

**THE EFFECT OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY
OF NON-FINANCIAL LISTED FIRMS IN KENYA DURING THE COVID-19
PANDEMIC**

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DECLARATION

I hereby declare that this research project is my original work. It has not been submitted by me or anyone else for academic purposes. The material consulted has been appropriately acknowledged.

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DEDICATION

I dedicate this proposal to all budding entrepreneurs and the organisations that they are trying to build. It is my hope that you find the strength to persevere in your ventures.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA –	Analysis of variance
CCC –	Cash conversion cycle
Covid-19 –	Corona virus disease 2019
DIO –	Days inventory outstanding
DPO –	Days payables outstanding
DSO –	Days sales outstanding
GDP –	Gross Domestic Product
Ltd –	Limited (as in a company, Limited Company)
NSE –	Nairobi Securities Exchange
ROA –	Return on Assets
PLC –	Public Limited Company
SARS-CoV-2 –	Severe Acute Respiratory Syndrome Coronavirus 2
SOF –	Size of firm
WC –	Working capital
WCM –	Working capital management

ABSTRACT

Working capital management is at the heart of businesses' financial operations, since it affects the utilization of short-term financing (current liabilities) to generate value for the organization in the form of cash, profits and appreciated value for the firm. It also determines how the organisation manages its short-term investments (current assets) efficiently to generate value for its shareholders. Working capital management, as important as it is, is determined by various factors that can broadly be categorized as internal or external. Internal factors are those that are inside the organization and can to a large extent be controlled by the organizational practices of the firm. Examples are the size of the firm, growth in the sales of the company, the company's profitability, how the company uses debt, and so on. Examples of external factors may include the economic climate or environment that the company is operating in, the gross national product or the GDP of the country the company operates in, factors such as taxes and legal requirements, and so on. Working capital management can be measured by looking at how the organization utilizes its short-term financing to generate short term investments. The cash conversion cycle is an excellent way to achieve this since it determines the efficiency of the organization in converting financing (from procurement stage) into liquid or cash state, that is, into cash. Presumably, the more efficient a company is, the shorter its cash conversion cycle will be, holding other factors constant. The longer the cash conversion cycle, the less efficient we assume the company is at managing its working capital. In 2020, a worldwide pandemic was declared (COVID-19) which had the effect of mass lockdowns in many countries. The lockdowns had a myriad of effects such as employees not being able to go to work, disruptions in supply chain, and other effects on the working capital cycle such as delayed payments to suppliers. This research project focused on studying how the working capital management techniques of non-financial companies listed in the Nairobi Stock Exchange was affected by the Covid-19 pandemic. To do this, the trend in the cash conversion cycles and the profitability of the sampled organisations were analysed. The results from this analysis were then used to draw conclusions on the effect of working capital management on the profitability of non-financial listed firms in Kenya's Nairobi Stock Exchange. The conclusion of this research project was that although Covid-19 affected the working capital of companies positively, the financial performance of organisations as shown by the return on assets, was affected adversely. This means that the profitability of the sampled organisations was affected by factors other than the working capital management as demonstrated by the cash conversion cycle. Improvements in working capital indicators such as increased credit periods, reduced inventory and reduced days receivable were more than proportionately offset by poor sales which in turn affected the profitability of the organisations despite increased effectiveness in working capital management.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Managing working capital by a company is crucial in making financial decisions that influence the ability of that company to create value and thereby maximise the wealth of its shareholders (Haron & Nomran, 2016). Working capital, which represents the firm's excess of short-term investments (that is, current assets) over its short-term financing (also referred to as current liabilities), may be affected by various elements that may be external or internal. As a result, this would influence firm's performance. (Aktas, Croci, & Petmezas, 2015), hence the value it creates.

Though numerous, we can distinguish two broad classes of working capital determinants in a firm: factors inside the firm, and factors outside the firm. Internal factors include those relating to the firm's operations, activities and capabilities while external factors relate to macroeconomic or environmental factors (Johnson & Soenen, 2003).

In the years 2020 -2021, an external factor of global magnitude affected the operations of companies all over the world, hence their working capital management. This factor was the Covid-19 pandemic, a pandemic caused by a virus that mainly spread through close personal contact by virtue of breathing air contaminated with the virus (World Health Organization, n.d.).

The Covid-19 problem severely impacted economies all over the world, and Kenya's economy was no exception. The Kenyan economy was impacted severely by the pandemic. Many businesses experienced the following effects: a decline in the ability to generate value through sales (occasioned by decreased demand for goods and services); a reduction in cashflows; and a fall in obtainable inputs and available finance (The World Bank, 2021).

Because of the business challenges Kenyan firms encountered owing to the Covid-19 pandemic, firm performance – hence survival – was threatened (The World Bank, 2021). The average period over which Kenyan firms were expected to carry out their operations with the available cash they had was about 47 days (The World Bank, 2021). For many of the firms in the country, this would pose a huge risk to the ability of the firm to continue generating value.

1.1.1 The Nature of Working / Operating Capital

In defining working capital, we may say it is the difference between a company's investments that are in cash form or that can readily be liquidated, and, the sources of finance used to finance these investments, which sources will result in cash outflows within the short-term. Examples of investments that can be readily liquidated are stock/ inventories, trade receivables/ trade debts, treasury investments, and so on. Examples of short-term financing outflows include trade payables/ supplier credit, overdrafts, interest payments on long term sources of finance, and so on (Rimo & Panbunyuen, 2010). Alternatively, we can describe working capital as what remains when the current liabilities of a company are deducted from its current assets (Filbeck & Krueger, 2005).

From the above definition, we can infer that working capital represents the short-term available capital which a company uses to generate shareholder value (Corporate Finance Institute, 2022). The company creates value by trading off its need for liquidity, that is, its appetite for risk, with its desire to maximise its profitability, thus obtaining higher returns (Rimo & Panbunyuen, 2010). We may refer to this balancing or trading off activity as the management of working capital.

1.1.2 Working Capital Management (WCM)

WCM, as stated above, is the balance between a company's liquidity versus its profitability needs. Indeed, the way the firm manages its working capital influences its performance in a direct manner (Haron & Nomran, 2016). Working capital is managed differently by different businesses, based on various criteria such as the policies of the company, the attitudes of the management, external factors and others (Tingbani, Tauringana, Damoah, & Sha'ven, 2020).

Working capital management strategies are grouped into three approaches, namely: the cautious method, the bold method, and the hedging/ maturity matching method (e-Finance Management, n.d.). These strategies are usually related to and determined based on the factors affecting WC mentioned in the preceding paragraph (Tingbani, Tauringana, Damoah, & Sha'ven, 2020). A conservative approach is the most risk averse while an aggressive risk approach usually has the highest risk appetite. The hedging approach is a moderate risk approach to managing working capital (e-Finance Management, n.d.). Numerous studies have examined what determines working capital management in different firms. (Tingbani, Tauringana, Damoah, & Sha'ven, 2020).

Working capital management of companies influence the financial flexibility and liquidity of a firm (Rimo & Panbunyuen, 2010). Financial flexibility is when a company can quickly and in a value-maximising manner retrieve its funds in response to unanticipated situations affecting the firm's cash or opportunities to invest (Denis, 2011). Liquidity means that a firm can service its short-term financing without incurring undue costs (Rimo & Panbunyuen, 2010).

Based on the assertions mentioned, the management method and efficiency of working capital are significant for the continuance of a company to generate value that results in future cash flows (Konak & Güner, 2016). As such it would be important to examine the effect that significant environmental factors may have on working capital management and by extension the financial well-being of a company. External factors affecting working capital of a firm include the economic health of the region where the firm is conducting its business activities, the fiscal and monetary policies in place, technological factors and environmental factors that affect the business such as natural disasters (Nyeadi, Sare, & Aawaar, 2018). This paper focuses on analysing the effect that Covid-19 has had on the WC of non-monetary listed companies on the NSE in Kenya.

1.1.3 The Importance of Managing Working Capital

Although at first glance it may seem that value is created when there is a larger excess of short-term investments over short-term financing obligations, this may not necessarily be true because of the risk and return trade-off referred to earlier.

Short-term investments by their nature are low risk and therefore are likely to return low rewards for their investments. Moreover, every short-term non-cash investment the company obtains comes at a cost. Konak and Güner in their paper indicate that this may be the cost of external funding to procure the investments (such as interest expense) or, if the investments are owner funded, then the opportunity cost of putting the equity funds into an alternative more profitable investment (Konak & Güner, 2016). These costs, which result in future cash outflows, are therefore likely to reduce the value generated by the firm.

Additionally, holding excessive short-term investments (for example, in the form of inventory) for long periods without generating value from them may be an indication that the firm has long turnover times. This is an indication of lack of efficiency in generating value that ties up the company's resources which would otherwise be utilized to generate higher value. Hence, it might be more value-enhancing to maintain lower surpluses of short-term investments over short-term financing to enable the use of investments more times to generate increased wealth for the firm. Thus, working capital management is an important activity for any company that wishes to maximise shareholder value.

Another significance of overseeing operational funds is that WC is essential for maintaining the viability of businesses (Filbeck & Krueger, 2005), and it impacts the financial performance of firms in a direct way (Haron & Nomran, 2016). Insufficient working capital could lead to illiquidity hence bankruptcy and therefore closure of the business (Zhang, 2016) while too much working capital would be an opportunity cost to the firm that underutilizes its funds (capital) leading to poor profitability and low value creation (Zhang, 2016). Therefore, the right balance must be maintained to avoid risks of shutting down the business or the opportunity costs associated with lost value (profit) due to idle capital (Javid & Zita, 2014). Additionally, effective management of working capital not only ensures the business stays afloat but it also determines the financial performance of a company, thus whether or not the company gains competitive advantage over other players in the market.

Accordingly, effective WC management is attained by keeping the company's short-term debt at tolerably low levels to avoid the risk of illiquidity. Lack of liquidity would mean the firm lacking the cash flows to pay its costs of financing when they fall due (Konak & Güner, 2016). It is also achieved by maintaining a level of short-term investment that is sufficient to meet the firms' product (service) demand without stocking out, yet not so excessive that it lowers the capacity utilization and hence wealth generation of the firm (Konak & Güner, 2016). All this must be done amidst intense competition from other firms, escalating capital expenses from financiers, and rampant hyperinflation in the company's operational regions (Javid & Zita, 2014).

As working capital is of such a huge significance to the survival and performance of a company, then it is important that companies create a working capital policy that will appropriately guide the financial managers and cater to the company's needs. Javid and Zita (2014) in their evaluation on the

effect of working capital policy on the enterprises' profitability state that a company may be generating profit but its ability to generate future cash flows could still be in doubt if it is unable to service its short-term financing costs, an indication of poor working capital management (Javid & Zita, 2014). A good working capital policy, therefore, is based on proficient planning and control techniques (Imegi, Agundu, Onwuli, & Tamunonimim, 2004).

1.1.4 Measurement of Working Capital Management

From the foregoing we grasp the gravity of WCM for the cash flow generation and value creation of the firm. It then follows that the measurement of the efficiency of WCM techniques is important in determining the performance of firms. We have already stated that WCM has a bearing on the financial flexibility and the liquidity of firms.

Ferrando et al. (2014) in their working paper on fiscal adaptability within the Eurozone and the UK (Ferrando, Marchica, & Mura, 2014) state that in existing literature there is no clear measure evaluation of how enterprise capacity to reorganize its financing and access the same at low cost. This is because this is a factor that cannot be observed as such. Rather, its measure largely depends on the management's assessment of future growth options (Ferrando, Marchica, & Mura, 2014). Rimo and Panbunyuen agree with this stating that financial flexibility is measured by sustainable growth rate (Rimo & Panbunyuen, 2010). The liquidity of a firm on the other hand can be assessed using tools such as cash conversion efficiency, the cash conversion cycle and cash flows from operations (Rimo & Panbunyuen, 2010).

For this study I have elected to measure WCM using the CCC, which calculates effectiveness of WCM by measuring the speed at which the firms' short-term investments (such as inventories and trade receivables) are converted into cash (FundsNet, 2022). The CCC measures the speed at which a firm converts its short-term investments into cash against the speed at which it pays off its short-term financing. This means, how fast the company realizes cash inflows versus the speed at which the company dispenses cash outflows (FundsNet, 2022). In this way, we can assess the firm's efficiency in managing its operational funds.

To compute CCC we maximize the formula shown below:

$$CCC = DIO + DSO - DPO$$

Wherein: DIO signifies days inventory outstanding, denoting the mean duration for a company to convert its inventory into sales; DSO signifies the day's sales outstanding, representing the average duration for a company to gather payments on its trade debt; DPO signifies the day's payables outstanding, depicting the average duration for the firm to settle supplier trade financing expenses. (FundsNet, 2022).

The three component ratios are calculated as follows:

DIO = (Average inventory / cost of goods sold) * number of days in period

DSO = (Average trade debt / total credit sales) * number of days in period

DPO = (Average supplier financing / total cost of sales) * number of days in period

For the investment components of the CCC ratio (DIO and DSO), the preference is that the ratios be lower, because this would indicate the company is able to generate cashflows faster from these investments. For the financing component of the CCC ratio (DPO) a higher ratio is preferred because this would indicate the firm uses its financing longer at no additional cost, and is therefore presumably able to generate more value at no additional cost.

1.1.5 Financial Performance

Fiscal performance helps to inform interested parties of the well-being and/ or investment opportunities of the firm (CFI (TM), 2022). Fiscal performance is quantitatively calculating how a company maximizes its assets in its core operations to generate value for the firm, in terms of revenue, profitability or some similar indicator of value.

The pecuniary performance of an enterprise can be measured using various financial indicators (CFI (TM), 2022) depending on what a person is interested in measuring. In this study of how working capital affects the financial performance of the firm, the interest is in determining how effective the firm is in generating a return using its net assets. Therefore, the financial performance metric used in this paper will be ROA.

ROA tells us how effective a company is in earning a profit from its economic resources (assets). The formula for calculating ROA is net income/ total assets. Net income, also known as net profit, is arrived at after deducting all financing costs from revenue, which is the value generated from assets. Thus, this measure is suitable because it informs us how effective working capital has been utilised in generating value for the firm.

1.1.6 Non-Financial Firms Listed in the Nairobi Securities Exchange

NSE is “a principal securities exchange in Kenya that offers an automated platform for the listing and trading of multiple securities.” (Reuters, n.d., Company Information section). The company was founded in 1954 and has two main market segments: the equities and bonds trading business, and, the derivatives trading business. The company is licensed by the Capital Markets Authority of Kenya and offers data products to different clients such as fund managers and trading system developers (Reuters, n.d.).

There are 63 companies listed on the NSE currently, and these are classified into 11 sectors (My Stocks, n.d.). The sectors are: energy and petroleum; telecommunication and technology; automobiles and accessories; real estate investment trust; banking; commercial and services; insurance; construction and allied; agricultural; investment; investment services; manufacturing and allied sector; and exchange traded funds. Of these firms, 38 of them are non-financial companies (NSE, n.d.). For purposes of this research, the following sectors are considered to be financial: banking; insurance; investment; real estate investment trust; investment services; exchange traded funds.

Companies in the agricultural sector are: Eaagads Ltd, Kapchorua Tea Co. Ltd, Kakuzi, Limuru Tea Co. Ltd, Rea Vipingo Plantations Ltd, Sasini Ltd, and Williamson Tea Kenya Ltd. In the automobiles sector, there is one company which is Car and General (K) Ltd. In the commercial and services sector, the companies are: Express Kenya Ltd, Sameer Africa, Kenya Airways, Nation Media Group, Standard Group Ltd, TPS Eastern Africa (Serena) Ltd, Scangroup Ltd, Uchumi Supermarket Ltd, Longhorn Publishers PLC, Deacons, and Nairobi Business Ventures Ltd. In the construction and allied sector, the companies are: Athi River Mining, Bamburi Cement PLC, Crown Paints Kenya PLC, E.A.Cables PLC, and E.A.Portland Cement Ltd. In energy and petroleum sector companies

listed are: Total Kenya Ltd, KenGen Ltd, Kenya Power & Lighting Co Ltd, and Umeme Ltd. In the manufacturing sector, the listed companies are: BOC Kenya Ltd, British American Tobacco Kenya Ltd, Carbacid Investments Ltd, East African Breweries Ltd, Mumias Sugar Company Ltd, Unga Group PLC, Eveready East Africa Ltd, Kenya Orchards Ltd and the Flame Tree Group. Finally, the telecommunication and technology sector has one company listed: Safaricom PLC (NSE, n.d.).

1.1.7 Covid-19 Pandemic

On 31 December 2019 an outbreak of an infectious disease called Corona Virus (Covid-19) brought about by the SARS-CoV-2 virus was first announced in Wuhan China (World Health Organization, n.d.). The disease was uncovered a global pandemic on 11 March 2020 after the thirteen-fold increase of the disease and its rapid spread to countries outside of China (World Health Organization, 2020). The pandemic caused disruptions both socially and economically worldwide. International movement was interrupted as nations sought to prevent incidences of people spreading the disease into their countries. Globally, households and organisations were affected by the pandemic and struggled to deal with its consequences as people took precautions to prevent infection and curb its spread. Kenya, like other countries in the world, suffered challenges to its private sector (The World Bank, 2021).

As per 2021 World Bank report, the Covid-19 pandemic caused disruptions in world economies by curbing flows of inputs and thus cash flows among companies as well as from consumers to businesses (The World Bank, 2021). As people were forced to isolate themselves to minimise the spread of the disease, manufacturing and service activities, which are value-generating activities for firms, were put to a halt, or greatly reduced. As a spillover effect, inputs from such companies to other businesses were interrupted, which further disrupted production in firms down the value chain.

1.1.8 Covid-19 and Working capital

The Covid-19 pandemic caused disruptions in world economies, which undoubtedly created inefficiencies in supply chain systems. Inefficiencies in the supply chain would have a spillover effect on the working capital of firms. This paper seeks to establish how firms handled their working capital in light of these inefficiencies and consequently how their financial performance was affected as a result.

On the side of short-term investments, Covid-19 affected access to investments. It made it more difficult to obtain inventory for example. Managers could deal with this by either spending more money to acquire more expensive inventory items and paying more to hold larger stock because of uncertainties of getting more stock, or, in certain instances they could be forced to hold less stock because they were unable to obtain the level of inventory they required. Covid-19 affected the purchasing power of customers which reduced sales in some cases, and in other cases they forced companies to extend their receivables days. The level of cash for many firms was likely to reduce because of the cost of inventory as well as longer debtor days plus defaults on debts they extended to customers.

On the short-term financing side, because Covid-19 had made the economic landscape uncertain, the cost of debt was likely to have increased. This might have made financing more expensive and therefore limited the level of financing firms accessed. At the same time, being a time of crisis, firms may have been forced to borrow more to maintain their operations. Supplier credit is likely to have increased where possible further increasing short-term financing. Companies were also likely to take advantage of overdraft facilities and other forms of financing.

In general, the expectation is for working capital to have reduced for most companies. For some companies, the cost of running certain overheads without being able to generate value due to shortages of input and human resources led to negative working capital, which is an unfavourable situation. Due to uncertainty of consumer disposable income, there was a reduction in sales made (The World Bank, 2021). In other cases, credit sales periods had to be extended, further straining corporate working capital resources. The uncertainty of the situation led to managers trying to handle operational funds as effectively as possible amid considerable uncertainty.

1.2. Research Problem

There have been numerous studies carried out in different regions that seek to establish how WC and enterprise performance are associated. Similar assessment has been carried out in Kenya, specifically on manufacturing companies and service firms. From a lot of the research done, it has been shown that working capital does indeed influence pecuniary performance of an organization.

The Covid-19 pandemic, being a recent event that occurred globally, has sparked a lot of research. As stated earlier, we know that it affected the operations of the private sectors of many countries. In Kenya, there was a lockdown declared by the president of the republic, H.E. Uhuru Kenyatta, on Friday March 13th, 2020 (president.go.ke, 2020). As a result, the operations of most firms, other than those of firms providing essential services, were interrupted. Employees were encouraged to work from home where possible, the numbers of people congregating in any place was restricted, sanitary guidelines were provided, and other related initiatives were implemented, which contributed to the disruption of businesses.

According to the World Bank Report of 2021, among other effects, Kenyan firms saw a fall in demand, cash flow, and existing funds as a result of Covid-19 (The World Bank, 2021). With these shocks, there may have been some changes on how companies managed their working capital during that period. For the purpose of this study, the relevant year of study will be the years 2020 and 2021 and for comparison purposes, the years 2018 and 2019 will be examined. This study thus seeks to investigate what effect the Covid-19 pandemic had on the working capital management of non-financial firms in the years 2020 and 2021.

1.3. Research Objective and Questions

The aim of this study is to investigate the impact of the Covid-19 pandemic in 2020 on the working capital management hence the financial performance of non-financial companies listed in the NSE.

1.4. Value of the Study

This study seeks to examine how a specific factor, the Covid-19 pandemic, affected the WCM of non-financial companies in Kenya listed in the NSE. From literature, WCM is seen as crucial for the company's continued existence because it ensures the company is sufficiently liquid and hence has financial flexibility, as well as ensuring that the maximum value possible can be generated from the firm's investments at no additional cost. Working capital management policies are affected by internal and external factors.

There have been various studies that have studied what elements influence WCM in general (for example, Rimo & Panbunyen, 2010), and still others (such as Konak & Güner, 2016 and Tingbani, Tauringana, Damoah, & Sha'ven, 2020) that have evaluated the effect of working capital management on various performance measures such as profitability. Some studies like that of Zhang (2016) have assessed whether working capital management enhances the worthy of Organization. One study evaluated the effect of a working capital determinant before and after an external market-wide event, that is, the financial crisis of 2008 (Haron & Nomran, 2016), but there are not many such studies that have been conducted.

The study seeks to investigate how Covid-19, an unexpected industry-wide shock affected managers' WC management techniques. The study will shed light on how an external market-wide factor, the Covid-19 pandemic, affected the working capital management of Kenyan non-fiscal companies. In this way, we will assess the financial flexibility of these companies by evaluating how their financial performance in the years 2020 and 2021 was affected by their working capital management. The discoveries of this assessment can be used to advise non-financial companies on how their working capital management techniques could affect their financial performance, thus helping them make more informed decisions in times of future crises. Based on this, steps can be taken to improve efficiency of management of working capital in setting of an external unexpected shock.

By highlighting how Covid-19 affected the working capital management of non-financial companies, we will be able to investigate how this determinant affected the ability of the non-financial companies to generate value for their shareholders. It would be interesting to note how various firms responded to this industry-wide event and the working capital management approaches they took consequently. The study will of value to financial managers who will get to see how an external factor affecting the entire industry could affect their working capital, and this may help them plan strategies to administer efficiently their working capital during industry-wide shocks.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This section delineates the existing literature concerning the study's subject matter. It contains a review of the theoretical framework of the study, it describes some of the work already undertaken in other literature, and then finally it summarises the literature review.

2.2. Theoretical Framework

The main theories underpinning this research problem are the contingency theory and trade-off theory. These two theories describe what affects the management of working capital in an organisation.

2.2.1 Contingency Theory

The contingency theory of management states that for an organisation, what are considered as efficient structures for that organisation depends on its contextual factors, such as societal variables, technology, organizational attributes and the environment (Ismail, Zainuddin, & Sapiei, 2010). Moreover, it suggests that how effective certain management techniques are depends on the context of the organisation and its structure (Lawrence & Lorsch, 1967). In the context of this study, a firm's working capital management effectiveness may be affected by an external factor such as the Covid-19 pandemic. This research seeks to investigate to what extent this is the case.

2.2.2 Trade-off Theory

Firms can either maintain a favorable working capital position or an unfavorable working capital position. The trade-off amid these two positions may determine whether the enterprise maximises its performance (Ling, Yie, & Ali, 2018). A healthy working capital management position is reached by balancing the trade-off between the risk and return of holding a certain amount of working capital (Ling, Yie, & Ali, 2018). In the context of the pandemic, managers of manufacturing companies might have had to trade of the rewards of holding less working capital to reduce the risk of being unable to meet their short-term obligations.

2.3. Event Studies

Event studies examine how a given aspect reacts to an important external factor or contingent event. They are empirical in nature and can help to inform how the studied aspect could react to similar future occurrences or events (Hayes, Event Study, 2022).

Related to working capital, event studies have been done regarding the influence of the global financial crisis on operational funds. Ramiah et al. (2014) explored the impact of the global pecuniary challenges on WCM in Australia, revealing that many companies adopted a risk-averse approach during the crisis. They chose to maintain elevated cash reserves, aiming to minimize their CCC (Ramiah, Zhao, & Moosa, 2014). Another study done by Gunay and Kesimli in 2011 examined the effect of the global fiscal crisis on Turkish firms in the real sector, finding that the receivables turnover was gravely affected by the crisis due to decreased capacity of customers to repay their credit purchases (Gunay & Kesimli, 2011). A study conducted in Malaysia to investigate determinants of working capital before, during and after the global pecuniary crisis found that significant factors were sales growth and leverage (Haron & Nomran, 2016).

2.4. Importance of Working Capital Management

Absolutely, a company can generate profits and still face closure due to an inability to fulfill its immediate fiscal obligations. Working capital is what ensures that a firm has adequate cash flows to pay for future operating expenses and can hence successfully ensure continuity and value-creation (Naser, Nuseibeh, & Al-Hadeya, 2013).

Business is about getting the maximum return on one's investment. A specific amount of capital may be invested in a number of ways, and the role of the finance manager would be to decide which resources would be financed by the company's capital, and how these resources would be financed. Imegi et al. (2004) in their assessment WCM in state-owned corporations in Rivers assert that firms are surrounded by uncertainty and for this reason they aim to determine the required balances for each type of [current] asset and add a buffer stock to cater for forecast imperfections (due to inefficiencies) or unexpected occurrences, referred to elsewhere in this paper as financial flexibility (Imegi, Agundu, Onwuli, & Tamunonimim, 2004). This is what WC management is concerned with.

Companies can improve the performance of their firms and increase the value of their firms by effectively and efficiently managing their working capital (Konak & Güner, 2016). Efficient working capital management also means that a company can employ its capacity to the fullest or maximum, therefore ensure uninterrupted production and supply of goods and services. At the same time, a company with efficient working capital management practices will be able to pay its creditors as and when required while incurring as little cost as possible for its capital (Konak & Güner, 2016).

Konak and Güner, in their paper of 2016 cite some of the negative effects of managing working capital poorly. They state one of these effects as the increased cost of current assets (short-term investments), which could be too high if financed by expensive foreign capital sources. Another adverse effect is the cost of forgone returns on short-term investments (such as lost interest on short-term treasury investments) if current assets are acquired using equity funds instead of using supplier credit. If supplier credit (trade payables) is used to purchase inventories instead of cash, equity funds can then be reinvested in financial instruments for example, thus generating additional value for the Institution's shareholders. Another undesirable consequence of poor working capital management is a disruption in production in cases where a firm does not have sufficient working capital to obtain cashflow-generating short-term assets, which could further result in delayed deliveries (decreased efficiency), loss of customers (lost value), or increased costs of production (decreased value) (Konak & Güner, 2016).

The above illustrations give some examples of the ways in which working capital is important for a company. Notably, working capital can be thought of as the lifeblood of a business since it keeps the operations flowing and thus sustains the business's life. The balance of available capital must be kept at a healthy range for the firm to perform optimally.

2.5. Determinants of Working Capital Requirements

Various empirical research has evaluated elements impacting working capital levels and references numerous potential factors. One study grouped them into the following main factors: size of the firm, extent of economic activities, growth in firm sales, profitability, leverage (use of debt), and the nature of the business (Nyeadi, Sare, & Aawaar, 2018). However, there are many factors that affect the

working capital requirements of a company, and these factors may be endogenous (internal) or exogenous (external) (Atseye, Ugwu, & Takon, 2015).

2.5.1. Firm size

Firm size affects working capital requirements due to the operational needs demanded by the size of the firm. Larger firms, having more operations, are expected to have higher working capital needs. At the same time, the perception of larger firms is that they are more stable. Moreover, because of the size of their operations, they have a greater option of suppliers and are therefore able to negotiate better terms with them than can smaller sized firms. Hence, organization size seems to be positively linked to how much working capital is needed (Haron & Nomran, 2016; Nyeadi, Sare, & Aawaar, 2018).

2.5.2. Sales Growth

The quantity of working capital in companies relies on their sales volume. Enterprises that have demand growth prospects will make investments to be able them to take advantage of such growth, and thus will have higher working capital requirements than firms that have low growth prospects. They will invest in additional stock, and probably extend more favourable credit terms to their customers to attract increased sales, which in effect will lead to higher working capital requirements. Hence, sales growth prospects/ projections positively affect working capital requirements (Haron & Nomran, 2016).

2.5.3. Profitability

In terms of profitability, companies that generate higher profits tend to reinvest these earnings back into the business. Such businesses also seem to have higher financial flexibility and can therefore afford to maintain low levels of liquid investments to cushion them from future uncertainties. Thus, profitability is inversely correlated with the need for working capital (Nyeadi, Sare, & Aawaar, 2018).

2.5.4. Leverage

Firms with high levels of gearing already commit a large amount of their cashflows to servicing the cost of debt. For this reason, they tend to be careful about channeling even more of their cash to

current assets or tying up more of their capital in assets such as stock. Firms with low gearing on the other hand have more latitude to invest in short-term assets since they are likely to have some free cash flows. Therefore, a high level of debt/ gearing has inverse correlation with the working capital needs (Haron & Nomran, 2016; Nyeadi, Sare, & Aawaar, 2018).

2.5.5. Level of Economic Activities

Economic activities are an external determinant of working capital. Where the economy has a high level of activity, or where economic activity is on the increase, firms are likely to project sales growth and therefore invest in more current assets. This leads to increased working capital needs, and therefore high levels of economic activity have a positive relation with working capital needs (Nyeadi, Sare, & Aawaar, 2018).

2.5.6. Nature of Business

The nature of business of a firm will determine the working capital requirements it has. For example, retail businesses might need to hold high levels of inventories to be able to serve their customers. Manufacturing firms might have just-in-time processes which would allow them to keep low levels of inventories. Certain businesses need to give their customers competitive credit terms, for example due to high competition, whereas other businesses may have higher bargaining power that would allow them to dictate credit terms to their customers that suit them. The state of business determines the working capital needs of the company, but this factor has no predictable relationship (Nyeadi, Sare, & Aawaar, 2018).

2.5.7. External Factors

External factors affecting the firm are beyond the control of Financial Managers, but the way they react in such situations is important for the prosperity of the company. Nyeadi et al. in their 2018 paper state that determinants such as the economic activity levels of the regions the firms operate in affect their management of working capital, for instance during periods of economic boom, firm liquidity is expected to improve, and therefore they may maintain lower levels of short-term assets like cash since risk of defaulting on paying short term obligations is reduced (Nyeadi, Sare, & Aawaar, 2018).

Where external factors are within the normal expected course of events, they are not particularly studied since businesses are understood to operate within the context of these. However, when a significant external disastrous event occurs, such as the global financial crisis of 2008, then the effect of this even may be studied in relation to working capital management, as was done in the studies referred to in the event studies section (section 2.3). Such catastrophic external factors may be economic (for example the global financial crisis) or non-economic (such as the Covid-19 pandemic). The non-economic factors are equally relevant because they impact the environment economically, for example, by increasing inefficiencies in the firm's supply chains. This delays value creation by firms for instance, and in effect increases the costs the firms incur, thus reducing the profitability and value of the firm.

2.5.8. Other Factors

As earlier stated, the number of determinants that could affect working capital requirements are numerous. They may include the manager's risk appetite, the governance policies of the firm, capital investments by the firm, and so on. The above are just a few common examples, but many more factors can be cited.

2.6. Summary of Literature Review

Empirical studies conducted in yesterday have investigated what factors affect the corporate working capital of organisations. Per existing literature, there are two main categories of factors affecting working management capital. These are: external factors, and internal factors. External factors are those that are on a macroeconomic scale while internal elements are those related to activities and operations of the company (Haron & Nomran, 2016).

Other studies conducted include studies to evaluate various corporate attributes such as the industry type, firm size, the growth of the firm and the gearing position of the firm relate with working capital management (Naser, Nuseibeh, & Al-Hadeya, 2013). Variables such as sales growth, debt ratio, liquidity and other company characteristics have also been studied and their effects on working capital documented in existing literature (Rimo & Panbunyuen, 2010).

There have been many studies evaluating how working capital is related to firm performance. Specifically, the effect that managing working capital has on the profitability of businesses has been an area of interest for a lot of empirical research. Melita, Elfani and Petros (2010) in their research carried out in Cyprus indicated that good practices of managing working capital lead to increased profitability in the firm (Melita, Elfani, & Petros, 2010). Similar research carried out in Turkey in 2012 by Gamze, Ahmet and Emin showed similar results. According to the study, firms could increase their gross profitability by shortening their accounts receivable collection period as well as their cash conversion cycle (Vural, Sökmen, & Çetenak, 2012).

The Covid-19 pandemic, which is such a recent occurrence, has not been studied in relation to how it has affected the working capital management of Kenyan listed non-monetary firms, hence its effect on their fiscal performance. Therefore, this assessment will contribute to the body of knowledge by investigating the effect that the pandemic had on the WCM in non-fiscal organization indexed at NSE. This will also pave way for similar studies to be executed on other firms quoted on the stock exchanges of other countries since the pandemic was a global one affecting companies all over the world.

2.7. Conceptual Framework

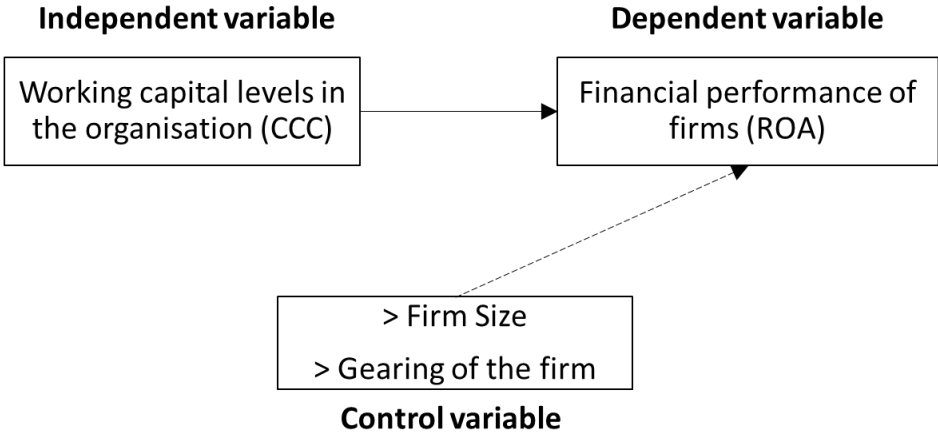


Figure 1: Conceptual Framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

In this segment, the methodology of this investigation, the particular research structure, the study populace and sample, the procedure for gathering data, and methods for analysis and display of data.

3.2. Research Design

A descriptive study layout was employed for this research. Descriptive research represents a specific type of research framework where the aim is to obtain data in order to systematically describe a phenomenon, a situation or a pattern. In a descriptive quantitative research design, quantifiable data is collected from a population sample in order to conduct a statistical analysis which is used to describe phenomena (Business Research Methodology, n.d.).

3.3. Population and Sample

A population is “a complete set of elements (persons or objects) that possess some common characteristic defined by the sampling criteria established by the researcher” (University of Missouri-St. Louis, n.d.). A subset on the other hand is “the selected elements (people or objects) chosen for participation in a study” (University of Missouri-St. Louis, n.d.). A sample is supposed to be a representation of the population and is usually a subset of it.

For this study, the target population was the non-fiscal institutions quoted on the NSE. There are thirty-eight non-pecuniary organization indexed on the NSE. Since the population is reasonably small, a census of the thirty-eight non-pecuniary organization indexed on the NSE was studied for this project. However, observations with incomplete data were excluded to avoid skewing the data in a way that invalidates the findings.

3.4. Data Collection Procedure and Techniques

This investigation utilized secondary information to conduct the study, specifically verified company financial records that were made public online by the relevant corporations. Publicly listed firms are obligated to release their verified financial documents, hence such information was obtainable from the web. The financial statements of the publicly traded corporations were acquired from their respective online platforms. The verification of these statements ensured their dependability.

3.5. Data Analysis and Presentation

3.5.1 Data Analysis

This research employed both multiple regression and correlation analyses to evaluate the influence of NSE-listed non-financial companies' working capital management on their monetary performance amid the Covid-19 pandemic in 2020. A comparative analysis was conducted with the working capital from preceding years (2018 and 2019) and subsequent years post-Covid-19 (2021 and 2022) to gauge the alterations in enterprise' working capital positions. Regression analysis was utilized to scrutinize how independent factors impacted variations in the dependent element (ROA), all derived from yearly figures.

3.5.2 Diagnostic tests

Diagnosis refers to studying or analysing the deviation of a variable from its standard and pinpointing the problem causing such deviation (Andekina & Rakhmetova, 2013). In their research paper of 2013, Andekina and Rakhmetova pointed out that diagnosis is often conflated with analysis, although they stated that certain scholars distinguish the two (Andekina & Rakhmetova, 2013). In distinguishing these two concepts, they stated that analysis is the process of researching the problem while diagnosis is the conclusion of the process involving pointing out what the issue is. In Finance, diagnostic tests can be used to investigate what caused a certain variable to act in certain manner.

In the case of this study, diagnostic tests involved the following: tests on heteroskedasticity (which regards to instances where a variable varies unevenly across the spectrum of values of another predictive variable. (Statistics Solutions, 2023)), multicollinearity (where several independent elements in a model are correlated (Hayes, Multicollinearity: Meaning, Examples, and FAQs, 2023)) and normality tests (which is an analysis that assesses whether the sampled data falls within a normal curve (statistics.com, n.d.)).

The testing of the three diagnostic characteristics/ assumptions above was done using a combination of histograms (normality) which were used to graphically display the data and statistical tests such as Breusch-Pagan (heteroskedasticity) and correlation analysis (multicollinearity).

A normal dataset has variables concentrated around the middle forming a bell-shaped curve. A heteroscedastic test helps us determine whether the variance of errors in a regression model is similar for all observations. If the data is heteroscedastic, it may mean that the results of the linear regression are inaccurate. A multicollinear test helps to identify intercorrelated predictors in the dataset, which again would invalidate the data results.

3.5.3 Analytical Model

The regression model was employed to ascertain the impact of working capital levels on performance was as shown below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y = Firm's financial performance as measured by return on assets (ROA)

α = The constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = Beta Coefficients

X_1 = Working Capital Management measured by CCC (further explanation below)

X_2 = Size of firm as measured by the natural log of total assets

X_3 = Leverage ratio as measured by (long-term debt / total assets)

X_4 = Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)

ε = Error term

Return on Assets (ROA) was calculated using the following formula:

$$\text{ROA} = \text{Net income} / \text{Total Assets}$$

To calculate the cash conversion cycle (CCC) the formula shown below was used:

$$\text{CCC} = \text{DIO} + \text{DSO} - \text{DPO}$$

Where: DIO represents days inventory outstanding, that is, the average time it takes a firm to convert its inventory into sales; DSO represents the days sales outstanding, that is, the average time it takes a firm to collect payments on its trade debt; DPO represents the days payables outstanding, that is, the average time it takes the firm to pay of supplier trade financing costs.

The three component ratios are calculated as follows:

$$\text{DIO} = (\text{Average inventory} / \text{cost of goods sold}) * \text{number of days in period}$$

$$\text{DSO} = (\text{Average trade debt} / \text{total credit sales}) * \text{number of days in period}$$

$$\text{DPO} = (\text{Average supplier financing} / \text{total cost of sales}) * \text{number of days in period}$$

3.5.4 Test of Significance

ANOVA was utilized to assess the significance of the variables within the model. ANOVA used F-statistics and p-value to test how much the data explains the model.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1. Introduction

This section presents the outcomes of the conducted data analysis, elucidating both the descriptive and inferential statistics used to scrutinize the data.

The descriptive statistics here will show the trends in the return on assets, the leverage ratio, and the components of CCC and the sales growth of the firms being reviewed in this study.

Diagnostic studies were conducted to assess the suitability of the data. The outcomes are presented in this section.

The inferential statistical methods used here include regression analysis and analysis of variance (ANOVA). Those are also included here below.

4.2. Descriptive Statistics

The tables below show the descriptive statistics of the data collected. The ROA, CCC, size of firm (SoF, or \ln_total_assets), leverage ratio and sales growth for each of the 21 companies being studied was calculated over the five years relevant to this study (2018, 2019, 2020, 2021 and 2022).

4.2.1. Descriptive Statistics Over the Different Time Periods

Table 4.1: Overall Analysis

	Count (N)	Minimum	Maximum	Mean	Std Deviation
ROA	105	-1.22138	0.34639	0.00206	0.18834
CCC	105	-1,069.79259	481.26374	-99.43377	277.94515
\ln_total_assets (SoF)	105	11.53558	20.03423	16.26481	2.22078
Leverage ratio	105	0	0.86316	0.19362	0.21633
Sales growth	105	-0.70187	1.11214	0.00346	0.25541
covid_19	105	0	1	0.40000	0.49225

From Table 4.1, the standard deviation of ROA is 0.18834. SoF has a standard deviation of 2.22078, Leverage ratio has 0.21633 and sales growth has a standard deviation of 0.25541. CCC has a standard deviation of 277.94515. This informs us that the standard deviation of the companies from the mean

was quite dispersed among the tested companies. A high standard deviation value simply tells us how spread out the values in the sample are from the mean value and cannot be considered good or bad (Statology, 2021). For the cash conversion cycle, since the metric used is an absolute value (number of days) rather than a proportion, the spread is expected to be large, based on many factors such as the enterprise size, the industry it operates in, and other such factors.

Table 4. 2: Pre-Covid Period (2018 - 2019)

	Count	Minimum	Maximum	Mean	Std Deviation
ROA	42	-0.38260	0.30034	0.02189	0.13056
CCC	42	-894.83766	481.26374	-138.43789	327.67092
ln_total_assets (SoF)	42	11.53558	20.03423	16.30257	2.28977
Leverage ratio	42	0	0.86316	0.19312	0.21919
Sales growth	42	-0.32767	1.11214	0.13874	0.26243
covid_19	42	0	0	0	0

Table 4.2 describes the studied period before Covid-19. The mean of the ROA pre-Covid-19 (0.02) is higher than the mean during and post Covid-19. The CCC in the period before the pandemic is almost the same as the CCC during Covid-19 but much lower than the CCC in post-Covid-19. There is quite a huge standard deviation in this variable, which would signify that different firms were using very different strategies and the distribution away from the mean was very wide. In terms of the leverage ratio the variable was at 0.19 pre-Covid-19 and increased during Covid-19 before reducing again after Covid. Sales growth was high before Covid, then it reduced drastically during Covid and improved slightly post Covid. The firm size as indicated by natural log of assets did not change much over the three periods.

Table 4.3: Covid Period (2020)

	Count	Minimum	Maximum	Mean	Std Deviation
ROA	21	-0.39282	0.3464	-0.0238	0.1730
CCC	21	-1,069.7926	344.1600	-139.7591	337.7006
ln_total_assets (SoF)	21	11.7460	19.8388	16.2326	2.2521
Leverage ratio	21	0.0010	0.7598	0.2258	0.2381
Sales growth	21	-0.7019	0.1944	-0.1687	0.2580
covid_19	21	1	1	1	0

From Table 4.3 we see that during Covid-19 the ROA drops to -0.02 compared to pre-Covid-19 mean rate of 0.02. The CCC fell very slightly during Covid-19 period to -139.7, an indication that firms were taking shorter to convert their investments from short term credit to cash from sales. The change is however insignificant. The size of firm did not change much in the Covid-Period, which is expected since this is a change that would take some time to be effected. The leverage ratio increased from 0.19 before Covid to 0.22 during Covid, signifying increased borrowing during the pandemic year. Sales growth, which was 0.13 before Covid, slowed to -0.17 in the year 2020 during Covid.

Table 4.4: Post-Covid Period (2021-2022)

	Count	Minimum	Maximum	Mean	Std Deviation
ROA	42	-1.2214	0.3241	-0.0049	0.2399
CCC	42	-391.7500	262.5282	-40.2670	164.2692
ln_total_assets (SoF)	42	11.6489	19.8105	16.2432	2.1887
Leverage ratio	42	0.0	0.81650	0.17805	0.20551
Sales growth	42	-0.4758	0.1813	-0.0457	0.1665
covid_19	42	0.0	0.0	0.0	0.0

In the post-Covid period shown in Table 4.4 above, ROA increased to a mean of -0.004 from -0.02 during the Covid-period. CCC increased after the Covid-19 period from -139.7 to -40. The size of total assets does not change much from Covid period to post-Covid period. The leverage ratio went down from 0.22 during Covid to 0.17 after Covid. Sales growth, which was reduced from pre-Covid period to 0.22 during the Covid year, improved slightly to -0.05 post-Covid.

4.2.2 Descriptive Statistics Across Different Industry Groups

Table 4.5: Automobiles and Accessories Industry

	2018	2019	2020	2021	2022
CCC	139.01875	152.17295	130.75419	95.07339	107.5367
DIO	127.95712	123.47931	120.73185	97.8018	135.1643
DSO	60.427508	50.890967	48.412792	35.06972	37.46738
DPO	49.36588	22.19733	38.390452	37.79813	65.09499
SoF	16.135298	16.256443	16.292342	16.48604	16.75588
ROA	0.022	0.016	0.023	0.061	0.036
LR	0.203	0.188	0.230	0.210	0.111
SG	0.046	0.181	0.018	0.415	0.132

From Table 4.5, the CCC for the automobile industry, consisting of one company, increased from 139 in 2018 to 152 in 2019, and then reduced to 130 in 2020, went down further to 95 in 2021 before increasing slightly to 107 in 2022. Looking at the components of CCC, we see that both DSO and DIO reduced consistently from 2018 to 2021 before increasing in 2022. DPO however reduced in 2019, increased in 2020, reduced in 2021 and then increased in 2022.

The trend in firm size for the automobiles and accessories sector was increasing from 2018 to 2022 as seen in Table 4.5 above, although very slightly. Looking at the financial performance of the automobile and accessories industry and its other determinants, the sales growth fluctuated every year from 2018 to 2022. It grew to 0.18 in 2019, slowed to 0.02 in 2020, grew again to 0.42 in 2021 and finally reduced to 0.13 in 2022.

The leverage ratio remained fairly stable from 2018 to 2021, undergoing only minor changes of about 0.05. However, in 2022 it decreased greatly to 0.11, causing a significant dip in the trend. Despite the fluctuating sales growth, the organization performance as represented by return on assets did not experience much change from 2018 to 2020, probably because the other factors had mitigating effects on the ROA. In 2021, there was a significant increase in ROA from 2020 (0.04 or three times increase). This reduced in 2022 to 0.04.

Table 4.6: Commercial and Services Industry

	2018	2019	2020	2021	2022
CCC	-121.43	-125.41	-308.84	-310.13	-244.65
DIO	136.17	155.83	208.36	116.13	89.88
DSO	164.29	179.86	275.66	222.36	208.13
DPO	421.89	461.10	792.86	648.62	542.66
SoF	15.77	15.82	15.76	15.79	15.85
ROA	-0.05	-0.07	-0.13	0.01	-0.05
LR	0.15	0.28	0.31	0.28	0.23
SG	-0.11	-0.10	-0.42	0.26	0.27

Table 4.6 shows changes in CCC in the commercial and services sector. The CCC and its components, DIO, DPO and DSO change little from 2018 to 2019. In 2020, the DSO and DIO increased slightly, but the DPO increased at a much higher rate, causing the average CCC for the industry to fall that year. In 2021, the DSO and DIO decreased slightly but the DPO decreased at a much higher rate, nullifying the effect of the faster liquidation of inventory and assets, and causing the CCC to remain almost the same in 2021 as 2020. In 2022, DIO and DSO changed minimally but DPO continued to decrease, causing an increase in the CCC in 2022.

The average industry firm size according to Table 4.6 has been fluctuating, increasing in 2019, decreasing in 2020 and then increasing in 2021 and 2022. The fluctuation is small, showing there was not much change in the total assets of the firm.

Analysing the pecuniary performance of the commercial and services industry and its determinants, Table 4.6 shows that the sales growth from 2018 to 2019 was minimal. In 2020 the sales growth decreased significantly to -0.4 before picking up again and increasing significantly to 0.26 in 2021. In 2022 it increased marginally to 0.27.

The leverage ratio from 2018 to 2019 increased noticeably and then in 2020 it increased slightly. The ratio decreased in both 2021 and 2022.

Looking at the firm performance (ROA) in the commercial and services sector, the ROA decreased slightly in 2019, then decreased further in 2020. It increased in 2021 then decreased again in the year 2022.

Table 4.7: Construction and Allied Industry

	2018	2019	2020	2021	2022
CCC	33.29	-36.07	-97.33	-164.00	-245.49
DIO	105.76	102.04	103.21	113.88	119.71
DSO	134.21	153.46	160.52	122.41	126.06
DPO	206.68	291.58	361.06	400.29	491.26
SoF	16.16	16.11	16.08	16.15	16.19
ROA	0.05	0.01	-0.03	0.03	0.01
LR	0.08	0.15	0.19	0.18	0.17
SG	-0.14	-0.13	0.04	0.06	0.07

In the construction and allied industry, Table 4.7 unveils the trend in the working capital management (CCC) of the field over the different years. The CCC consistently decreased from 2018 to 2022 as seen above. The DIO remained steady over the years 2018 to 2020, changing minimally, but then it increased in 2021 and 2022. The DSO increased slightly from 2018 to 2019 and 2020, then it reduced in the year 2021 and increased slightly in 2022. DPO increased steadily from 2018 to 2022. We therefore see the CCC and the DPO trends moving in opposite directions from 2018 to 2022.

The size of firms in the construction and allied industry also did not change much over the years, as has been the trend in the other industries reviewed before. Average firm size however reduced slightly from the year 2018 to the year 2020, then increased in 2021 and further increased in the year 2020.

For the determinants of financial performance, the sales of the industry grew from a negative growth rate of close to -0.15 in the year 2018 to a growth rate of -0.13 in the year 2019. The growth rate

steadily increased to a positive rate of 0.04 in the year 2020, then 0.06 in year 2021, and maintained the same growth rate in the year 2022.

The leverage ratio in the industry steadily increased from 2018 to 2020. Thereafter, the leverage ratio declined slightly in the subsequent years, that is, in the years 2021 and 2022.

The financial performance for this sector as shown in Table 4.7 by the ROA deteriorated in 2019 compared to 2018 and continued to decline in 2020. In 2021 the ROA improved but then it dropped again in the year 2022.

Table 4. 8: Energy and Petroleum Industry

	2018	2019	2020	2021	2022
CCC	-64.29	-99.84	-202.28	-184.63	-73.38
DIO	75.77	59.39	62.58	70.07	41.09
DSO	99.50	93.28	111.51	116.24	112.61
DPO	239.56	252.51	376.37	370.95	227.07
SoF	18.95	18.95	19.01	19.05	19.25
ROA	0.03	0.03	0.04	0.02	0.02
LR	0.23	0.24	0.25	0.24	0.21
SG	0.04	0.03	-0.20	0.09	0.18

In the energy and petroleum sector, Table 4.8 shows that the DPO increased from 239 in 2018 to 252 in 2019, then it increased to 376 in the year 2020. In 2021 the DPO decreased to 370 and then decreased further to 227 in 2022. The DIO slightly decreased from 2018 to 2019. It increased in 2020 and 2021, then reduced significantly in 2022.

The average size of firms in the energy and petroleum industry did not change in 2019 from the previous year, but in 2020 it increased, and continued to do so until 2022.

Table 4.8 also shows that the industry ROA follows an almost straight-line trend. It increased slightly in 2020, reduced in 2021 and remained the same in 2022. Sales growth decreases minimally in 2019 but then dips in 2020. It picks up in 2021 and continues to grow in 2022. The leverage ratio, like sales growth, has an almost imperceptible change over the years, although it is fluctuating from 2018 to 2022.

Table 4. 9: Manufacturing Industry

	2018	2019	2020	2021	2022
CCC	39.39	40.50	17.58	11.85	2.38
DIO	118.69	110.46	112.98	124.87	121.80
DSO	127.39	143.85	146.14	151.21	155.57
DPO	206.69	213.81	241.54	264.23	274.99
SoF	15.05	14.98	14.97	14.94	14.93
ROA	0.06	-0.12	0.00	0.05	0.01
LR	0.18	0.14	0.16	0.15	0.12
SG	-0.01	-0.04	-0.04	-0.01	0.04

In the manufacturing industry as presented in Table 4.9, the DIO decreased in 2019 compared to 2018, increased in 2020 and further in 2021, then it decreased in 2022. The DSO on the other hand increased in 2019, 2020, 2021 and 2022. The DPO increased slightly in the year 2019, and then increased at a higher rate in the years 2020, 2021 and 2022.

Working capital management shown by the CCC trend line in figure 14 increases slightly in 2019 compared to 2018, and then it decreases progressively from the year 2020 to the year 2021 and finally in the year 2022. The average firm size in the manufacturing industry decreased progressively from 2018 to 2022, although the change was minimal. The log of total assets reduced from 15.05 in 2018 to 14.93 in 2022.

From Table 4.9, the ROA reduced in 2019 and then increased 2020 and increased further 2021 before decreasing in 2022. The leverage ratio decreased in 2019, increased in 2020, decreased to 2021 and

decreased further in 2022. The sales growth shrunk from 2018 to 2019 and remained the same in 2020. It increased in 2021 and increased further in 2022.

Table 4. 10: Telecommunications Industry

	2018	2019	2020	2021	2022
CCC	-127.14	-106.01	-110.46	-110.53	-105.95
DIO	7.59	8.45	8.63	9.62	13.27
DSO	25.62	23.56	23.74	25.75	26.05
DPO	160.35	138.01	142.83	145.90	145.27
SoF	18.93	19.07	19.17	19.25	19.53
ROA	0.32	0.32	0.35	0.30	0.24
LR	0.00	0.01	0.06	0.08	0.21
SG	0.10	0.07	0.05	0.00	0.13

The Telecommunications sector has only one company, Safaricom Limited. Its DIO and DSO remained decreased from 2018 to 2019, then increased again minimally in 2020. In 2021 and 2022 the increase occurred at a higher rate. The DPO fluctuated over the years, decreasing in 2019. In 2020 the DPO increased to 142 and in 2021 it increased to 145. After that it remained almost the same in 2022.

The CCC trend from Table 4.10 shows an increase in 2019 compared to 2018, before reducing slightly in 2020 and then remaining almost the same in 2021. The CCC increased further in 2022.

The size of Safaricom in terms of total assets over the years increased gradually from 2018 to 2022 as shown above in Table 4.10.

The ROA did not change significantly between the years 2018 and 2020. In 2021 it decreased to 0.30 and in 2022 it decreased again to 0.24. The leverage ratio is increased every year from 2018 (no gearing) to 2019 (0.01), 2020 (0.06), 2021 (0.08) and finally 2022 (0.21). Sales growth ratio reduced from 2018 to 2021 and then increased in the year 2022.

4.3. Diagnostic Tests

4.3.1 Normality test

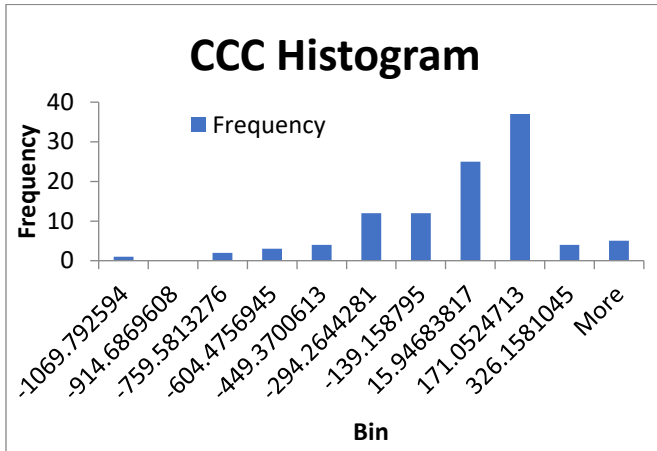


Figure 2: CCC histogram

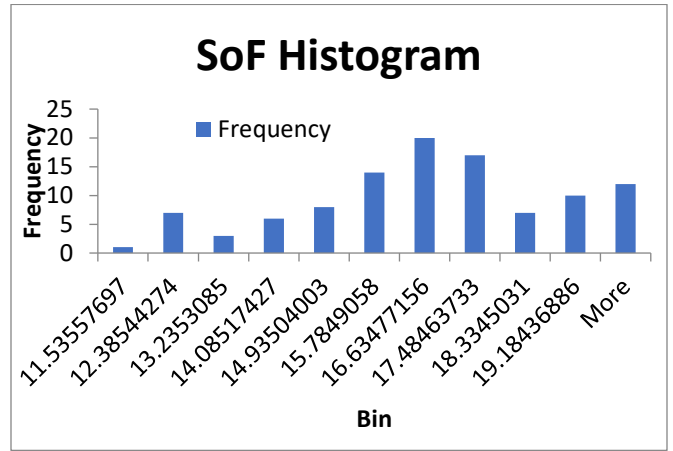


Figure 3: SoF Histogram

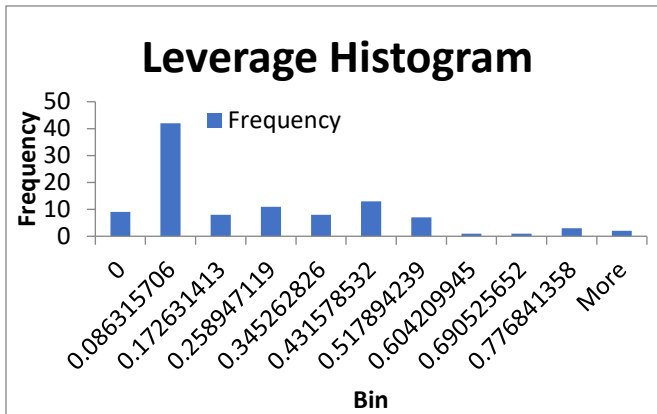


Figure 4: Leverage Histogram

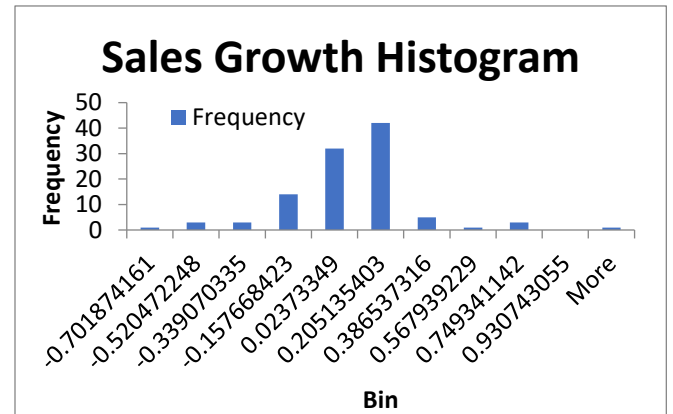


Figure 5: Sales Growth Histogram

To test for normality, histograms were used to show the curve of the observed data in the four independent variables.

Figure 5 shows that CCC does not follow a normal distribution curve because the data is skewed towards the higher end of the curve. Figure 6 shows that the size of firms does fall within the normal distribution curve. Leverage as shown in figure 7 does not follow a normal distribution curve since most of the observations are concentrated on the lower end of the curve. Finally, sales growth follows a normal distribution curve since most of the observations are concentrated at the center of the curve.

4.3.2 Heteroskedasticity

Heteroskedasticity is a test used to measure whether the variance in residual values in a regression equation is constant across all the observations in a data set. If heteroskedastic, then a linear regression cannot be used to describe the association amid the variables tested.

To test whether the data being reviewed was heteroskedastic, a Breusch-Pagan test was used. For heteroskedasticity to be present, the p-value must be lower than 0.05. The results of the test were a p-Value of 0.527, which shows that the data is not heteroskedastic.

4.3.3 Multicollinearity

Multicollinearity assessed the connection amid two or more independent variables. If these elements show strong correlation or are highly interrelated, then the variables cannot truly be said to be independent of each other since they cause changes in each other even as they cause changes in the dependent variable.

In the chosen variables, a correlation of (+/-) 0.5 or greater would be considered significant. A correlation that was less than 0.5 but equal to or greater than 0.3 would be considered moderate. A correlation of less than 0.3 would be considered low. All the independent variables chosen for this study had correlations of less than 0.4.

4.4. Inferential Statistics

4.4.1 Correlation Analysis

Table 4. 11: Correlation Analysis

Variable	ROA	CCC	ln_total_assets	Leverage ratio	Sales growth	Covid_19
ROA	1					
CCC	0.008488	1				
ln_total_assets	0.392401	-0.251273	1			
Leverage ratio	-0.110860	-0.009796	0.057115	1		
Sales growth	0.262164	0.099470	0.237556	0.03320	1	
covid_19	-0.140009	0.017208	-0.009969	0.07013	-0.35495	1

From the correlation analysis in Table 4.11, we see that the variables that have the strongest positive correlation to firm performance are the size of the firm (ln_total_assets with 0.39 correlation) and sales growth (0.26 correlation). Leverage ratio and Covid-19 have negative correlation with firm performance (-0.11 and -0.14 respectively). From the Table, working capital management as indicated by CCC has a positive correlation with ROA, albeit a weak one (0.008). This shows that movements in working capital management are related only to a small extent with the movements in firm performance, and the two variables move in the same direction.

4.4.2 Regression Analysis

Table 4. 12: Regression Statistics - Overall

Multiple R	R Square	Adjusted R Square	Standard Error	Observations
0.46404	0.21533	0.17570	0.17100	105

From the regression analysis, the predictors used are the working capital measured by CCC, the firm size, leverage of the firms, the sales growth and Covid-19. The regression shows a positive correlation amid the firm's performance (ROA) and the predictors mentioned above. The predictors are causing 46.4% of the changes in firm performance.

4.4.3 Analysis of Variance (ANOVA)

Table 4. 13: Regression coefficients

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.49654	0.13197	-3.76263	0.00029	-0.75839	-0.23469
CCC	0.00006	0.00006	0.92573	0.35684	-0.00007	0.00018
ln_total_assets	0.03237	0.00816	3.96514	0.00014	0.01617	0.04857
Leverage ratio	-0.12021	0.07822	-1.53679	0.12753	-0.27542	0.03500
Sales growth	0.12553	0.07325	1.71374	0.08971	-0.01981	0.27088
covid_19	0.00385	0.04482	0.08600	0.93164	-0.08508	0.09279

Using the regression output in table 4.13 above, the equation:

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

Also presented as:

$$Y = \alpha + \beta_1 CCC + \beta_2 SoF + \beta_3 SG + \beta_4 LR + \beta_5 Cov + \varepsilon)$$

Was fitted into:

$$Y = -0.49654 + 0.00006CCC + 0.03237SoF + -0.12021LR + 0.12553SG + 0.00385Cov + \varepsilon$$

From the regression equation presented in Table 4.13 above therefore, when all the independent factors are held at zero, then ROA will be -0.497 as shown by the intercept value. An increase in CCC by one increases ROA by 0.00006. An increase in a unit in the size of firm result to a 0.03 increase in the ROA. When gearing or leverage ratio increases by a unit, ROA declines by 0.12. Growing sales by one unit results in a 0.12 growth in ROA, and finally the presence of Covid leads to an increase in ROA of 0.0039.

Table 4. 14: ANOVA

	<i>df</i>		<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	0.79440	0.15888	5.43363	0.000185
Residual	99	2.89479	0.02924		
Total	104	3.68919			

From the ANOVA test (Table 4.14), the calculated F value is 5.43. The calculated Critical F value is 2.46, indicating a significance in the model since the F value exceeds the critical F value. The P-Value is less than 0.05 showing statistical significance, hence showing that the presence or absence of Covid-19 did have an impact on the firm performance over the three periods.

4.5. Discussion on findings

The standard deviation data from the overall descriptive statistics (Table 1) tells us that in terms of size of firm, the firms are not very different from each other in size, hence they would behave somewhat similarly in terms of growth. The leverage ratios and sales growth over the years have been quite similar among the firms, showing comparability. The size of firms was somewhat different as the standard deviation is above 1, but the CCC of the different firms varied greatly, with a standard deviation of 277.9. The variance in ROA is also low, showing comparability in this predictor/ variable among the different firms.

The cash conversion cycle tells us how much time it takes organisations to convert its short-term investments into returns. In general, the lower the CCC the more efficient the organisation is in generating returns from its investments. The large variability in CCC is in line with Nyeadi, Sare and Anwar (2018) who state that the working capital needs of organisations vary with the nature of business of the firm, although they state there is no predictable relationship in this (Nyeadi, Sare, & Aawaar, 2018).

As earlier mentioned in section 4.2, the pre-covid, covid and post-covid periods show variability in ROA where the ROA progressively decreased over the years from the pre-Covid period to the periods after. From Table 4.2, Table 4.3, and Table 4.4, we see that Covid-19 had an adverse effect on the ROA of the firms that were tested and this continued even after Covid-19 pandemic period.

Interestingly, the effectiveness in working capital management as indicated by CCC follows a different pattern. An increase in CCC indicates lower efficiency in WCM management since the cash conversion cycle is longer. Before Covid-19, CCC was low (-138). During Covid-19 in 2020, the CCC reduced slightly (-139) but then it increased to -40 post-Covid-19 (the years 2021 and 2022). This could be because during Covid-19 the pandemic restrictions reduced credit sales in favour of

cash business. However, this was balanced by equally short credit purchase terms given by suppliers as they also reduced their acceptance of lengthy credit terms given the uncertainty of the period. From Table 4.4, the trend of taking longer to convert short-term investments into returns (resulting in a higher average CCC) seems to have worsened after restrictions related to Covid-19 were lifted in 2022. However, even with a higher CCC, the post-Covid ROA was higher than the Covid ROA and was in fact similar to the pre-Covid ROA.

The pre-Covid and post-Covid period results are in line with studies conducted by Melita, Elfani and Petros (2010) on the positive effect of WCM on organization performance (Melita, Elfani, & Petros, 2010). Vural, Sökmen, & Çetenak (2012) also posit a similar relationship stating that a reduction in receivables collection period hence a reduction in CCC would lead to better firm performance (Vural, Sökmen, & Çetenak, 2012). However, the Covid period results differ from the assertions in existing literature, because during the Covid-19 period, firm performance (ROA) decreased despite minimal change in the average working capital management (CCC). This is shown by decreasing ROA in 2020 with a slight decrease in CCC.

From the ANOVA results (Table 4.13), we may infer that enterprise performance (ROA) is explained in large part by changes in sales growth and leverage ratio. It is also affected by the presence or absence of Covid-19. In the Covid-19 period, sales saw a negative growth of about 17% whereas in the post-Covid period, the negative growth was only about 5%. Therefore, although CCC overall may have increased (indicating reduced efficiency due to taking longer to liquidate investments into cash), sales growth may have had a greater impact on the firm performance than working capital management post-Covid.

One possible explanation may be that after Covid-19, even with improving sales, credit periods may have been longer, increasing cash conversion periods; in fact, the post-Covid sales growth may possibly be explained by increased receivables credit period granted by businesses as a way to stimulate growth in sales hence firm performance. Given that Covid-19 restrictions had been lifted, the economic outlook (effect of external factors) may have improved which would have prompted firms to use this strategy to restore pre-Covid firm performance, but further studies would need to be done to ascertain this.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this section covers the outcomes of the data analysis performed in the preceding chapter. It also discusses the setbacks of the study and offers recommendations for future research.

5.2 Summary

The descriptive statistics in section 4 above showed that the firm performance (ROA) of the NSE listed non-financial companies tended to cluster around the mean over the 5 years with little standard deviation (0.18). On the other hand, the overall CCC of the firms studied showed a lot of variance as indicated by the standard deviation of 277. The large variability may be attributed to the difference in the nature of the companies being investigated as affirmed by Nyeadi Sare and Anwar (2018) in their paper on factors affecting working capital management (Nyeadi, Sare, & Aawaar, 2018).

The level of gearing among the tested firms showed little variability, which may be expected considering that these are listed companies which rely largely on equity financing. The standard deviation for this variable was 0.21. The sales growth of the listed companies also showed little standard deviation from the mean, with a standard deviation of 0.25. This shows that majority of the firms tested in this study experienced sales growth that was close to what was the average of the group, that is, about 0.3% growth over the five-year period.

From the data, there was little change in working capital management as represented by CCC during Covid-19 period from the pre-Covid period. Yet the financial performance of the listed companies tested was affected, which went against the assumption of this study since it was expected that financial performance of the companies was dependent on working capital to a significant extent. From the data analysis, it seems that other factors had a greater effect on the financial performance of the firms than working capital.

In the period post-Covid-19, an increase in CCC – which indicates less efficient management of working capital – corresponded with an improvement in firm performance as indicated by an increasing ROA. Therefore, these results challenge to some extent the assumption that there is a

positive correlation between increased efficiency in WCM and firm performance because we see that an increase in CCC post-Covid is actually associated with an increase in ROA.

From the ANOVA test, the p-value of the variables was greater than 0.05, which indicated a somewhat insignificant relationship between the variables and the firm performance (ROA) of non-financial firms listed in the NSE. Further, as seen from the correlation analysis results (Table 4.11), CCC had the least correlation with ROA (0.008) compared to the other variables.

5.3 Conclusion

Based on the study, the data analysis results reveal that the presence of Covid-19 restrictions or lack thereof *did* impact the performance of non-financial listed firms, but not necessarily through the working capital management of these firms. Instead, a wide variety of factors affect firm performance, some of which were included in the regression analysis in this study.

As demonstrated in the data analysis section, Covid-19 had an adverse impact on the average firm performance of the sampled population. This is indicated by the fact that during the Covid-19 year, there was a decline in firm performance compared to the prior period, which did not suffer the effects of the pandemic. However, in the period post Covid-19, the average financial performance of the sampled population improved compared to the previous Covid-affected period. In addition, the correlation table shows that Covid-19 was negatively correlated with ROA, though the correlation was a weak one since the absolute correlation factor was less than 0.3 (it was in fact -0.07). This means that the presence of Covid-19 adversely affected the firm performance of the sampled population.

In the Covid period, there was a slight decrease in CCC, indicating more efficient management of working capital. Yet this coincided with reduced firm performance as shown by a decreasing mean in ROA, an observation which rejects the assumption that increased efficiency necessarily leads to increased firm performance.

On the other hand, in the period post-Covid, although the working capital management efficiency decreased relative to the Covid-19 period (as shown by the increase in CCC ratio from -139 to -40), the ROA of the listed non-fiscal institutions improved. Again, this challenges the assumption that firm performance indicated by ROA is dependent on efficient working capital management. From the ANOVA table, the CCC regression coefficient for the regression equation is low, and the correlation table gives similar findings. This possibly points out that the influence of other variables on firm performance, specifically ROA, is stronger. In this study specifically, the ANOVA table shows that the other variables were more highly correlated to ROA. Most notably, the size of firms and the average sales growth had the highest correlation.

5.4 Limitations of the study

This scope of this study covered non-financial NSE-listed companies in various industry sectors. In doing so, the comparability of the companies being reviewed may have been reduced since different industries have different working capital management practices.

The number of non-financial NSE-listed companies is thirty-eight. However, the number of companies subjected to this study was twenty-one. This was due to some of the companies lacking crucial data to allow for analysis, such as missing financial results for some of the years, some listed companies were insolvent and therefore not in operations, and one company was listed in the NSE but was not a Kenyan firm, hence was excluded due to the possible difference in operating context. The post-Covid period being reviewed was short: only one year immediately after the lift in Covid-19 restrictions, which may have been insufficient time to observe the recovery of firm WCM practices. The recovery of WCM would be expected to take longer to happen since the disruptions in supply chain may have taken longer to be restored.

5.5 Recommendations for future studies

A good further study would be to continue the longitudinal study for a few years post-Covid-19 to observe the changes in working capital and how these affect the overall firm performance. In addition, a longer pre-covid comparison, say, five years before the pandemic, would give a clearer picture on how working capital affects ROA.

In this study, firm performance was measured using ROA. In future, other indicators of firm performance could be explored to investigate whether any differences would occur. Specifically, it may be interesting to investigate the association amid the predictor variables examined in this paper and earnings before tax and/or earnings after tax.

In future, it may be helpful to focus on one industry sector when evaluating the relationship between working capital and firm performance to provide better comparison, especially in terms of the means and the standard deviations of the variables being tested.

Similar studies may also be carried out in other locations to investigate whether the financial performance in different geographic locations (hence economic environments) was affected in similar ways to the Kenyan non-financial NSE-listed firms studied in this project.

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APPENDICES

APPENDIX 1: LIST OF COMPANIES SAMPLED

Automobiles and accessories Sector

- Car and General (K) Ltd

Commercial and services

- Express Kenya Ltd
- Sameer Africa
- Kenya Airways
- Nation Media Group
- Standard Group Ltd
- TPS Eastern Africa (Serena) Ltd
- Scangroup Ltd

Construction and allied

- Crown Paints Kenya PLC
- E.A.Cables PLC
- E.A.Portland Cement Ltd

Energy and petroleum

- KenGen Ltd
- Kenya Power & Lighting Co Ltd,
- Total Kenya Ltd

Manufacturing and allied sector

- British American Tobacco Kenya Ltd
- BOC Kenya Ltd
- East African Breweries Ltd
- Eveready East Africa Ltd,
- Kenya Orchards Ltd
- Unga Group PLC

Telecommunication and technology

- Safaricom PLC

APPENDIX II: DATA COLLECTION FORM

In Sh '000

<< Company Name >>

	2022	2021	2020	2019	2018	2017
P&L						
Sales						
COS						
Net income						

BSh						
Inventory						
Trade Receivables						
Total Assets						
Trade Payables						
Long term debt						

Ratios & Calculations:

Y = Firm's financial performance as measured by return on assets (ROA) = Net income/ Total Assets

ROA :

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X₁ = Working Capital Management measured by CCC

CCC :

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DIO :

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DSO :

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DPO :

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X₂ = Size of firm (SoF) as measured by the natural log of total assets

SoF :

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X₃ = Leverage ratio as measured by (long-term debt / total assets)

LR :

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X₄ = Sales growth (SG) of the firm i.e. ([Current Sales – previous sales] / previous sales)

SG :

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APPENDIX III: DATA SUMMARY

In Sh '000							
		2022	2021	Car & General		2018	2017
				2020	2019		
P&L							
Sales		19,398,885	17,141,960	12,117,976	11,907,237	10,079,734	9,635,150
COS		(16,253,626)	(13,987,931)	(10,147,703)	(10,026,975)	(8,513,513)	(8,184,936)
Net income		679,460	887,243	274,134	182,359	225,716	79,841
BSh							
Inventory		7,540,924	4,496,940	2,999,196	3,713,960	3,070,281	2,898,840
Trade Receivables		2,319,746	1,662,859	1,631,189	1,583,414	1,736,974	1,600,523
Total Assets		18,922,884	14,447,609	11,903,486	11,483,744	10,173,507	9,400,007
Trade Payables		4,401,644	1,395,779	1,501,304	633,353	586,220	1,716,668
Long term debt		2,107,671	3,027,806	2,742,081	2,158,918	2,068,904	426,993
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
	ROA	0.04	0.06	0.02	0.02	0.02	
X ₁ =	Working Capital Management measured by CCC						
	CCC	107.54	95.07	130.75	152.17	139.02	
	DIO	135.16	97.80	120.73	123.48	127.96	
	DSO	37.47	35.07	48.41	50.89	60.43	
	DPO	65.09	37.80	38.39	22.20	49.37	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
	SoF	16.76	16.49	16.29	16.26	16.14	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
	LR	0.11	0.21	0.23	0.19	0.20	
X ₄ =	Sales growth of the firm i.e. ((Current Sales – previous sales) / previous sales)						
	SG	0.13	0.41	0.02	0.18	0.05	

In Sh '000							
		2022	2021	WPP Scan Group		2018	2017
				2020	2019		
P&L							
Sales		1,422,113	1,256,664	1,106,744	1,558,808	1,624,741	1,885,130
COS		(1,356,973)	(1,154,707)	(1,042,885)	(1,410,414)	(1,497,194)	(1,746,843)
Net income		19,997	114,982	(2,750,819)	630,319	258,551	256,576
BSh							
Inventory		0	0	0	0	0	-
Trade Receivables		2,929,884	2,567,577	2,364,220	1,853,207	1,370,161	1,606,523
Total Assets		8,214,629	7,250,107	7,002,825	11,666,307	12,717,673	11,575,219
Trade Payables		708,475	958,753	787,906	1,219,495	1,321,904	1,082,308
Long term debt		31,155	40,902	67,922	111,174	0	-
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
	ROA	0.00	0.02	-0.39	0.05	0.02	
X ₁ =	Working Capital Management measured by CCC						
	CCC	481.26	440.17	344.16	48.54	41.30	
	DIO	0.00	0.00	0.00	0.00	0.00	
	DSO	705.49	716.22	695.45	377.38	334.36	
	DPO	224.23	276.06	351.29	328.84	293.06	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
	SoF	15.92	15.80	15.76	16.27	16.36	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
	LR	0.00	0.01	0.01	0.01	-	
X ₄ =	Sales growth of the firm i.e. ((Current Sales – previous sales) / previous sales)						
	SG	0.13	0.14	-0.29	-0.04	-0.14	

In Sh '000		Kenya Airways					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	107,899,000	64,191,000	49,090,000	121,001,000	107,820,000	100,222,000	
COS	(74,901,000)	(37,928,000)	(29,078,000)	(78,602,000)	(72,318,000)	(62,336,000)	
Net income	(37,050,000)	(14,284,000)	(33,084,000)	(13,017,000)	(7,812,000)	(10,072,000)	
BSh							
Inventory	2,273,000	2,152,000	2,173,000	2,115,000	2,098,000	1,829,000	
Trade Receivables	38,789,000	31,182,000	29,045,000	30,776,000	29,952,000	13,383,000	
Total Assets	181,017,000	164,824,000	178,971,000	200,177,000	150,777,000	146,144,000	
Trade Payables	65,394,000	58,937,000	57,291,000	50,763,000	48,423,000	24,470,000	
Long term debt	136,869,000	142,269,000	135,973,000	128,995,000	5,186,000	113,067,000	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	-0.20	-0.09	-0.18	-0.07	-0.05		
X ₁ =	Working Capital Management measured by CCC						
CCC	-173.81	-367.22	-428.86	-128.92	-100.69		
DIO	10.78	20.81	26.91	9.78	9.91		
DSO	118.35	171.23	222.39	91.59	73.35		
DPO	302.94	559.26	678.17	230.29	183.95		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	19.01	18.92	19.00	19.11	18.83		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.76	0.86	0.76	0.64	0.03		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.68	0.31	-0.59	0.12	0.08		

In Sh '000		Nation Media Group					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	5,070,900	5,354,500	5,016,100	6,922,300	7,523,500	8,186,000	
COS	(938,800)	(843,900)	(825,900)	(1,342,000)	(1,323,800)	(1,521,500)	
Net income	297,400	386,300	36,700	799,100	1,003,800	1,076,200	
BSh							
Inventory	540,300	490,500	431,800	508,900	873,800	487,900	
Trade Receivables	2,790,500	2,679,100	2,799,500	2,874,100	2,752,800	1,858,300	
Total Assets	9,493,100	9,578,900	9,082,100	9,363,000	8,904,500	9,222,500	
Trade Payables	2,418,200	2,381,800	1,933,700	2,046,000	2,090,600	2,136,000	
Long term debt	0	329,900	357,800	571,300	0	-	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.03	0.04	0.00	0.09	0.11		
X ₁ =	Working Capital Management measured by CCC						
CCC	-535.87	-547.08	-465.11	-226.16	-283.10		
DIO	200.38	199.45	207.87	188.03	187.72		
DSO	196.85	186.73	206.42	148.35	111.85		
DPO	933.11	933.26	879.40	562.54	582.68		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	16.07	16.08	16.02	16.05	16.00		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	-	0.03	0.04	0.06	-		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	-0.05	0.07	-0.28	-0.08	-0.08		

In Sh '000		Sameer Africa				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	539,576	566,461	581,382	1,268,403	1,417,273	1,798,957
COGS	-236,202	(162,060)	(411,085)	(1,069,243)	(1,224,284)	(1,336,200)
Net income	71,501	200,838	(193,800)	(697,075)	(691,817)	80,363
BSh						
Inventory	29,486	34,576	0	319,624	313,617	409,331
Trade Receivables	144,813	248,485	198,036	534,275	842,318	792,505
Total Assets	1,151,423	1,070,124	968,646	1,569,888	2,277,398	2,731,467
Trade Payables	280,517	210,981	297,616	579,369	484,465	533,474
Long term debt	445,446	495,994	708,588	455,218	14,585	31,026
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.06	0.19	-0.20	-0.44	-0.30	
X ₁ =	Working Capital Management measured by CCC					
CCC	-197.23	-389.95	-17.56	124.57	166.54	
DIO	49.50	38.94	141.90	108.08	107.77	
DSO	133.02	143.86	229.88	198.07	210.51	
DPO	379.75	572.74	389.33	181.58	151.74	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	13.96	13.88	13.78	14.27	14.64	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.39	0.46	0.73	0.29	0.01	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	-0.05	-0.03	-0.54	-0.11	-0.21	

In Sh '000		Standard Group				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	2,033,529	2,207,113	2,101,097	2,979,291	4,836,030	4,657,488
COS	(574,767)	(470,857)	(514,837)	(959,082)	(1,225,452)	(1,384,302)
Net income	(775,032)	(58,143)	(215,310)	(372,661)	261,285	(210,838)
BSh						
Inventory	98,498	154,467	215,205	217,457	357,758	311,361
Trade Receivables	1,174,033	1,064,693	840,608	1,060,710	1,324,314	1,509,789
Total Assets	3,918,566	3,815,884	3,515,731	4,195,946	4,072,075	4,459,637
Trade Payables	2,399,426	1,304,513	1,175,767	1,677,677	1,377,011	1,301,228
Long term debt	6,537	31,144	372,297	454,076	538,136	360,603
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	-0.20	-0.02	-0.06	-0.09	0.06	
X ₁ =	Working Capital Management measured by CCC					
CCC	-894.84	-660.51	-692.97	-325.71	-192.26	
DIO	80.32	143.28	153.37	109.46	99.65	
DSO	200.92	157.54	165.15	146.10	106.95	
DPO	1176.07	961.33	1011.49	581.26	398.86	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	15.18	15.15	15.07	15.25	15.22	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.00	0.01	0.11	0.11	0.13	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	-0.08	0.05	-0.29	-0.38	0.04	

In Sh '000		TPS Serena					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	6,944,306	3,287,798	2,034,160	6,823,159	6,593,441	6,408,206	
COGS	(1,066,206)	(563,330)	(363,245)	(1,118,985)	(1,123,363)	(1,116,544)	
Net income	379,695	(639,149)	(1,210,007)	181,747	179,005	119,465	
BSh							
Inventory	477,013	411,965	422,090	459,983	475,308	499,821	
Trade Receivables	1,162,974	1,093,954	738,092	1,139,680	1,267,721	1,332,411	
Total Assets	17,707,638	17,359,098	17,245,807	17,986,459	17,598,123	17,486,823	
Trade Payables	1,713,203	1,884,648	1,420,403	1,926,286	1,805,800	1,796,277	
Long term debt	3,896,879	5,835,869	5,333,501	4,012,697	1,677,058	3,819,714	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.02	-0.04	-0.07	0.01	0.01		
X ₁ =	Working Capital Management measured by CCC						
CCC	-404.36	-698.83	-1069.79	-391.75	-354.80		
DIO	152.16	270.21	443.17	152.54	158.42		
DSO	59.31	101.69	168.47	64.39	71.97		
DPO	615.84	1070.73	1681.43	608.68	585.19		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	16.69	16.67	16.66	16.71	16.68		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.22	0.34	0.31	0.22	0.10		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	1.11	0.62	-0.70	0.03	0.03		

In Sh '000		Express Kenya Ltd					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	30,876	26,291	15,760	20,218	26,380	50,323	
COGS	(77,150)	(74,833)	(21,625)	(20,069)	(32,489)	-45,210	
Net income	(81,129)	(82,978)	(30,653)	(21,713)	(72,116)	-90,349	
BSh							
Inventory	28,752	28,752	28,752	28,752	28,752	40,631	
Trade Receivables	3,880	3,394	8,018	12,868	12,963	21,874	
Total Assets	1,400,822	1,258,393	1,258,416	470,434	320,942	359,933	
Trade Payables	34,302	36,177	32,278	33,946	46,826	88,070	
Long term debt	291,734	269,448	269,448	282,641	262,049	185,135	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	-0.06	-0.07	-0.02	-0.05	-0.22		
X ₁ =	Working Capital Management measured by CCC						
CCC	12.30	52.51	168.28	21.59	-126.99		
DIO	136.03	140.24	485.30	522.92	389.74		
DSO	42.99	79.22	241.86	233.17	241.00		
DPO	166.72	166.95	558.88	734.50	757.74		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	14.15	14.05	14.05	13.06	12.68		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.21	0.21	0.21	0.60	0.82		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.17	0.67	-0.22	-0.23	-0.48		

In Sh '000		Crown Paints				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	10,158,095	9,656,216	8,401,195	7,930,021	7,837,707	6,790,999
COGS	(6,327,454)	(5,687,963)	(4,800,185)	(4,699,512)	(4,992,505)	(4,284,608)
Net income	526,531	666,677	419,238	(172,892)	167,760	333,033
BSh						
Inventory	2,945,165	2,767,651	1,453,448	1,432,278	1,668,841	1,492,184
Trade Receivables	2,135,328	1,357,273	1,255,071	1,062,245	1,039,986	2,690,397
Total Assets	8,478,159	7,383,919	5,525,077	5,470,195	6,060,339	6,451,222
Trade Payables	2,267,894	2,520,621	1,775,220	1,488,398	1,867,207	1,983,358
Long term debt	353,998	254,465	390,120	413,340	302,512	278,968
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.06	0.09	0.08	-0.03	0.03	
X ₁ =	Working Capital Management measured by CCC					
CCC	89.41	46.97	35.97	38.50	61.66	
DIO	164.77	135.44	109.71	120.43	115.55	
DSO	62.75	49.37	50.34	48.38	86.86	
DPO	138.11	137.83	124.08	130.31	140.76	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	15.95	15.81	15.52	15.51	15.62	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.04	0.03	0.07	0.08	0.05	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	0.05	0.15	0.06	0.01	0.15	

In Sh '000		EA Cables				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	2,211,916	1,616,851	1,744,860	1,460,868	1,385,598	2,043,727
COGS	(1,603,760)	(1,097,986)	(1,165,191)	(960,253)	(923,126)	(1,401,661)
Net income	(167,687)	(249,699)	(330,588)	727,930	(399,695)	(454,404)
BSh						
Inventory	295,775	309,826	257,719	226,648	186,802	385,083
Trade Receivables	820,261	657,039	755,999	895,777	898,903	1,164,797
Total Assets	4,123,792	4,334,723	4,532,860	4,891,447	5,054,241	5,246,895
Trade Payables	552,253	687,213	620,787	553,968	382,942	509,032
Long term debt	1,931,728	2,142,574	2,225,379	1807524	480436	817,239
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	-0.04	-0.06	-0.07	0.15	-0.08	
X ₁ =	Working Capital Management measured by CCC					
CCC	49.76	36.42	64.63	124.72	208.53	
DIO	68.91	94.33	75.86	78.58	113.06	
DSO	121.89	159.49	172.76	224.20	271.81	
DPO	141.05	217.41	184.00	178.06	176.34	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	15.23	15.28	15.33	15.40	15.44	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.47	0.49	0.49	0.37	0.10	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	0.37	-0.07	0.19	0.05	-0.32	

In Sh '000		EA Portland				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	2,143,279	2,762,748	2,474,902	2,839,572	5,130,127	6,923,749
COGS	(2,925,509)	(3,583,282)	(3,300,350)	(4,051,736)	(5,218,092)	(6,163,025)
Net income	541,585	1,887,846	(2,768,466)	(3,327,605)	7,528,335	(1,432,960)
BSh						
Inventory	926,571	1,084,314	1,112,167	1,131,247	1,247,113	1,287,843
Trade Receivables	1,017,025	1,255,923	1,141,401	2,363,375	558,798	676,725
Total Assets	35,824,116	34,601,414	35,136,380	36,521,027	37,529,153	27,625,774
Trade Payables	9,791,185	9,358,873	7,244,297	6,772,505	5,801,646	2,859,918
Long term debt	19,615	20,445	33,809	0	3,608,128	1,776,595
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.02	0.05	-0.08	-0.09	0.20	
X ₁ =	Working Capital Management measured by CCC					
CCC	-875.64	-575.39	-392.59	-271.43	-170.32	
DIO	125.44	111.87	124.05	107.13	88.66	
DSO	193.54	158.36	258.44	187.81	43.95	
DPO	1194.62	845.62	775.09	566.37	302.93	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	17.39	17.36	17.37	17.41	17.44	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.0005	0.0006	0.0010	-	0.0961	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	-0.22	0.12	-0.13	-0.45	-0.26	

In Sh '000		KENGEN				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	49,226,472	45,900,839	44,110,491	45,965,646	45,289,660	43,431,919
COS	(9,752,700)	(4,160,118)	(4,288,290)	(10,191,562)	(9,406,027)	(8,979,436)
Net income	4,719,160	1,188,407	18,377,093	7,884,335	7,890,633	9,006,216
BSh						
Inventory	1,447,124	2,051,828	1,371,280	1,324,294	1,149,180	1,082,044
Trade Receivables	22,344,295	24,348,846	23,402,447	18,855,494	21,842,958	15,751,937
Total Assets	502,062,226	425,658,163	412,926,930	401,422,249	379,353,005	376,729,582
Trade Payables	8,595,567	8,310,367	6,991,581	9,127,256	7,927,695	6,771,915
Long term debt	122,441,458	134,777,599	137,349,668	128,771,882	121,287,608	127,884,286
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.01	0.00	0.04	0.02	0.02	
X ₁ =	Working Capital Management measured by CCC					
CCC	-77.77	-331.25	-396.43	-99.52	-90.42	
DIO	65.48	150.17	114.72	44.29	43.29	
DSO	173.11	189.86	174.84	161.59	151.49	
DPO	316.36	671.28	685.98	305.40	285.21	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	20.03	19.87	19.84	19.81	19.75	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.24	0.32	0.33	0.32	0.32	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	0.07	0.04	-0.04	0.01	0.04	

In Sh '000		KPLC					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	157,353,254	144,119,000	133,258,602	133,140,887	131,378,974	120,742,270	
COS	(115,208,040)	(94,220,014)	(87,499,392)	(90,152,296)	(84,100,479)	(78,938,762)	
Net income	3,504,289	1,489,688	(939,482)	261,553.00	3,268,626.00	7,266,131	
BSh							
Inventory	6,316,243	5,895,766.00	4,831,372.00	9,834,900	9,745,385	9,626,293	
Trade Receivables	40,295,197	37,454,287	33,815,005	29,620,971	35,219,921	51,278,804	
Total Assets	329,708,799	331,206,664	325,267,359	328,004,926	332,269,343	341,653,227	
Trade Payables	87,508,583	91,522,034	88,502,706	80,706,473	71,259,374	53,974,414	
Long term debt	119,149,482	119,401,893.00	119,360,385	114,550,593	119,453,408	111,075,216	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.011	0.004	-0.003	0.001	0.010		
X ₁ =	Working Capital Management measured by CCC						
CCC	-174.08	-237.67	-235.46	-179.12	-109.57		
DIO	19.34	20.78	30.59	39.64	42.04		
DSO	90.17	90.25	86.88	88.88	120.16		
DPO	283.60	348.70	352.92	307.63	271.76		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	19.61	19.62	19.60	19.61	19.62		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.36	0.36	0.37	0.35	0.36		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.09	0.08	0.00	0.01	0.09		

In Sh '000		Total Energies					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	102,802,416	74,710,464	65,431,178	143,990,455	136,678,235	137,096,919	
COS	(93,222,522)	(65,909,440)	(56,374,062)	(32,113,529)	(28,765,461)	(25,673,365)	
Net income	2,444,327	2,738,908	3,296,532	2,534,532.00	2,312,582.00	2,738,216	
BSh							
Inventory	11,890,143	7,747,934	6,436,314	6,668,240	9,916,675	12,461,179	
Trade Receivables	27,179,637	14,806,406	13,283,383	12,820,826	10,356,391	9,759,025	
Total Assets	73,043,134	47,030,094	42,987,172	37,564,704	39,258,921	38,012,115	
Trade Payables	25,804,361	15,700,296	17,836,687	10,024,397	15,401,877	10,085,047	
Long term debt	1,546,343	1,819,829	1,605,529	1,910,789	966,441	856,436	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.03	0.06	0.08	0.07	0.06		
X ₁ =	Working Capital Management measured by CCC						
CCC	31.73	15.03	25.04	-20.87	7.13		
DIO	38.45	39.28	42.42	94.25	141.97		
DSO	74.54	68.62	72.81	29.38	26.86		
DPO	81.25	92.86	90.19	144.50	161.70		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	18.11	17.67	17.58	17.44	17.49		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.02	0.04	0.04	0.05	0.02		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.38	0.14	-0.55	0.05	0.00		

In Sh '000		BAT				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	27,377,922	25,427,369	25,339,237	24,039,618	20,750,135	18,673,297
COS	(14,232,690)	(12,995,849)	(14,606,403)	(14,591,245)	(11,316,681)	(10,731,063)
Net income	6,891,992	6,483,381	5,517,492	3,885,649	4,084,523	3,336,006
BSh						
Inventory	3,631,737	3,799,034	3,619,389	5,315,026	6,004,667	5,674,768
Trade Receivables	5,034,078	3,583,259	3,790,270	1,651,946	2,414,218	2,803,043
Total Assets	23,947,044	21,586,458	18,767,265	18,420,142	17,732,962	17,805,588
Trade Payables	5,064,163	3,942,378	4,489,289	6,139,247	4,994,656	4,757,921
Long term debt	13,544	19,665	44,171	148,205	1,222,200	1,239,000
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.29	0.30	0.29	0.21	0.23	
X ₁ =	Working Capital Management measured by CCC					
CCC	37.24	38.69	18.03	33.19	76.96	
DIO	95.28	104.18	111.63	141.58	188.35	
DSO	57.44	52.92	39.20	30.87	45.89	
DPO	115.49	118.41	132.80	139.26	157.28	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	16.99	16.89	16.75	16.73	16.69	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.00	0.00	0.00	0.01	0.07	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	0.08	0.00	0.05	0.16	0.11	

In Sh '000		BOC Gases				
	2022	2021	2020	2019	2018	2017
P&L						
Sales	1,281,249	1,376,117	1,093,798	930,610	913,804	872,666
COS	(761,088)	(819,130)	(615,432)	(511,673)	(450,822)	(413,715)
Net income	118,376	130,589	167,142	75,599	101,756	60,777
BSh						
Inventory	202,687	205,809	157,346	151,232	149,227	128,258
Trade Receivables	647,193	330,544	431,549	350,968	280,535	287,340
Total Assets	1,951,601	1,944,770	2,019,992	1,848,543	1,951,395	2,015,587
Trade Payables	289,177	324,370	405,556	464,731	473,657	499,856
Long term debt	7,678	7,726	7,768	6,556	0	0
Ratios & Calculations:						
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)					
ROA	0.06	0.07	0.08	0.04	0.05	
X ₁ =	Working Capital Management measured by CCC					
CCC	90.10	19.35	-36.01	-103.69	-168.35	
DIO	97.95	80.91	91.51	107.17	112.33	
DSO	139.27	101.07	130.56	123.84	113.41	
DPO	147.12	162.63	258.07	334.70	394.09	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets					
SoF	14.48	14.48	14.52	14.43	14.48	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)					
LR	0.004	0.004	0.004	0.004	-	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)					
SG	-0.07	0.26	0.18	0.02	0.05	

In Sh '000		Carbacid Investments					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	1,414,660	906,588	682,878	630,500	565,508	589,380	
COS	(574,483)	(352,941)	(258,667)	(230,231)	(206,292)	(196,732)	
Net income	707,664	415,099	324,654	264,589	298,526	352,300	
BSh							
Inventory	64,954	39,898	33,863	41,236	37,040	53,742	
Trade Receivables	367,176	213,297	195,453	174,741	146,606	147,680	
Total Assets	4,461,747	1,242,942	1,056,326	3,503,501	3,371,233	3,306,974	
Trade Payables	275,897	45,639	46,712	106,421	84,611	124,454	
Long term debt	40,174	0	0	0	0	0	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.16	0.33	0.31	0.08	0.09		
X ₁ =	Working Capital Management measured by CCC						
CCC	6.05	72.67	43.88	3.64	-9.67		
DIO	33.31	38.14	52.99	62.05	80.31		
DSO	74.88	82.28	98.93	93.01	94.97		
DPO	102.14	47.75	108.04	151.43	184.95		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	15.31	14.03	13.87	15.07	15.03		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.01	-	-	-	-		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.56	0.33	0.08	0.11	-0.04		

In Sh '000		EABL					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	109,409,027	85,961,815	74,916,259	82,543,241	73,456,832	70,247,065	
COS	(56,553,029)	(48,548,122)	(41,896,229)	(44,426,104)	(41,052,409)	(39,116,742)	
Net income	15,574,399	6,961,940	7,020,915	11,515,130	7,255,555	8,514,568	
BSh							
Inventory	13,272,250	11,688,157	10,916,370	7,368,012	7,882,606	7,473,094	
Trade Receivables	11,792,541	13,022,880	5,681,444	8,222,994	7,946,481	9,928,000	
Total Assets	110,426,670	100,117,014	88,658,406	87,065,627	71,246,826	66,666,312	
Trade Payables	32,209,869	30,543,718	21,731,083	27,864,192	24,629,299	20,814,011	
Long term debt	36,161,792	39,322,951	38,051,841	31,115,178	30,546,789	27,488,274	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	0.14	0.07	0.08	0.13	0.10		
X ₁ =	Working Capital Management measured by CCC						
CCC	-80.57	-71.83	-102.52	-117.24	-89.35		
DIO	80.55	84.97	79.65	62.65	68.26		
DSO	41.39	39.71	33.87	35.75	44.41		
DPO	202.51	196.51	216.04	215.64	202.02		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	18.52	18.42	18.30	18.28	18.08		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.33	0.39	0.43	0.36	0.43		
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
SG	0.27	0.15	-0.09	0.12	0.05		

In Sh '000		2022	2021	Eveready		2018	2017
				2020	2019		
P&L							
	Sales	82,624	89,816	133,590	190,667	251,720	338,931
	COS	(59,595)	(68,696)	(105,655)	(154,013)	(220,108)	(251,610)
	Net income	(39,137)	(34,691)	(69,010)	(303,544)	(110,155)	270,644
BSh							
	Inventory	15,652	18,859	38,055	36,014	88,851	182,798
	Trade Receivables	21,236	38,040	42,044	80,554	155,161	149,235
	Total Assets	102,291	159,193	201,085	248,526	573,768	771,104
	Trade Payables	111,175	109,756	129,681	111,728	108,956	149,600
	Long term debt	0	697	8,168	0	0	0
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
	ROA	-0.38	-0.22	-0.34	-1.22	-0.19	
X ₁ =	Working Capital Management measured by CCC						
	CCC	-439.95	-322.17	-121.57	112.08	231.55	
	DIO	105.68	151.20	127.94	147.96	225.23	
	DSO	130.93	162.73	167.48	225.62	220.69	
	DPO	676.57	636.10	416.99	261.50	214.38	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
	SoF	11.54	11.98	12.21	12.42	13.26	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
	LR	-	0.00	0.04	-	-	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
	SG	-0.08	-0.33	-0.30	-0.24	-0.26	

In Sh '000		2022	2021	Kenya Orchard		2018	2017
				2020	2019		
P&L							
	Sales	51,503	49,405	56,986	60,009	72,239	73,691
	COS	43,004	(42,057)	(48,829)	48,628	53,028	(60,362)
	Net income	1,924	3,690	(12,543)	8,434	8,886	5735
BSh							
	Inventory	41,719	29,391	27,501	21,387	15,591	2,740
	Trade Receivables	77,084	67,940	68,447	71,440	55,992	59,561
	Total Assets	147,290	126,950	126,247	136,004	114,566	108,278
	Trade Payables	63,081	43,046	46,859	42,847	27,443	31,273
	Long term debt	56,272	56,272	56,272	56,272	56,272	56,272
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
	ROA	0.01	0.03	-0.10	0.06	0.08	
X ₁ =	Working Capital Management measured by CCC						
	CCC	365.29	360.55	295.44	262.53	152.94	
	DIO	301.78	246.87	182.72	138.78	63.09	
	DSO	513.89	503.81	447.99	387.55	291.93	
	DPO	450.38	390.13	335.28	263.80	202.08	
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
	SoF	11.90	11.75	11.75	11.82	11.65	
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
	LR	0.38	0.44	0.45	0.41	0.49	
X ₄ =	Sales growth of the firm i.e. ([Current Sales – previous sales] / previous sales)						
	SG	0.04	-0.13	-0.05	-0.17	-0.02	

In Sh '000		Unga Group					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	18,032,334	17,812,638	17,569,967	17,895,670	19,982,070	19,528,785	
COS	(16,623,273)	(15,923,564)	(15,927,981)	(15,363,481)	(16,671,007)	(17,285,467)	
Net income	(502,040)	293,477	66,161	544,814	783,203	(32,286)	
BSh							
Inventory	2,054,442	2,461,724	4,615,753	2,752,081	2,689,813	2,321,807	
Trade Receivables	2,940,205	2,047,381	2,540,018	3,017,093	2,813,438	2,440,699	
Total Assets	10,287,650	10,048,779	12,050,876	10,646,066	9,932,664	10,267,471	
Trade Payables	2,898,109	2,372,875	4,747,086	3,112,013	2,611,469	3,807,201	
Long term debt	24,451	558,162	668,698	896,293	878,517	131,688	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = (Net income / Total Assets)						
ROA	-0.05	0.03	0.01	0.05	0.08		
X ₁ =	Working Capital Management measured by CCC						
CCC	42.19	46.51	52.09	56.11	32.58		
DIO	49.58	81.11	84.42	64.64	54.86		
DSO	50.48	47.00	57.72	59.46	47.99		
DPO	57.87	81.60	90.05	67.99	70.27		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	16.15	16.12	16.30	16.18	16.11		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.00	0.06	0.06	0.08	0.09		
X ₄ =	Sales growth of the firm i.e. ((Current Sales – previous sales) / previous sales)						
SG	0.01	0.01	-0.02	-0.10	0.02		

In Sh '000		Safaricom					
	2022	2021	2020	2019	2018	2017	
P&L							
Sales	295,845,900	262,449,700	261,405,500	249,481,000	233,893,000	212,885,194	
COS	(90,613,600)	(80,334,100)	(75,468,700)	(73,021,000)	(71,562,000)	(66,749,520)	
Net income	71,789,300	67,956,600	73,284,200	61,966,000	53,814,000	48,444,418	
BSh							
Inventory	4,147,400	2,441,200	1,793,100	1,775,000	1,605,000	1,370,771	
Trade Receivables	22,003,700	20,225,500	16,801,900	17,206,000	14,999,000	17,833,539	
Total Assets	303,308,300	228,101,400	211,564,100	191,171,000	166,233,000	161,686,996	
Trade Payables	38,058,200	34,068,400	30,153,800	28,911,000	26,310,000	36,567,298	
Long term debt	64,231,700	17,541,700	13,644,100	1,870,000	-	0	
Ratios & Calculations:							
Y =	Firm's financial performance as measured by return on assets (ROA) = Net income/ Total Assets						
ROA	0.24	0.30	0.35	0.32	0.32		
X ₁ =	Working Capital Management measured by CCC						
CCC	-105.95	-110.53	-110.46	-106.01	-127.14		
DIO	13.27	9.62	8.63	8.45	7.59		
DSO	26.05	25.75	23.74	23.56	25.62		
DPO	145.27	145.90	142.83	138.01	160.35		
X ₂ =	Size of firm (SoF) as measured by the natural log of total assets						
SoF	19.53	19.25	19.17	19.07	18.93		
X ₃ =	Leverage ratio as measured by (long-term debt / total assets)						
LR	0.21	0.08	0.06	0.01	-		
X ₄ =	Sales growth (SG) of the firm i.e. ((Current Sales – previous sales) / previous sales)						
SG	0.13	0.00	0.05	0.07	0.10		