrive at the findings of a testable research question of interest. This study uses a descriptive research design in order to explain the characteristic of the variables of interest, cause and effect of more than one variable in the study as it uses (Serkan 2003). Descriptive research, therefore, assist to establish the relationship between variables.

3.3 Population

A population of study refers to a comprehensive group of individuals, objects or institutions which possesses common characteristics of interest to the researcher. These common characteristics make the group to stand out from other individuals, objects or institutions (Cooper and Schindler, 2003). The target population of the study is all non-financial firms listed at the NSE for a period of five years (2017-2021). A census study was undertaken to test the relationship between liquidity management and efficiency of these firms.

3.4 Data Collection.

Secondary data was employed in the study to collect data from all non-financial firms listed at the NSE for a period of ten years (2012-2021). Data was collected from the published annual reports, from the respective firms' websites, NSE website, published manuals and any other relevant reliable source of data.

3.5 Data Analysis

This research used SPSS version 23 to analyse the data collected to give descriptive and inferential statistics. The relationship between independent and dependent variables was given by multiple linear regression (MLR) analysis and correlation analysis. MLR analysis is technique that analyses the relationship between dependent variable and a number of independent variables. The following diagnostic tests were therefore conducted before applying multiple linear regression analysis which include normality, heteroscedasticity, multicollinearity and autocorrelation.

3.6 Analytical Model

This study applied linear regression model to determine the relationship between liquidity management on efficiency. To determine the dispersion and distribution of the data, the study used descriptive statistic. This study also conducted correlation analysis to identify the association between the independent variables and the dependent variable

The regression model depicted below explains the expected.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Whereas

$\beta 0$ is the intercept and ε is the error term

Y represents efficiency determined by Inventory (Turnover Ratio - Sales/Average Inventory)

X_1 represents liquidity measured by liquidity Ratio (Current Ratio – Current Assets/Current Liabilities)

X_2 represents accounts receivable turnover measured by number of days taken for debtor to pay (Average accounts receivable/credit sales) * 365

X_3 represents accounts payable turnover measured by number of days taken by the firm to pay creditors (Average accounts payable/credit purchases) * 365

X_4 represent inventory period measured by the number of days it takes before inventory is sold (Av inventory/cost of sales) * 365

X_5 represent Age of the firm; that measures the number of years the firm has existed from incorporation.

$\beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 are coefficients of $X_1, X_2, X_3, X_4,$ and X_5 respectively.

3.7 Diagnostic Tests

The study carried out the following diagnostic tests on the data namely: linearity test, normality test, multicollinearity test, autocorrelation test and heteroskedasticity test.

3.7.1 Linearity Test

Variables are said to be linear if an increase in one unit of independent results to a fixed increase in the dependent variable. Therefore, linearity means that there exists a linear relationship between independent and dependent variables of a data. To test linearity, this

study used linear plots that determined whether the data collected could form linear formats and therefore linearity could be assumed for the data. Linear data means that linear relationship between the study variables could be assumed, and properties of linear equations could apply in the linear model (Field, 2009).

3.7.2 Normality Test

OLS regression model that impacts the validity of all tests assumes that residuals behave normal. In this study, a non-graphical test by Shapiro Wilk was used to determine whether the residual's behaviour is normal. The null hypothesis of the test states that there is a normal distribution of the residue. The study accepts the null hypothesis at 95% significant level if the p-value is greater than 0.05 ($p>0.05$). The study therefore concludes that there exists a normal distribution of the residual (Oscar, 2007).

3.7.3 Test of Autocorrelation

In time series data, disturbances can either display serial correlation or autocorrelation across the period. Serial correlation causes a problem of biasness of the standard errors and also inefficiency of consistent estimated regression coefficients when present in a linear panel data models. This study applied Durbin-Watson test to identify whether the problem of autocorrelation is present. This is a statistical test used for testing First Order autocorrelation between the error and its immediate previous value to find out whether there is correlation among the errors in different observations. There is no serial correlation is the null hypothesis. The study fails to reject the null hypothesis at 95% significant levels if d-statistic is more than 0.05 ($d>0.05$). The conclusion is that there is no correlation among the errors in different observations.

3.7.4 Heteroscedasticity Test

Observations may have regression disturbances which do not have constant variances. This problem is referred to as heteroskedasticity. It may arise in cross-section data as well as time series data. Its presence causes a problem of inefficiency of the estimation results. Trevor Breusch and Adrian Pagan (1979) came up with modified Wald test for heteroskedasticity. This study used Breush-Pagan test in undertaking heteroscedasticity test.

3.7.5 Multicollinearity Test

The test is designed to ensure that the independent variables are not correlated with each other and therefore bring collinearity issues in the data. This is because independent variables should remain truly independent, and their dependence should be on the dependent variable. Variation inflation factors (VIF) is used to determine multi-collinearity, where variables with VIF or more than 10 are believed to have multi-collinearity that may affect the regressions. This is also determined by the use of tolerance level, where a tolerance level of greater than 1 indicates that there is multicollinearity issues that would need to be solved.

3.7.6 Test of the Model

Model test is undertaken using AIC model test and use of BIC model test. The higher the score of either AIC or BIC, the less efficacy is the model. The test is undertaken on all the variables in the model then the test is repeated on the model with the exception of each of the independent variable to ensure which of the model has the lowest value of AIC or BIC.

3.8 Significance Tests

The study used F- test and Analysis of Variance (ANOVA) model to test the significance of the study. Both models have the ability to find significance level with this study's sample and are simple to conduct and interpret. The level of statistical significance used in this study is 0.05 which means the confidence level that is used is 95% because it is statistically significant for this study.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

The chapter describes the data collected for each study variable. It provides the mean standard deviation, the minimum, maximum value of the variables. The study then undertakes regression analysis after conducting diagnostic tests that determine the extent to which the data conforms to the assumptions while undertaking a regression analysis. Correlation analysis is also undertaken, and the chapter ends by summarizing the study findings and interpretation of findings.

4.2 Descriptive Statistics

Descriptive statistics is used to describe the data collected in form of mean and standard deviation. It also indicates the maximum and the minimum value that explains the extent to which the data for each variable is distributed and the extent it varies from the largest value to the smallest value in the distribution. The kurtosis and the skewness are also used to determine the distribution of the study variable.

Table 4. 1: Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Y Inventory turnover ratio	90	1.74	49.62	9.75	9.24	2.198	.254	5.049	.503
X1 Current Ratio	90	.03	10.09	1.97	1.84	2.520	.254	7.097	.503
X2 Accounts Receivable Turnover	90	6.60	506.04	95.09	75.51	2.274	.254	8.705	.503
X3 Accounts Payable Turnover	90	4.50	244.95	78.38	60.94	1.191	.254	.761	.503
X4 Average Inventory Period	90	4.80	338.93	87.21	55.52	1.412	.254	3.638	.503
X5 Age of the Firm	90	23	114	69.39	27.943	.217	.254	-1.273	.503
Valid N (listwise)	90								

Source: Researcher, (2022)

The inventory turnover ratio is the dependent variable in the study. It has been used to indicate the efficiency of manufacturing firms by calculating the frequency with which a firm buys raw materials and sells them. The higher the inventory turnover ratio, the more the number of times a firm is able to produce goods and sell them and therefore the higher its efficiency. A highly efficient firm incurs less storage costs and is able to sell inventory as fast as possible. The mean of efficiency is 9.75 that indicates that in average, firms are able to turnover inventory 9.7 times in an year with a standard deviation of 9.24 times. The company that indicated the highest efficiency indicated an inventory turnover ratio of 49.62 times while the firm that indicated the least turnover ratio was 1.74 times

only. The distribution was also highly skewed at a positive skewness of 2.2 and a kurtosis of 5.05.

The independent variable of the study was liquidity that was determined by the current ratio of current assets divided by current liabilities. It measures the extent to which firms are able to cover their current liabilities by the current assets. The average current ratio for all the manufacturing firms is 1.97 indicating that in average the current assets are in average two times the current liabilities, with a standard deviation of 1.84. The firm that recorded the highest current ratio recorded 10.09 times while the firm that recorded the least value indicated only 0.03 times. Both skewness and kurtosis were high at 2.52 and 7.1 respectively.

Accounts receivable was also determined in the study by calculating the number of days that it took for debtors to clear their outstanding. Firms aspire to ensure that they collect receivables as soon as possible as long as it does not jeopardize the total sales made by the firm. The average number of days used by clients in manufacturing firms was in average 95 days with a very high standard deviation of 75.5 days. This indicated that debt collection among manufacturing firms was very poor. The firm that recorded the highest number of days to collect receivables indicated 506 days which is over 1 year in outstanding, while the firm that had the least number of days recorded 6.6 days. The variable had high skewness and kurtosis of 2.27 and 8.7 respectively.

Accounts payable turnover on the other measured the number of days a firm took before settling for supplies from suppliers. Firms are supposed to pay their accounts payables as late as possible as long as they do not jeopardize their chances to benefit from cash

discounts as well as losing their credit worthiness. The average accounts payable turnover is 78.38 days with an equally high standard deviation of 60.94. Despite the fact that the number of days undertaken by manufacturing firms to pay their suppliers are many, perhaps more than the average threshold of around 30 to 45 days, they are fewer than the average accounts receivable days. It implies that manufacturing firms do not take advantage of cash discounts and may have unhealthy relationship with their suppliers. The liquidity management technique adopted by these firms of allowing their customers to increase the number of days before they pay up as well as taking long before paying their suppliers is not healthy in liquidity management. The variable has a low kurtosis and skewness of 0.76 and 1.19 respectively.

Average inventory period on the other hand measures the number of days inventory takes from the period that raw materials for manufacturing the inventory are acquired to the day that the inventory is sold. The fewer the number of days the better the performance of the firm. However, manufacturing firms had in average of 87.21 inventory period days, with a standard deviation of 55.52 days. The firm that used most of the days to convert inventory to sales used 338.93 days, equal to almost a year, while the firm that used the least number of days used only 4.8 days. The distribution of data for this variable had low skewness and kurtosis of 1.412 and 3.64.

The age of the firm indicates the period of time a firm had existed since it was incorporated. It indicates the years of experience of a firm, with an assumption that the more years of experience a firm had, the better it would be in being efficient. The average age was 69.39 years with a standard deviation of 27.94 years. The oldest firm had 114

years while the youngest had only 23 years. The variable had a low kurtosis and skewness of -1.27 and .217 respectively.

4.3 Correlation Analysis

Correlation analysis is undertaken to determine the correlation between the study variables. In this study the correlation between the independent variables and the dependent variable is undertaken to determine the direction of movement of the dependent variable if each independent variable is increased by 1 unit. Correlation ranges from 0 to 1 with 1 indicating perfect correlation while 0 indicates no correlation. Correlation may also be positive or negative depending on the direction. Table 4.2 indicates the correlation analysis for the study.

Table 4. 2: Correlation Analysis

Correlations

	Y Inventory turnover ratio	X1 Current Ratio	X2 Accounts Receivable Turnover	X3 Accounts Payable Turnover	X4 Average Inventory Period	X5 Age of the Firm
Y Inventory turnover ratio	1	.495**	.179	.250*	-.568**	-.232*
X1 Current Ratio		1	.004	-.249*	-.178	-.095
X2 Accounts Receivable Turnover			1	.675**	-.130	-.316**
X3 Accounts Payable Turnover				1	-.193	-.395**
X4 Average Inventory Period					1	.341**
X5 Age of the Firm						1

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

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation between each independent variable with the dependent variable is significant at 0.05 significance level, apart from the correlation between accounts receivable turnover with efficiency (Y). The correlation between efficiency of the firm and both average inventory period and age of the firm are significant but negative. This indicates that increasing these variables, lead to a decrease in efficiency of the firm. However, increasing liquidity through the current ratio as well as increasing the number of days for accounts payable leads to increase efficiency of the firm.

4.4 Diagnostic Tests

Diagnostic tests are undertaken to determine whether the data collected for the variables is in a format that would agree with undertaking regression analysis. The diagnostic tests that are undertaken in the study include, normality test, linearity test, test of autocorrelations, multicollinearity test and heteroscedasticity test.

4.4.1 Normality Test

Normality test is undertaken to determine whether data is distributed in a bell-shaped form that we refer to as normal curve. Normality in data distribution indicates that the qualities of normal data could be used to explain the data and test the null hypothesis. Shapiro -Wilk test is therefore used in this study to test whether data is normally distributed or not.

Table 4. 3: Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
X1 Current Ratio	.271	90	.000	.707	90	.000
X2 Accounts Receivable Turnover	.176	90	.000	.800	90	.000
X3 Accounts Payable Turnover	.138	90	.000	.873	90	.000
X4 Average Inventory Period	.108	90	.011	.906	90	.000
X5 Age of the Firm	.165	90	.000	.915	90	.000

a. Lilliefors Significance Correction

Source: Researcher, (2022)

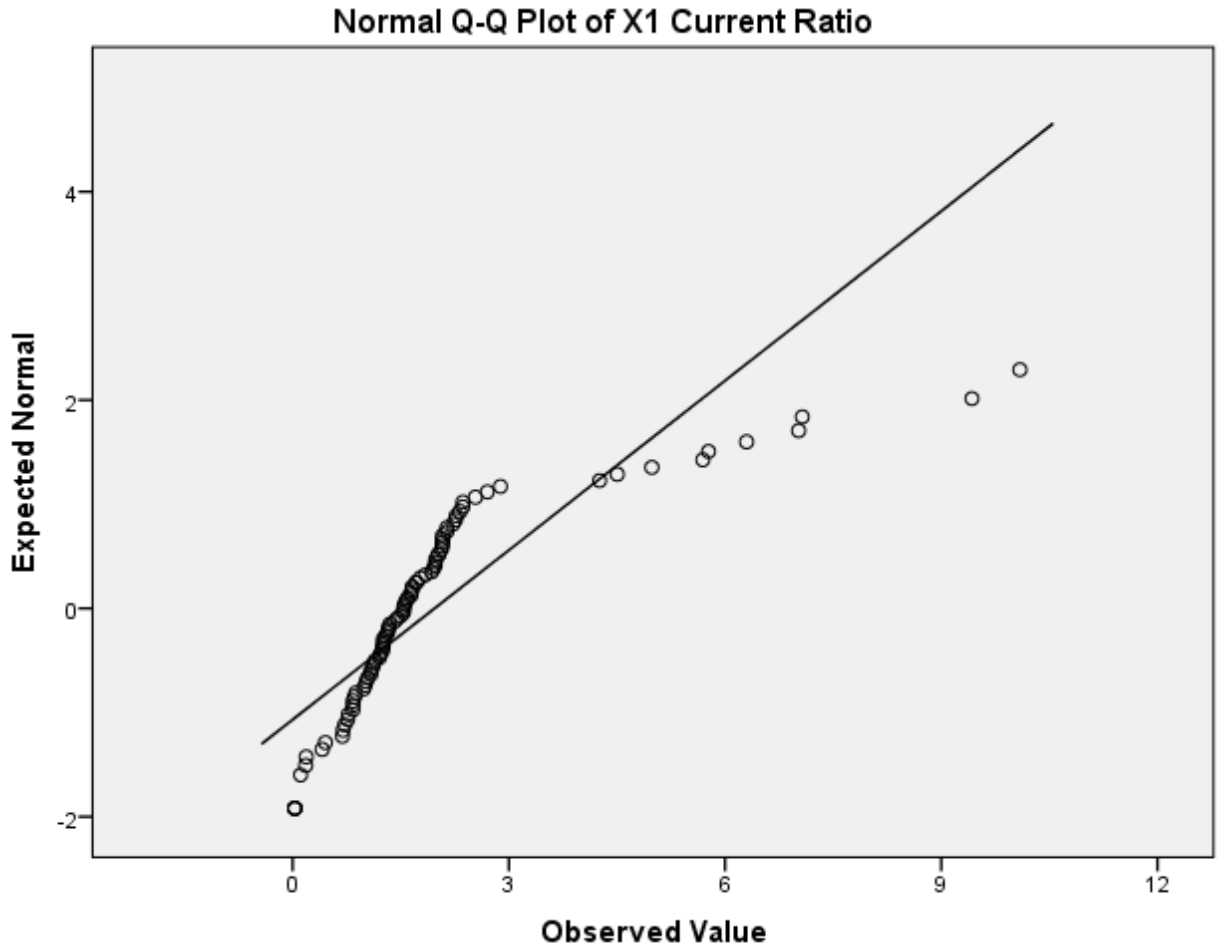
Table 4.3 indicates that the p values are less than 0.05 and therefore we reject the null hypothesis. It indicates that all the variables are not normally distributed. It therefore implies that data will be transformed by standardizing the values of each independent variable before undertaking regression analysis.

4.4.2 Linearity Test

Linearity testing requires the understanding that the data could be represented by a straight line. It indicates that the distribution of data could best be described by a straight line, where it would therefore be possible to use the elements of a straight line to undertake projections and determine the line of best fit for the study. Linear plots are therefore carried out to determine linearity of the study.

The Q-Q plots indicates that the values follow the diagonal line indicating that the data can be expressed in linear terms. The data therefore passes the linearity test.

Figure 4. 1: Normal Q-Q Plot



4.4.3 Heteroscedasticity Test

In OLS heteroscedasticity refers to unequal scatter, particularly in the context of residuals or error terms. Heteroscedasticity is not preferred in OLS as it is assumed that the residuals are drawn from a population with constant variance which is referred as homoscedasticity. The residuals are therefore required to have a constant variance.

Breusch – Pagan test was used to test for heteroscedasticity where the null hypothesis of the test indicates that data is homoscedastic (has constant variance). The null hypothesis is rejected if the p value is less than 0.05.

Table 4. 4: Breusch-Pagan Test

Modified Breusch-Pagan Test for Heteroskedasticity[a,b,c]		
Chi-Square	df	Sig.
7.795	1	.005

a. Dependent variable: Y Inventory turnover ratio

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + X1CurrentRatio + X2AccountsReceivebaleTurnover + X3AccountsPayableTurnover + X4AverageInventoryPeriod + X5AgeoftheFirm

Source: Researcher, (2022).

The p-value of the Breusch Pagan Test is less than 0.05 that indicates that the null hypothesis is rejected, and therefore the data has problem of heteroscedasticity. The problem is therefore addressed by transforming the data to deal with the problem of heteroscedasticity. The data is transformed by standardizing the values of each variable.

4.4.4 Multi-collinearity Test

Multi-collinearity test is undertaken to determine whether the independent variables are truly independent, or they influence or are correlated to each other that would bring about

collinearity problem. Multi-collinearity is tested by use of VIF factors, where the rule of thumb indicates that values above 10 shows presence of significant correlations that would lead to spurious regression.

Table 4. 5: Multi-Collinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1 Current Ratio	.813	1.230
	X2 Accounts Receivable Turnover	.510	1.963
	X3 Accounts Payable Turnover	.425	2.352
	X4 Average Inventory Period	.845	1.183
	X5 Age of the Firm	.751	1.331

Table 4.5 shows that all the variables have VIF values below 10 indicating that there is no problem of multi-collinearity in the independent variables of the study.

4.4.5 Test of Auto Correlations

The test of auto correlations is used to determine that autocorrelations of the residuals is not significantly skewed to the right or to the left. Autocorrelations is determined by Durbin Watson Score that ranges from 0 to 4. Both extremes of the score are not desired as they indicate either positive skewness of the residuals or negative skewness. The

Durbin Watson score in acceptable levels ranges from 1.2 to 2.8 with 2 being the perfect distribution of residuals.

Table 4. 6: Durbin Watson Test

Model	Durbin-Watson
1	1.282

The Durbin Watson test indicates that the Durbin Watson score is 1.282 that indicates that there is fair distribution of residuals (which is within acceptable levels) and therefore no autocorrelations that would lead to spurious regressions.

4.5 Regression Analysis

Regression analysis is therefore carried out to determine the significance of the relationship between the independent variables and the dependent variable. The regression analysis is undertaken according to the regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

4.5.1 Regression Summary

It gives the summary of the regression analysis where it provides the coefficient of determination usually defined by R squared. It also indicates the ability of the independent variables to predict the fitted dependent variable (ẏ).

Table 4. 7: Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757[a]	.574	.548	6.21

a. Predictors: (Constant), Zscore: X1, X2, X3, X4 and X5.

b. Dependent Variable: Y Inventory turnover ratio

Table 4.7 indicates that the R square is 0.574. It indicates the co-efficient of determination that suggests the ability of the regression model to predict changes in the dependent variable. The model is therefore responsible of 57.4% of the changes in the dependent variable which indicates a strong model. The adjusted R square on the other hand is slightly lower (54.8%) indicating that some of the added independent variables do not add value to the model.

4.5.2 Significance Testing

Significance testing is undertaken through F test, where a p-value of less than 0.05 indicates that there is a significance effect of liquidity management on efficiency of manufacturing firms listed at the NSE. This is measured by test of ANOVA as depicted in table 4.8.

Table 4. 8: ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4356.829	5	871.366	22.614	<.001[b]
	Residual	3236.743	84	38.533		
	Total	7593.572	89			

a. Dependent Variable: Y Inventory turnover ratio

b. Predictors: (Constant), X5 Age of the Firm, X1 Current Ratio, X2 Accounts Receivable Turnover, X4 Average Inventory Period, X3 Accounts Payable Turnover.

Source: Researcher, (2022)

The p-value according to table 4.8 is <.001 that indicates that it is less than 0.05. The null hypothesis is rejected, and the study concludes that there is significant effect of liquidity management on efficiency of manufacturing firms listed at the NSE.

4.5.3 Regression Coefficients

Regression coefficients express the extent to which the dependent variable increases or decreases if the independent variable is increased by one unit while holding all other factors constant.

Table 4. 9: Coefficients

Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	9.754	.654		14.907	<.001
	Zscore: X1 Current Ratio	4.920	.730	.533	6.744	<.001
	Zscore: X2 Accounts Receivable Turnover	-1.297	.922	-.140	-1.407	.163
	Zscore: X3 Accounts Payable Turnover	3.963	1.009	.429	3.928	<.001
	Zscore: X4 Average Inventory Period	-4.065	.716	-.440	-5.679	<.001
	Zscore: X5 Age of the Firm	.864	.759	.094	1.138	.258

a. Dependent Variable: Y Inventory turnover ratio

Source: Researcher, (2022)

The coefficients of the model have significant effect on the model as the p-value of the t test is less than 0.05 except for accounts turnover ratio and age of the firm, that indicates were greater than 0.05 and therefore indicated that they had insignificant effect on the model. These two variables did not improve the model.

The analytical model that took the form

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Would therefore be reduced to

$$Y = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

This could also be written as

$$Y = 9.754 + 4.92\ X_1 + 3.963\ X_3 - 4.065\ X_4 + 0.654$$

Despite the fact that accounts receivable turnover has a negative coefficient, indicating that increase in the accounts receivable turnover would have a negative impact on efficiency, the variable is insignificant and does not have significant effect in predicting the dependent variable. Similarly, age of the firm despite having a positive coefficient that would indicate that increasing the age of the firm would have a positive impact on efficiency, thereby indicating the element of learning curve, where experience would indicate that the company improves efficiency, the impact has insignificant impact on efficiency of manufacturing firms.

Liquidity ratio that was determined by the current ratio has a significant positive impact on efficiency. The co-efficient of current ratio is 4.92 that indicates that if all factors are held constant and current ratio (liquidity) is increased by one unit, then efficiency of manufacturing firms (measured by inventory turnover ratio) would increase by 4.92.

Accounts payable turnover ratio has a significant positive effect on the model and therefore if all factors are held constant and accounts payable turnover is increased by one unit, then efficiency would increase by 3.963. This indicates that manufacturing firms should increase the period of time it takes them to pay their suppliers as it improves liquidity and therefore improving efficiency for the firm.

Average inventory period has a negative significant effect on the model, indicating that if all the other factors are held constant and average inventory period is increased by one

unit, then efficiency of the firm would decrease by 4.065. This means that manufacturing firms should ensure that they decrease the number of days they hold inventory, and therefore they ensure that they sell their products as fast as possible, without them taking too long, as it would increase efficiency of the firm.

4.6 Summary and Interpretation of Study Findings

The study sought to determine the effect of liquidity management on efficiency of manufacturing firms listed at the NSE. The liquidity of manufacturing firms was determined by current ratio while efficiency was determined by the ability of a firm to turnover inventory. The other independent variables that were determined by the study included accounts receivable turnover ratio, accounts payable turnover ratio, average inventory period as well as the age of the firm. These factors were modelled in an analytical model and the study sought to undertake a regression analysis to determine the significance of the relationship.

The study undertook a descriptive analysis of the variables that determined the mean, standard deviation, the minimum and the maximum for each variable, as well as the kurtosis and the skewness. The inventory turnover ratio (efficiency) in average terms was good at 9.75 times a year. The current ratio was also pretty good at 1.97 in average. However, the accounts receivable period was in average at 95 days, that indicated that the firms had poor accounts receivable collection policy and were exposed to risk of default and increased provision of doubtful debts. On the same note, the accounts payable period was lower, but it was not a t the best level, as it was found to be at 78 days while the inventory period that indicated the number of days before inventory was sold was in

average at 87 days. The age of the firm was also determined, and the firms were in average 69 years.

Correlation analysis was also undertaken to determine the correlation between the independent variables and the dependent variable. It was determined that the correlation of all the independent variables and the dependent variable was significant at the 0.05 level apart from the correlation between accounts receivable turnover and efficiency. Similarly, the correlation was positive between efficiency and all the independent variables apart from inventory period and age of the firm. Indicating that increasing the number of inventory period would lead to a decrease in efficiency while increasing years of experience for a firm would lead to decrease in efficiency of the manufacturing firms. Increasing liquidity (current ratio) and increasing accounts payable period would lead to an increase in efficiency of the firms.

The determination of the effect between liquidity and efficiency of the manufacturing firms was determined by use of regression analysis. Diagnostic tests were undertaken to determine whether regression analysis could be undertaken without resulting in spurious regression. Data passed linearity, multi-collinearity as well as test of autocorrelation. However, the data failed normality test, and heteroskedasticity test, where the data was transformed by standardizing the data. Regression analysis was then undertaken on the data.

The R squared indicated that the regression model could predict 57.4% of the changes in the dependent variable which indicates a strong model. However, the adjusted R square was less than R square indicated that some independent variables in the study did not

have significant contributions to the model. The F test had a p-value of less than 0.05 indicating that the null hypothesis was rejected and therefore there was a significant effect of liquidity management on efficiency of manufacturing firms listed at the NSE.

The regression co-efficient indicated that both accounts receivable turnover ratio and age of the firm did not have significant effect on efficiency and therefore they did not have significant contribution to the model. However, current ratio, accounts payable ratio, and inventory period ratio had significant effect and contribution to the model.

Liquidity ratio that was determined by the current ratio has a significant positive impact on efficiency. The co-efficient of current ratio is 4.92 that indicates that if all factors are held constant and current ratio (liquidity) is increased by one unit, then efficiency of manufacturing firms (measured by inventory turnover ratio) would increase by 4.92.

Accounts payable turnover ratio has a significant positive effect on the model and therefore if all factors are held constant and accounts payable turnover is increased by one unit, then efficiency would increase by 3.963. This indicates that manufacturing firms should increase the period of time it takes them to pay their suppliers as it improves liquidity and therefore improving efficiency for the firm.

Average inventory period has a negative significant effect on the model, indicating that if all the other factors are held constant and average inventory period is increased by one unit, then efficiency of the firm would decrease by 4.065. This means that manufacturing firms should ensure that they decrease the number of days they hold inventory, and therefore they ensure that they sell their products as fast as possible, without them taking too long, as it would increase efficiency of the firm.

The study findings were in line with findings by Kinyua and Fredrick (2022) who found that liquidity risk had significant effect on performance of manufacturing firms. Kyule (2015) and Njuguna (2015) also found positive significant effect of liquidity management on performance of listed firms. On the contrary, Nizigiyimana (2014) indicated that cement manufacturing firms had poor current ratio but had good quick ratio that enhanced performance. Azhar (2015) found that credit turnover ratio, quick ratio and liquidity ratio had insignificant effect on performance. Thuraisingam (2015) also did not find any significant effect of liquidity on performance for firms in Sri Lanka. Li et al. (2020) on the other hand found that liquidity management had significant but negative effect on performance of firms listed at Ghana Stock Exchange.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The chapter summarizes the study, makes conclusion from the study findings and then brings out recommendations. The chapter also highlights the limitations of the study and areas for further research.

5.2 Summary of the Study

The study sought to determine the effect of liquidity management on efficiency of listed manufacturing firms at the NSE. The motivation of the study arose from the fact that liquidity is a crucial component in any firm that is needed for investments. It is also desired to ensure that the firm meets its obligations as and when they fall due and therefore reduce liquidity risk. However, vested interests by managers means that they may not always act on the best interest of the shareholders and are therefore confronted with maintaining liquidity and bring down on liquidity risks or else maximize on the investments they undertake. The study therefore sought to determine the effect of liquidity management on efficiency of these firms. Liquidity was the key independent variable but other factors that were related to liquidity but also were considered to have an influence on efficiency of manufacturing firms were accounts receivable turnover ratio, accounts payable turnover ratio, inventory period, and age of the firm.

The efficiency of manufacturing firms was determined by inventory turnover ratio that measured the number of times a company was able to manufacture and sell all the

inventory manufactured. Liquidity on the other hand was determined by current ratio which is the ratio of current assets over current liabilities. The study was undertaken for all listed manufacturing firms in Kenya for a period of 10 years (2012-2021). Regression analysis was adopted by the study to determine the relationship between the independent variables and the dependent variables.

The R squared indicated that the regression model could predict 57.4% of the changes in the dependent variable which indicates a strong model. However, the adjusted R square was less than R square indicated that some independent variables in the study did not have significant contributions to the model. The F test had a p-value of less than 0.05 indicating that the null hypothesis was rejected and therefore there was a significant effect of liquidity management on efficiency of manufacturing firms listed at the NSE.

The regression co-efficient indicated that both accounts receivable turnover ratio and age of the firm did not have significant effect on efficiency and therefore they did not have significant contribution to the model. However, current ratio, accounts payable ratio, and inventory period ratio had significant effect and contribution to the model.

Liquidity ratio that was determined by the current ratio has a significant positive impact on efficiency. The co-efficient of current ratio is 4.92 that indicates that if all factors are held constant and current ratio (liquidity) is increased by one unit, then efficiency of manufacturing firms (measured by inventory turnover ratio) would increase by 4.92.

Accounts payable turnover ratio has a significant positive effect on the model and therefore if all factors are held constant and accounts payable turnover is increased by one unit, then efficiency would increase by 3.963. This indicates that manufacturing

firms should increase the period of time it takes them to pay their suppliers as it improves liquidity and therefore improving efficiency for the firm.

Average inventory period has a negative significant effect on the model, indicating that if all the other factors are held constant and average inventory period is increased by one unit, then efficiency of the firm would decrease by 4.065. This means that manufacturing firms should ensure that they decrease the number of days they hold inventory, and therefore they ensure that they sell their products as fast as possible, without them taking too long, as it would increase efficiency of the firm.

5.3 Conclusion of the Study

The study concluded that there was a significant effect of liquidity management on efficiency of listed manufacturing firms in Kenya. However, on the specific factors that influence efficiency, the study concluded that despite the fact that accounts receivable turnover had a negative effect on efficiency, meaning that increasing the debt collection period had negative effect on efficiency, it was not a significant factor and reduced the predictability of the model. Similarly, age of the firm, had a positive effect on efficiency of the firm but it was insignificant and did not contribute to enhance predictability of the dependent variable.

The factors that were significant and had significant effect on efficiency included liquidity ratio, accounts payable turnover ratio, and inventory period. The study therefore concluded that increasing liquidity of manufacturing firms would lead to increased efficiency of the firm. On the other hand, accounts payable turnover ratio had significant positive effect on efficiency. The study therefore concluded that increasing accounts

payable turnover ratio, would lead to increased efficiency of the manufacturing firms. However, increasing inventory period had significant negative effect on efficiency. This means that the study concluded that manufacturing firms should manufacture products that they are able to sell as quickly as possible, therefore reducing on storage costs and are able to increase on efficiency.

The study also concluded the age of the firm as well as the accounts receivable turnover ratio did not have significant effect on efficiency of the firms. It therefore follows that the firm management, should not use so much effort in the management of accounts receivable turnover ratio.

5.4 Recommendation

From the study conclusions, there are several recommendations that the study would arrive at. In the first instance the study recommends that manufacturing firms should enhance their liquidity management. This means that they should ensure that they maintain their liquidity by enhancing their current assets and reducing liquidity risks. The study also recommends that the accounts payable turnover ratio should be increased by paying the suppliers as late as possible without losing the credit worthiness of the firm. This would help to increase liquidity as well as help to improve on the efficiency of the firm.

The study also recommends that the inventory period should be reduced. This means that the manufacturing firms should manufacture the amount of products that they would be able to sell as soon as possible, and therefore reduce on the time as well as the costs involved in storing goods before they are sold. It ensures that the inventory manufactured

is sold as soon as possible. This also alludes to the fact that the study recommends management of manufacturing firms to adopt policies that would increase sales, to ensure that all the manufactured products are sold as quickly as possible. The management is therefore better to ensure that they implement measures such as advertising or marketing of their goods and services that would help them increase on sales.

The study also recommends that management should not be bothered as much with accounts receivable turn over. This means that the manufacturing firms would be more efficient if they could allow more credit days to their customers as long as that would guarantee them increased sales of their products and it does not significantly increase exposure to increased default rate. Similarly, the study recommends that despite the fact that experience by the number of years a company has existed would count, however, this is not a significant factor and manufacturing firms should be more concerned with their ability to manage liquidity and enhance sales of their products.

5.5 Limitations of the Study

There are several limitations that the study encountered, with which would have an impact on the results in one way or the other. However, the researcher undertook due diligence in ensuring that the effect of such limitations was minimized as much as possible not to have significant effect on the study.

The study undertook secondary data which has its own limitations. Despite the fact that the study limited itself to rely on data from audited financial statements, the study acknowledges that some errors might be possible, since the researcher did not have

control of the data. The findings of the study would therefore be limited to the fact that the study relied upon secondary data that would be subject to errors.

The study also made assumptions that would have some effect on the result findings, among the assumptions made in the study is that all the sales made by the manufacturing company as well as all the purchases made by the company were done in credit. However, this may not be certainly true, since a good portion of sales by the firms is made in cash while at the same time some portion of purchases are also made in cash.

The study investigated listed manufacturing firms, in which case there are many more manufacturing firms in Kenya which are not listed at the NSE. This implies that despite the fact that the findings of the study are a good indication of operations in manufacturing firms in Kenya. The population used by the study may not reflect the population of all manufacturing firms operating in Kenya, and which may not have all their financial statements and annual reports.

The study was carried out in a period of ten years; however, the study did not adjust for inflation when it collected data. This means that the data collected in the study would represent different valuations in different time of the study and the concept of time variation has not been considered.

5.6 Areas for Further Research

The study therefore recommends different future studies to be undertaken to address these limitations. In the first place, a similar study may be undertaken where primary data would be collected instead of secondary data. In such a study the findings would be

compared to the findings of this study to ensure that the findings are similar, and where difference in findings is observed, a possible reason to be explained.

The study also recommends undertaking a similar study, where adjustments for inflation and time value of money is considered. This means that real value of objectives should be taken into consideration, rather than considering absolute values, that may have undergone significant changes. The findings of such a study should also be compared to the findings of this study.

A future study should also be undertaken where the methodology of the study should indicate the exact amount of sales and purchases that were undertaken by the company in terms of credit. The assumption that all sales are made on credit and all purchases are made on credit should be discarded and the results of such a study be compared to the findings of this study.

A study should also be undertaken that not just targets listed manufacturing companies, but rather considers all the manufacturing firms in Kenya. An appropriate sampling technique should be adopted and the result findings of such a study be compared to the study findings of this study.

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APPENDICES

APPENDIX 1: DATA COLLECTION FORM

Firm Name	Year	Date of Incorporation	Sales	Cost of sales	Inventory	Accounts receivable	Accounts Payable	Current Assets	Current Liabilities
	2011								
	2012								
	2013								
	2014								
	2015								
	2016								
	2017								
	2018								
	2019								
	2020								
	2021								

Appendix 2: Data Used

Company	Y Inventory turnover ratio	X1 Current Ratio	X2 Accounts Receivebale Turnover	X3 Accounts Payable Turnover	X4 Average Inventory Period	X5 Age of the Firm
BOC	6.54	2.08	96.76	87.36	112.78	72.00

BOC	5.14	2.23	122.72	59.34	117.14	73.00
BOC	5.83	2.14	119.29	49.18	109.91	74.00
BOC	5.37	2.06	146.93	98.01	95.56	75.00
BOC	6.67	2.32	138.32	89.02	107.47	76.00
BOC	6.01	1.95	136.52	64.16	98.56	77.00
BOC	5.64	1.35	129.46	69.43	118.93	78.00
BOC	4.75	1.98	151.91	94.98	119.35	79.00
BOC	6.31	2.36	123.63	78.23	105.13	80.00
BOC	6.24	2.88	105.06	58.18	81.71	81.00
Carbacid	31.30	4.26	60.29	8.63	4.80	51.00
Carbacid	29.78	10.09	64.51	15.43	31.92	52.00
Carbacid	22.67	6.30	63.87	58.90	33.27	53.00
Carbacid	23.50	4.50	65.00	46.33	42.99	54.00
Carbacid	26.92	7.07	73.66	4.50	40.80	55.00
Carbacid	18.24	7.02	86.55	9.28	50.68	56.00
Carbacid	16.55	9.42	87.00	12.39	84.43	57.00
Carbacid	16.17	5.69	101.02	16.65	69.03	58.00
Carbacid	18.21	5.77	99.70	9.88	59.46	59.00
Carbacid	24.54	4.98	76.32	105.86	52.15	60.00
BAT	4.44	1.12	17.80	28.37	338.93	105.00
BAT	4.42	1.26	6.60	41.88	118.05	106.00
BAT	2.67	1.25	62.90	29.15	152.86	107.00
BAT	2.25	1.45	107.31	27.43	157.67	108.00
BAT	3.35	1.42	53.61	60.05	179.68	109.00
BAT	3.23	1.32	54.64	80.08	189.54	110.00
BAT	4.56	1.59	48.17	74.10	152.44	111.00
BAT	4.91	1.09	52.08	67.61	156.59	112.00
BAT	4.19	1.33	56.28	65.76	150.14	113.00
BAT	4.82	1.08	51.47	65.66	139.97	114.00
Flame Tree	10.93	1.54	73.77	135.42	40.68	23.00
Flame Tree	14.45	1.21	68.57	124.44	46.02	24.00
Flame Tree	14.24	1.55	76.16	105.03	44.39	25.00
Flame Tree	14.80	1.64	53.49	43.08	47.02	26.00
Flame Tree	11.76	1.54	78.81	44.98	53.53	27.00
Flame Tree	9.33	1.29	118.31	83.68	57.87	28.00

Flame Tree	8.16	1.14	111.45	90.35	68.42	29.00
Flame Tree	7.12	1.21	101.64	109.43	71.96	30.00
Flame Tree	6.91	1.11	73.16	89.97	95.50	31.00
Flame Tree	5.38	1.24	72.49	84.66	114.16	32.00
EABL	8.58	0.69	33.31	37.98	103.48	90.00
EABL	8.22	0.70	33.08	37.59	91.49	91.00
EABL	7.07	0.72	33.67	42.42	99.31	92.00
EABL	6.32	1.02	32.39	41.87	121.71	93.00
EABL	6.84	0.77	34.70	50.92	105.96	94.00
EABL	9.00	1.01	34.70	44.84	88.69	95.00
EABL	9.57	0.83	40.86	44.71	71.64	96.00
EABL	10.82	0.88	37.89	48.58	67.01	97.00
EABL	8.19	0.84	40.20	50.10	74.53	98.00
EABL	7.96	0.86	50.61	53.17	95.89	99.00
KOL	17.46	1.98	223.33	222.40	21.46	53.00
KOL	10.83	2.08	178.51	179.11	56.62	54.00
KOL	9.45	1.77	198.31	198.76	50.86	55.00
KOL	17.68	2.08	213.91	219.00	23.24	56.00
KOL	49.62	2.02	212.89	214.03	8.77	57.00
KOL	38.74	1.72	205.46	212.28	12.24	58.00
KOL	33.95	2.02	234.45	226.10	11.49	59.00
KOL	38.74	1.72	205.46	212.31	12.24	60.00
KOL	3.77	1.93	251.14	244.95	91.31	61.00
KOL	1.74	2.08	235.62	236.58	212.42	62.00
Eveready	2.57	1.26	42.68	32.59	181.71	45.00
Eveready	2.75	1.54	45.31	42.63	176.52	46.00
Eveready	2.56	1.33	32.31	53.39	160.19	47.00
Eveready	2.44	0.98	38.53	75.40	186.01	48.00
Eveready	1.98	0.45	100.60	123.03	113.68	49.00
Eveready	1.91	2.70	126.59	86.32	142.48	50.00
Eveready	1.81	2.54	208.82	97.01	201.65	51.00
Eveready	3.00	1.50	209.69	103.10	105.30	52.00
Eveready	3.61	1.04	140.81	143.44	87.69	53.00
Eveready	3.27	0.76	506.04	112.64	94.79	54.00
Mumias	10.78	1.26	19.82	38.61	50.48	41.00
Mumias	5.82	0.84	18.36	55.10	67.54	42.00

Mumias	6.61	0.41	36.02	62.30	46.52	43.00
Mumias	4.29	0.19	117.70	65.02	37.46	44.00
Mumias	6.03	0.18	62.01	60.94	50.87	45.00
Mumias	2.33	0.11	165.40	85.90	39.66	46.00
Mumias	2.51	0.03	178.13	137.18	35.30	47.00
Mumias	4.00	0.03	65.91	138.82	32.34	48.00
Mumias	4.00	0.03	65.91	138.82	32.34	49.00
Mumias	4.00	0.03	65.91	138.82	32.34	50.00
Unga Group	7.91	2.36	19.87	12.19	63.93	104.00
Unga Group	5.96	1.84	25.97	14.64	66.07	105.00
Unga Group	6.11	2.27	29.75	13.00	70.70	106.00
Unga Group	8.33	1.64	30.96	12.45	53.62	107.00
Unga Group	8.45	1.66	26.88	17.57	50.90	108.00
Unga Group	8.00	1.66	37.07	17.33	51.04	109.00
Unga Group	7.97	2.14	49.15	16.23	53.03	110.00
Unga Group	6.34	1.98	60.18	17.90	61.76	111.00
Unga Group	4.64	1.58	59.40	16.98	89.90	112.00
Unga Group	5.03	2.26	54.30	20.10	81.10	113.00