

**SELECTED MACROECONOMIC VARIABLES AND FINANCIAL  
PERFORMANCE OF LISTED MANUFACTURING COMPANIES IN KENYA**

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**DECLARATION**

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

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## ABSTRACT

The government of Kenya's broad target under enhancing manufacturing is to increase the manufacturing share of gross domestic product from 8.4% to 15% to create more jobs but the target remains a mirage owing to the poor performance of the manufacturing sector over years where for instance, sector performance declined to 3.5% in 2019 compared to 4.4% in 2018. Studies globally, regionally and locally have been conducted to establish how macroeconomic variables affect profitability of companies. However, mixed results have been reported pointing to positive, negative, significant and insignificant effect making it unknown as to how economic growth, inflation and exchange rates influence performance of manufacturing firms. The purpose of this study was to establish the influence of selected macroeconomic variables on financial performance of listed manufacturing companies in Kenya. Specifically, the study aimed to; assess the influence of economic growth on financial performance of manufacturing firms registered at the NSE, evaluate the influence of inflation on financial performance of manufacturing firms registered at the NSE and examine the influence of exchange rate on financial performance of manufacturing firms registered at the NSE. The study was guided by; efficient market hypothesis, purchasing power parity and arbitrage pricing theory. This study adopted descriptive correlational research design grounded on panel data spanning 6 years from 2015 to 2020 with a target of 8 listed manufacturing firms. Panel data analysis was deployed to establish the influence of economic growth, inflation and exchange rates on financial performance. Economic growth and inflation had a positive significant influence while exchange rates showed negative influence on performance with coefficients 0.358, 2.764 and -1.532 respectively such that 1% increase in economic growth and inflation increased performance by 0.358% and 2.764% respectively while 1% increase in exchange rate decreased performance by 1.532%. The study recommends formulation of prudent macroeconomic policies including bail outs during pandemics are geared towards enhancing performance of manufacturing firms as envisaged under the Big four agenda and Vision 2030 blue print.

## **DEDICATION**

This work is dedicated to my beloved family; wife Celestine Mate, my children Blessings Isaiah Mukonjero, Joshua Miracle Chuck Patterson and Gamaliel Asaph Azrael, my mother Jane Mate, Brother Chuck Patterson and the wife Venice Chuck and the entire SOMA mission support, God bless you all abundantly.

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## ACRONYMS

|               |  |
|---------------|--|
| <b>APT</b>    | Arbitrage Pricing Theory                           |
| <b>CBK</b>    | Central Bank of Kenya                              |
| <b>EMH</b>    | Efficiency Market Hypothesis                       |
| <b>IMF</b>    | International monetary fund                        |
| <b>KAM</b>    | Kenya Association of Manufacturers                 |
| <b>KIPPRA</b> | Kenya Institute of public policy Research Analysis |
| <b>KNBS</b>   | Kenya National Bureau of Statistics                |
| <b>KRA</b>    | Kenya Revenue Authority                            |
| <b>NSE</b>    | Nairobi Securities Exchange                        |
| <b>PPPT</b>   | Purchasing Power Parity Theory                     |
| <b>ROA</b>    | Return on Assets                                   |
| <b>TR</b>     | Treasury Report                                    |
| <b>WEF</b>    | World Economic Forum                               |
| <b>VIF</b>    | Variance Inflation Factors                         |

## DEFINITION OF TERMS

|                               |   |
|-------------------------------|---|
| <b>Economic Growth</b>        | Rise in the manufacture of commercial merchandises and services, likened from one period to the other, Charles, (2021).   |
| <b>Exchange Rate</b>          | Value of one currency for purposes of conversion with another (Bretton Woods, 2021).  |
| <b>Financial Performance</b>  | Financial performance as defined by Novak (2008) is the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. |
| <b>Gross Domestic Product</b> | Is the total market value (the amount that a product would trade for in the open market) of all goods and services produced within a specific a location over a particular time period.   |
| <b>Inflation</b>              | Inflation is the decline of purchasing power of a given currency over time. Sabrina Jiang.(2021)Is sustained or persistent increase in the general prices of goods and services in the long run.  |
| <b>Return on Assets</b>       | Quantity of money a firm earns by putting its assets to use. It measures the efficiency or profitability of a firm relative to its.   |

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

A firm exists as a body that optimizes available scarce resources to produce goods and services to be sold to customers at a profit. Increased or decreased profits indicate improved or declining financial performance of the firm (Haider, Anjum, Sufyan, Khan and Khan, 2018). Measurement of financial performance as noted by Haider et al. (2018) is by profits, size, market share, worker and client satisfaction, societal and conservational performance where diverse ratios such as return on asset (ROA), liquidity and turnover ratios among others are commonly used to measure the financial status of firms. Challenges of competition in globalization period have influenced several firms to realize the significance of financial performance that aid sustainability of businesses. Undoubtedly, the firms' performance is informed by both inside factors and outside factors considered to be macro (Dewi, Soei and Surjoko, 2019). Firm is an organization that combines and organize resources for producing goods and services to sell in the market to its customer to earn profit.

Manufacturing firms can be defined as firms that are involved in processing materials to finished products usually at a large-scale industrial operation which are then sold to the consumers with main aim of making profits.

The organization that brings together resources, produces goods, and offers services and sell them to customer through market in order to earn profit is referred to as firm. The goal of the firm is to increase its worth and earn more and more profit. Better financial

performance is the way to satisfy the investors, which implies that company is either moving towards growth or slump. There are many factors that are used to judge financial performance. These factors are customer's satisfaction, employee satisfaction, firm size, profitability, social performance, environmental performance and increase in market value. The macroeconomic as well as microeconomic variables impact the performance of a business. It is necessary for a business to be alert regarding these factors so as to order to minimize their impact on profitability. Some microeconomics factors can be easily controlled and the influence of these are easily controllable and projected. These microeconomic factors are production factors and demand but various macroeconomics variables cannot be controlled, the examples of these macroeconomics variables are unemployment and corporation tax

The ultimate objective of firm is to maximize its value and increase their profit. Better financial performance is the way of satisfying its investors. This indicates the company's trend that is either improving or declining. The financial performance is judged by profitability, firm size, and maximization of market value, employee satisfaction, customer's satisfaction, environmental performance and social performance. There are different ratios that measure the financial health of firms some are common for all and some depends on nature of industry, these ratios are return on assets, return on equity, profit margin, revenue, sale growth, liquidity ratio, stock prices, dividend payout ratio, inventory turnover ratio and cash flow ratio.

It has been proved worldwide that there is a significant relationship between performance of a firm and exchange rate, interest rate, inflation rate and GDP volatility. These are the major macroeconomic variables that impact the performance of a firm: money supply, real

activity, goods price, interest rate, exchange rate, political risks, oil prices, unemployment, domestic consumption, imports, trade deficits, budget deficits, the trade sector, imports, real wage and regional stock market indices.

Micro and macroeconomic factors affect the performance of firms either positively or negatively where micro factors happen within the business which management can control such as production capacity, reduced costs, structural culture, governance, production quality, demand and production factors while macro variables are exogenous such as economic conditions, political, social, environmental, competition, government regulations and policies making their control by management impossible (Egbunike & Okerekeoti, 2018). It is therefore vital that firms understand these factors for the sake of controlling their effect on the future financial performance (Issah & Antwi, 2017). According to KIPPRA (2020), real gross domestic product (GDP) growth rate, public debt as a percentage of GDP, average overall inflation, population size, poverty level, labour productivity growth, exchange rate and unemployment rate were the key Kenya's macroeconomic and inclusive growth indicators in year 2020.

The study of performance of entire economy is called macro economy. This macro economy has influence on all organizations present in any particular economy. The number of macroeconomic variables that influence the performance of a firm are more than 30, some directly influence the performance of a firm and some indirectly influence the performance of a firm (Haider, Anjum, Sufyan, Khan & Khan, 2018). Macroeconomic factors which prevail in the external environment, affect the financial performance of microfinance institutions both positively and negatively since when adverse, they hamper members' ability to spend and to save.

Internal and macroeconomic dynamics affect the performance of firms either positively or negatively, inside factors occur within the business which management can control such as; production capacity, reduced costs, structural culture, governance, production quality, demand and production factors while macro factors are exogenous such as; economic conditions, political, social, environmental, competition, government regulations and policies making it impossible for the management to control (Egbunike and Okerekeoti, 2018). It is therefore vital that firms understand these factors for the sake of controlling their effect on the future financial performance (Issah & Antwi, 2017).

According to KIPPRA (2020), gross domestic product (GDP) growth rate, overall inflation, population size, poverty level, labour productivity growth, exchange rate and unemployment rate were the key Kenya's macroeconomic and inclusive growth indicators in year 2020. However, survival and growth of firms also depend on interaction of macroeconomic factors and firm characteristics. Using data from nine African countries, it was also found out that income level, growth rate and inflation influence the capital structure of firms. However, this is further affected by industry- and firm-specific characteristics. Ghareli and Mohammadi (2016) reported mixed findings for the effect of firm-specific characteristics on financial reporting quality. Studies have also substantiated the effect of firm characteristics on financial performance (Dioha et al., 2018). For instance, firm characteristics such as firm age (Swiss, 2008), firm size (Malik, 2011), liquidity (Dogan, 2013) and leverage (Mule and Mukras, 2015) have been associated with profitability. The recent study by Foyeke et al. (2015) on a sample of firms from both financial and non-financial sectors in Nigeria revealed a significant positive relationship



between financial performance and firm size with the level of corporate governance disclosure. Thus, given the interaction of the two factors in determining performance, there is a need for additional evidence on the joint association between macroeconomic factors, firm characteristics and financial performance in developing countries (Adeoye and Elegunde, 2012). More so, Izedonmi and Abdullahi (2011) have shown that the influence of macroeconomic factors varied from sector to sector. Therefore, there is a need to examine using such firms from the consumer goods sector.

Macroeconomic is the study of the economy as a whole that is it focuses on the behavior of an entire economy the “big picture” which can be regional, national or international. Macroeconomic variables include interest rates, economic output, employment, unemployment, inflation, government budget balances, National saving rate and finance, international trade balances, finance and productivity. This study the researcher will consider five macroeconomic factors: Inflation, Gross Domestic product, Exchange rate, Inflation as a sustained or persistent increase in the general prices of goods and services in the long run. This is primarily brought about by the national saving rate and employment rate. increase in earning which is not proportionate with the increase in the production of goods and services. Due to the case of more money chasing few goods general prices of goods and services are bound to increase leading to significant reduction in disposable income and the purchasing power of the low income earners bracket of population. Inflation was measured by average annual rate of inflation. Average inflation is the arithmetic mean for of the month by month inflation normally reported by the Kenya National Bureau of Statistics for each of the twelve months forming one year. The effect of the macroeconomic factors might change from one country to another and from one-

time period to another resulting in conflicted results from researchers. The conflict in results does not necessarily mean that some results are wrong and the others are right

Exchange rate is determined by the demand and supply of the foreign currency (BOP), trade balance, current account balance and capital account balance. Exchange rate is the value of a country's currency against that of another country. Average exchange rate used in this study was the exchange rate of the Kenyan shilling against the USA dollar. This study will compare exchange rate movements of the Kenyan shilling against the US dollar.

Gross Domestic Product (GDP) as the total market value (the amount that a product would trade for in the open market) of all goods and services produced within a specific location over a particular time period. GDP includes all products that are sold in the home market as well as some non-market items like educational services paid for by the government. GDP for Kenya is measured by the annual economic growth rate.

For many countries, the estimates of national saving are built up from national accounts data on gross domestic investment and from balance of payments-based data on net foreign investment. Despite the financial liberalization in Kenya, savings rates have generally remained very low. Kenya's development road map dubbed the vision 2030 stipulates that by the year 2030, Kenya shall be a middle income country and one of the ways of achieving this is to encourage saving among the Kenyan households because this contributes to national economic growth. The gross domestic savings ratio has an average of only 14.6 percent of GDP through the period 1970 – 2013. national saving rate is measured by annual rate reported by the government. GDP growth rate is the proxy for economic growth and

is the arithmetic average growth for twelve months as reported by the Kenya National Bureau of Statistics.

Macroeconomic variables have an impact the financial performance of manufacturing firms in the following ways: inflation reduces people disposable income and reduces people capacity to save and reduces the spending power of individuals. This will mean that the profits of firms will decline since fewer loans interest was earned. Gross Domestic Growth rate will influence financial performance in relation with the level. In times of upwards fluctuations then profitability is increased and times of downward fluctuations the performance is low. Exchange rates stability means stable profits for the microfinance institutions while devaluation of the local currency against the US dollar means low performance.

Macroeconomic and microeconomic variables impact the performance of a firm either positively or negatively. It is necessary for a business to be alert regarding these factors in order to minimize their impact on profitability. Some microeconomics factors can be easily controlled and the result of these are easily controllable and projected. These microeconomic factors are production factors and demand but various macroeconomics variables cannot be controlled, the examples of these macroeconomics variables are unemployment and corporation tax.

Macroeconomic factors impact on great populations and not just on individuals. The macroeconomic variables might have effects that are negative or positive on the business setting. Any change in the set of macroeconomic variables will bring a change to the operating environment of the firms and have an impact on their performance. The

macroeconomic environment of businesses is not static and therefore, this may affect the financial performance. Economic factors have an influence on performance financially. Economic conditions greatly influence funds allocation and it is probable that financial decline may arise. These conditions would have outright effects, whether negative or positive, on lending behavior. Firms reduce their production during recession thus macroeconomic conditions variance is significantly reduced. The economic environment is a routine risk component that has an impact on the economy. Economic Performance and progression are calculated in terms of macroeconomic aggregates

Several studies have been undertaken on macroeconomic variables and their effects on firm's financial performance though on varied context thus exploring the correlation between macroeconomic variables and financial performance of the manufacturing firms in Kenya and establish varying extent of influence between the selected macro-economic variables and returns of private equity firms as measured by return on investment. Kipkirui&Abednego (2019) on the other hand examined the effect of macroeconomic variables on financial performance; evidence from NBFIs in Kenya measured by return on assets (ROA). He found out that there was difference in the effects of variables and according to the results only currency exchange rate has a strong positive relationship 2 with ROA. While Njau's study limited itself to private equity firms and his study excluded non-bank institutions in Kenya, the current study aims at ascertaining the influence of selected macroeconomic variables on financial performance of all listed companies at NSE from the year 2006 to 2015. Return on Assets is the measure of profitability of a company which is arrived by dividing the net assets and the net income by the amount of its assets. ROA also measures how well a fund is doing financially.

The Kenya's manufacturing sector has grown with an average of 4 percent each year for the past 10 years indicating a quiet strong sector. The sector now provides for over 12 percent of the formal jobs and accounts for 20 percent of economic activity. The quickly growing areas have been chemicals, metal production and dairy which expanded by around 50 percent between 2010 and 2013 (KPMG, 2015). It has been observed that Kenya enjoys a geographical advantage by having access to the port as compared to other landlocked countries in East Africa. The Economic Report Survey has shown that the manufacturing sector has the potential to grow and needs more investment. The most notable manufacturing firms in Kenya are; East African Breweries Ltd, British American Tobacco Kenya, Bamburi Cement Ltd, Athi River Mining, Sameer Group, Devki Group of companies, Bidco Africa Ltd and Brookside Dairy Ltd among others. The manufacturing sector faces challenges that hinder its growth. These challenges include; Tax policy where the VAT refunds take too long to be refunded which limits the cash flow of the manufacturing sector. Another challenge that faces the industry is devolution with counties having stringent policies that increase the transaction costs for investment. The accessibility to finance is a major factor on manufacturing firms. Finances are limited with interest rates going up to around 18 percent with those opting for microfinance even higher than this. In the Kenya Economic update report by (World Bank, 2016) there was speculation that the business environment was not promising enough for investment. The report highlights high financing costs, poor infrastructure and accessibility, high insecurity and the fluctuating exchange rates that affect exports of final products and importation of raw materials as major challenges in the manufacturing sector.

Studies investigating the effect of macroeconomic variables have been conducted globally, regionally and locally focusing on different sectors of the economy. For instance, Issah and Antwi (2017), Dewi et al(2019), Cyril and Okechukwu (2014) established positive effect in United kingdom (UK), Indonesia, Nigeria and Kenya respectively while Haider et al. (2018),Nurlaily,Suhadak,Kusdi,Wen,His&Lydia(2011),Kipkirui&Abednego(2019)established negative effect in Pakistan, Indonesia and Kenya respectively. This mixed results is an indication that it remains uncertain as to what effect of macroeconomic variables have on profitability of manufacturing companies. Therefore it is necessary to undertake a study to establish the influence of selected macroeconomic indicators on financial performance of manufacturing firms listed at Nairobi Securities Exchange (NSE).

## **1.2 Statement of the Problem**

In the medium-term, the republic of Kenya plans to realize all-encompassing progress by warranting growing industrial sector to generate employment (KIPPRA, 2020). Broader target under enhancing manufacturing within the five-year plan from 2018 to 2022 is to grow the manufacturing share of GDP from 8.4 % to 15 % (Government of Kenya, 2020). The target remains a mirage owing to the poor performance of the manufacturing sector over years where for instance, according to KIPPRA (2020) report, progress in the industrial division declined to 3.5% in 2019 in relation to 4.4% in 2018. This decline is attributed to a slump in production of consumption goods and global recession among other macroeconomic challenges that have made 42% of manufacturing firms to operate at less than half their production capacity (KPMG & KAM, 2020) which has led to poor financial performance. KNBS reported that from the year 2017 to 2018 there was a massive job loss from 910,000 to 841,000 employees which had a negative effect on the financial

performance. Reduced financial performance has led to many companies shutting down such as; Webuye pan paper, East African Portland cement, Raymonds and even some operating at half capacity such as Mumias sugar company. The precondition for listed firms to be sustained and develop is dependent on their financial performance. The poorer financial performance has been caused by series of problems associated with transitional economic background; including historical factors, higher risks of the listed firms affecting competitiveness and sustainable development of the firms

In Kenya, most studies have not addressed the effects of these indicators or factors on manufacturing firms for example, the policy on inflation, exchange rate or Economic growth caps may have had a significant effect which no study has taken into account. The prioritization of manufacturing sector as one of the major agendas by the president also may have some effect on the performance of the firms. Therefore, this study is assessing all these factors putting into consideration a wide scope of five years.

Some studies have attempted to link the economic growth and performance of the microfinance institutions. These studies, however, are not fully complete, since they only look at one aspect of firms' success but not the challenges faced by the firms.

To ensure sustainability of the manufacturing sector it is imperative to identify the main macroeconomic aspects that affect financial performance. Several studies; globally, regionally and locally have been conducted to establish how macroeconomic factors affect financial performance of firms. However, mixed results have been reported pointing to positive, negative, significant and insignificant influence of economic growth, inflation and exchange rate on financial performance, more importantly, studies conducted in Kenya

rarely focused on manufacturing firms listed at the NSE, this makes it unknown as to how; economic growth, inflation and exchange rates affect performance of manufacturing companies. To bridge the knowledge gap, it was necessary to conduct a study on the influence of selected macroeconomic indicators on financial performance of listed manufacturing companies in Kenya.

### **1.3 Objectives**

#### **1.3.1 Main Objective**

The study seeks to establish the influence of selected macroeconomic variables on financial performance of listed manufacturing companies in Kenya.

#### **1.3.2 Specific Objectives**

- i. To assess influence of economic growth on the financial performance of listed manufacturing companies in Kenya
- ii. To evaluate influence of inflation on the financial performance of listed manufacturing companies in Kenya.
- iii. To examine influence of exchange rate on the financial performance of listed manufacturing companies in Kenya.

### **1.4 Research Hypothesis**

The listed hypotheses guided the study

$H_{01}$  :Economic growth has no significant influence on financial performance of listed manufacturing companies in Kenya.



$H_{02}$ : Inflation has no significant influence on financial performance of listed manufacturing companies in Kenya.

$H_{03}$ : Exchange rate has no significant influence on financial performance of listed manufacturing companies in Kenya.

### **1.5 Significance**

The government being the sole formulator and implementer of macroeconomic policies both fiscal and monetary will benefit immensely by its policy makers getting to understand the link among macroeconomic factors and financial performance of manufacturing companies. This will help in coming up with policies that are geared towards enhancing manufacturing as envisaged under the Big four agenda and Vision 2030 blue print.

Manufacturing firm's management will be able to come up with appropriate policies that will leverage on internal controls for instance where it may be predicted that macroeconomic policies are not going to be favorable to their objectives of maximizing profits hence putting the firm on her competitive edge.

The study will also be of importance to all stakeholders in the macro economy whose daily operations or activities and transactions are affected in one way or another by the ever-changing effects of the forces in the wider and global market. This is not limited to companies listed at the NSE. The management and owners of firms will have an invaluable source of empirical data to forestall their strategies and policies in order to improve their financial performance which will also provide an insight for planning and thus setting of the companies' goals. The study will be useful to investors since the findings on the effects

of macroeconomic variables on financial performance will offer them an insight on when to venture the market and on the choice of the company.

To academicians, scholars and researchers, the study will add onto the knowledge already available on macroeconomic variables and their effects on financial performance at NSE. It will open up and suggest areas for further research using this study as an important point of reference for literature and for the research gaps. Government agencies such as Central Bank of Kenya, Capital Markets Authority, Kenya Revenue Authority and policy makers will find this work a useful guide when formulating policies such as; fixing the rate of interest, control of inflation, tax collection, allocation of resources or budgeting and formulating regulatory frameworks for doing business. This will be geared towards rightful decision making.

These study findings augment existing research works on the link among macroeconomic indicators and financial performance of firms from the perspective of manufacturing firms that will be of interest to academicians and future researchers in making findings that will offer solutions to the relevant existing problems

## **1.6 Scope**

The Nairobi stock exchange (NSE) was established in 1954 through the association of brokers. The NSE has stand the test of time as today is poised to be one of the leading markets in east and central Africa in providing long term capital financing for investment. It has played a pivotal role in increasing investor confidence and enhancing mobilization of resources and growth of the Kenyan Economy, Nairobi Stock Exchange is regulated by Capital Markets Authority (CMA) for policy and legal compliance. There are a total of 67

listed companies which are grouped into; Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Investment Services, Manufacturing and Allied and Telecommunication and Technology.

The study was restricted to selected macroeconomic indicators and performance of listed manufacturing companies in Kenya, Kenya. Quarterly data spanning six years from 2015 to 2020 was used for the seven manufacturing firms that included: B.O.C Kenya, Unga group, Kenya Orchads Limited, Carbacid investment Limited, Flame Tree Group Holdings Limited and Eveready East Africa Limited. The selected macroeconomic indicators included economic growth, inflation and exchange rate.

### **1.7 Limitations of the Study**

By focusing on listed manufacturing companies in Kenya implied that the study ignored other smaller manufacturing firms not listed at NSE. Therefore, the study results might be generalized to the smaller firms.

The study used secondary data, which had already been obtained and was in the public domain, unlike the primary data which is first-hand information. Possible errors which might have occurred in the process of measurement or during recording may have been carried along into the research results.

The study was also restricted only to only manufacturing firms trading at the Nairobi Securities Exchange on the macroeconomic indicators and therefore caution should be

taken in generalizing the findings of this study. The analysis has also been constrained by the sample size. This could have affected the generalizability of the results.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This section reviewed theoretical and empirical literatures relevant to the variables of interest hypothesized using a conceptual framework. The chapter also showed how this research relates with current body of information and identifies criticism, research gaps and a summary of the existing in body of knowledge. Moreover, the chapter will also undertake empirical review of the previous research of other scholars and researchers that have been done on the relationship of macroeconomic variables. Finally, literature on the determinants of the financial performance of firms will be explored.

#### **2.2 Theoretical Review**

This framework helps in the creation of a reasonable sense of connection between the variables and theories that are relevant to the study. It defines the association between the variables chosen for the theories to be used and how they link. It therefore guides the research in choosing the factors to be measured and statistical relationship.

##### **2.2.1 Efficient Market Hypothesis**

A concept propounded by Fama (1970) stating that earnings as a result shareholder's rivalry due to profit-maximizing actions makes it impossible to attain increased profits. He differentiated three systems of the hypothesis that is weak, semi-strong and strong. Majority of empirical studies have been based on the semi-strong system. The hypothesis assumed players in the economy have everything required in regards to evidences connecting fluctuations in macroeconomic indicators and stock prices.

Changes in stock prices are evaluated by macroeconomic indicators including money supply, inflation, growth and exchange rate amongst others (Fama, 1981; Mayasami & Sims, 2002). Efficient market hypothesis assists in making inferences that variation in macroeconomic factors certainly impacts stock prices either negatively or positively. The study was consequently aimed towards determining the anticipated link between macroeconomic indicators and market performance of Kenya's stock.

### **2.2.2 Arbitrage Pricing Theory (APT)**

Stephen Ross in 1976 advanced this hypothesis by postulating that an asset's yields can be projected using direct association of an asset's probable yields and the macroeconomic indicators that affect the asset's risk. APT provides policy makers and investors a multi-factor pricing function for securities, built on the connection between a financial asset's expected return and risks. The APT purposes to identify the market price of a security that may be erroneously priced. APT assumes that trading action is not always perfectly efficient, and hence sometimes results in assets being overvalued or undervalued. Saeed and Akhter, (2012) suggested that projected yield of an asset depends on regular risks that include macroeconomic issues, which are not diversifiable practice measures.

Sadiye (2014) further argued that the theory uses numerous indicators hence a multiple variable model. The sensitivity of undertakings in each variable is presented with a beta coefficient that designates the unique sensitivity of each particular variable (Ouma & Muriu, 2014). The model also links expected return of an asset to multiple risk factors where Ouma and Muriu (2014) outlined numerous security risks that included variations in interest rates, inflation and growth.

APT, offer traders a function to evaluate the hypothetical value of an asset where after obtaining the value, traders identify slight deviations from the fair market price, and trade accordingly. The study was geared towards determining various macroeconomic variables in stock market in relation to financial performance of firms.

### **2.2.3 Theory of Purchasing Power Parity**

Cassel (1918) came up with the hypothesis which postulates that exchange rate of currencies ought to be equal to the ratio of total price levels between two countries, such that one unit of currency of one country will have an equal purchasing power in a foreign country. Coakley, John & O'Reilly (2005) suggested that the theory could also be stated as inflationary theory of exchange rate as it shows variations in cost levels as the key element of exchange rate developments. PPP can either be absolute or relative where absolute defines the situation where local currency retains the same purchasing power when exchanged to international currency.

Coakley et al. (2005) argued that local currency needs to have the ability to buy equal quantity of commodities across the world. Relative PPP on the other hand, notes that variation in national costs mirrors changes between countries. PPP is a collective device used by merchants to evaluate the over or under valuation of an asset. It is ordinarily used to analyze forex stock pairs. Merchants can use the discrepancy between the PPP rate and exchange rate to evaluate a currency's long-standing projection and valuation.

Purchasing power parity is relevant to the study because it is commonly used metric for measuring gross domestic product (GDP) and by comparing the GDP values in different

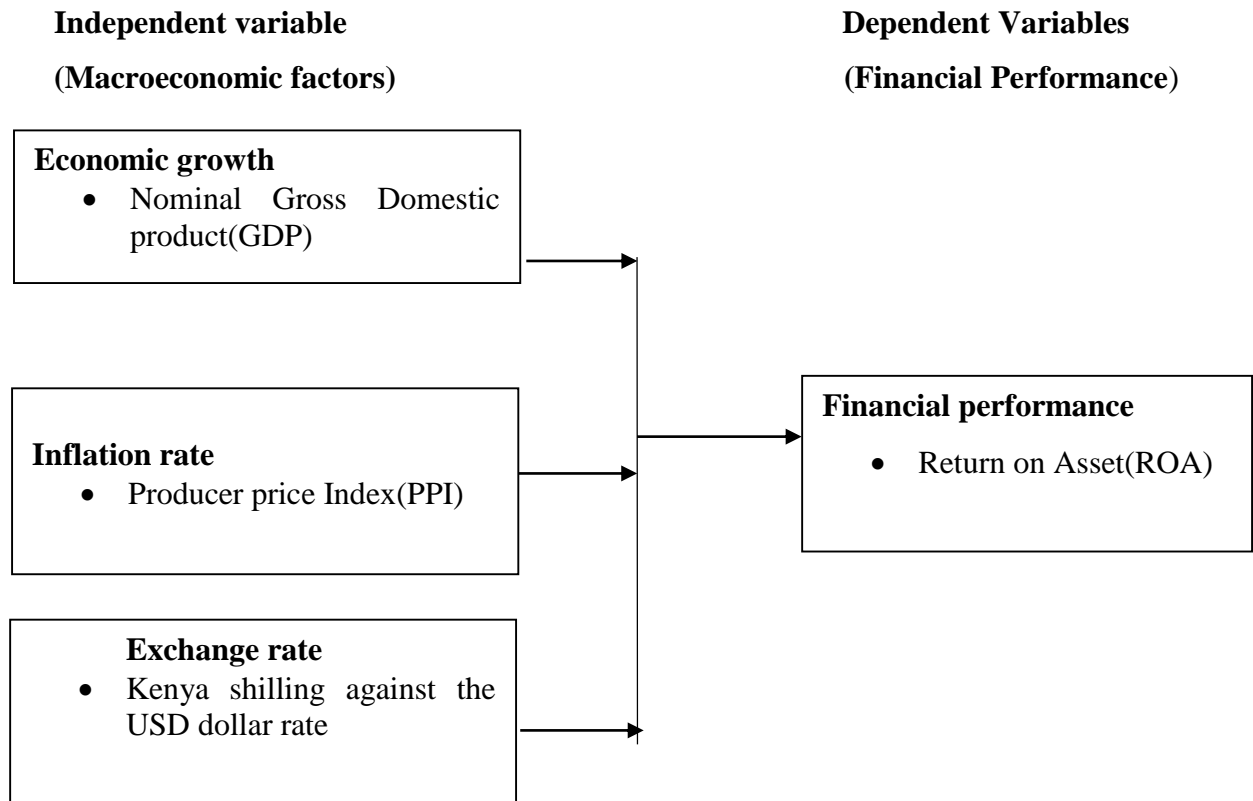
time periods we can tell the level of growth for a country which impacts financial performance of firms either positively or negatively.

#### **2.2.4 Conceptual Framework**

This study was guided by a conceptual frame work in Figure 2.1. The independent variables were economic growth measured by nominal Gross Domestic product, inflation rate measured by producer price index (PPI) rate and exchange rate measured by US dollar rate. Financial performance, the dependent variable was measured by return on asset. ROA captures the fundamentals of business performance and operating capability in a holistic way, leakages of earnings through both payments to capital, and the final return to equity holders. We assume that, profits that are available to shareholders are a fixed function of the firm's total asset base. Where, an organization is working at full capacity and effectively utilizing other factors of production, then, ROA will measure its surplus operational capacity. The model also assumes that this base surplus operating capacity will be modified by the general level of economic activities.

The government general management (or mismanagement) of the economy affect demand for the firm's goods and services in anyone particular year which in turn determine the obtained level of ROA. Management ability to manage the firm's factors of production in anyone particular year will result in individual firm differences. These differences should be captured in the ROA estimation to the so that they are relatively consistent over time. For the purpose of this study, ROA is used as a measure of firm performance which is determined by its asset base and the costs of its other factors of production. ROA measures the earnings before interest, tax, and extraordinary items, divided by net tangible assets (shareholder equity plus liabilities)





**Figure 2.1: Conceptual framework**

## **2.3 Empirical Literature**

### **2.3.1 Economic Growth and Financial Performance**

Financial performance as defined by is the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. Financial performance is also defined as the use of outcome-based financial indicators that are assumed to reflect the fulfillment of the economic goals of the firm. It is also a tool to measure the achievements of the company through its capital structure. Company financial performance can be measured through accounting-based measures calculated from firm's financial statements such as ROE, ROA, and GM This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. The word Performance originated in French which means bring through or to bring something forth. This is a situation where objectives are implemented, achieved and fulfilled which are then measured or compared to the time and resources that are put in to achieve those objectives. Performance in finance refers to achieving these objectives with the minimum financial obligations. It is a threshold that is used to determine the company's success in terms of profits and its financial position usually measured in return on investment, assets, capital invested and equity. Financial performance refers to the measurement of an organizations' financial wellbeing for a certain period of time. The financial action that is taken by the organization determines the sales and the profits that the organization is going to make in its undertaking.

Financial performance mainly relates to profitability, which is a key component of performance, profitability is the effectiveness to which management has utilized the total assets and net assets from a company's statement of financial performance. The Return on Asset is given by net income divided by average total assets. Thus the measure indicates how management is utilizing its real investment resources to generate income. It is also an important measure used to determine a company's efficiency and operational performance through the returns accruing from assets employed by the company.

Financial performance of companies varies among economic sectors, countries and regions over time. It is influenced by a very large number of factors. Profits are different from one year to another and from one company to another. Some companies obtain increases in profit; others record decreases and some even losses, in order to measure the financial performance of is where variety of ratios used of which Return on Asset, return on Equity and EBIT are the major ones and are measures are expressed in monetary units. The techniques widely used for analytical purposes include; ratio analysis, trend analysis and cross sectional analysis. A ratio is a mathematical expression of an amount in terms of another. Ratio analysis gives an objective picture of a company's financial performance because ratios eliminate the size effect.

Egbunike and Okerekeoti (2018) explored the relationship between macroeconomic indicators, company characteristics and performance of quoted consumer goods manufacturing companies in Nigeria by investigating how interest rate, inflation rate, exchange rate and the gross domestic product (GDP) growth rate affect performance. The dependent variable financial performance was measured as return on assets (ROA). Using ex-post facto design, all listed manufacturing companies on the Nigerian Stock Exchange

and multiple linear regression findings indicated positive effect GDP growth rate on ROA. Similarly, Ahmad *et al.*(2020) focused on listed Nigerian companies and the firm value which established that GDP had significant negative effect on firm value and the firm performance. 4 Gross domestic product (GDP). GDP is the total market value of goods and services produced by a country's economy during a specified period of time. It includes all final goods and services, that is, those that are produced by the economic agents located in that country regardless of their ownership and that are not resold in any form.

According to Mwangi (2013), GDP is a most commonly used macroeconomic indicator to measure total economic activity within an economy; its growth rate reflects the state of the economic cycle. It is used throughout the world as the main measure of output and economic activity. In economics, the final users of goods and services are divided into three main groups: households, businesses and the government. Issah and Antwi (2017) investigated the role of macroeconomic variables on firm's performance in the UK. Multiple regression was used to analyze the data. They studied a total of 59 macroeconomic variables, subjected to principal component analysis for variable reduction. The full sample model showed that the following variables lagged ROA; adjusted unemployment rate; benchmarked unit labor costs; real GDP and exchange rate. And five out of the six studied industries had significant F-values. Owolabi (2017) examined the relationship between economic characteristics and financial performance in Nigeria.

Financial performance can also be defined as the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries

or sectors in aggregation. To measure the financial performance there are variety of ratios used of which Return on Asset, Return on Equity and EBIT. Kharawish (2011). The techniques widely used for analytical purposes include; ratio analysis, trend analysis and cross sectional analysis. The economic characteristics were: government expenditure, inflation, interest rate and exchange rate. The sample comprised 31 manufacturing firms listed on the Nigeria Stock Exchange. The duration of the study was from 2010 to 2014. The effect of government expenditure, inflation, interest rate and exchange rate on EPS and ROA was not significant. Interest rate was significant for only ROE, while all the variables (government expenditure, inflation, interest rate and exchange rate) were significant for Tobin's Q. Mwangi and Wekesa (2017) examined the influence of economic factors on firm performance in Kenya. They study used a descriptive research design, and the sample comprised 74 staff working in Kenya Airways Finance Department. The economic factors were interest rate and taxation; the dependent variables of the study were efficiency and growth. The study used primary data. They used multiple regression technique in testing the hypotheses. They found that economic factors had significant effect on performance. Rao (2016) examined the relationship between macroeconomic factors and financial performance in Nairobi. The sample comprised five firms listed under the energy and petroleum sector of the Nairobi Stock Exchange. The study was from 2004 to 2015. The study found a significant negative effect of interest rate and oil price on financial performance. However, GDP growth, exchange rate and inflation rate were not significant. Otambo (2016) examined the effect of macroeconomic variables on financial performance of banks in Kenya. The duration of the study was from 2006 to 2015. ROA was used to measure financial performance while quarterly interest rates, quarterly exchange rates

(USD/KSH), quarterly GDP and quarterly inflation rates were used to measure interest rates. McNamara and Duncan (1995) investigated the firm performance and macroeconomics variables in Australia. Used 14 years' data of macroeconomic variables (1978 to 1991) and financial statements of 41 companies from the top sixty companies on market capitalization basis. The researcher reveals that firm performance is the function of the previous year return on assets (ROA), and macroeconomic variables. The lead lag model of this study suggests that earnings forecasts may be made based on the presented model of this study. (Boyd, Levine, & Smith, 2001) investigated the impact of inflation on financial sectors performance by using GMM method for finding the result. The results indicate that inflation has negative and significant relationship with both banking sectors and equity market, the inflation rate rise the performance will diminish rapidly. The authors pin points the exchange rate volatility and its relationship with performance of Nigerian firm. Author used cross sectional data collected from the 20 most active listed companies on Nigerian stock exchange from 2004 to 2013. The study reveals that the "exchange rate volatility" makes negative significant impacts on rate of return on assets, its portfolio activities & asset turn ratio. It is also reveals that there is negative relation with firm performance, higher exchange rate volatility less the firm efficiency (Kelilume, 2016).

The study by Issah and Antwi (2017) in the UK found that real GDP and exchange rate were significant. Otambo (2016) in Kenya also reported that GDP positively affected ROA but interest rates and exchange rates negatively affected ROA; inflation rates were also not significant

The idea behind the expenditure approach is that the output that is produced in an economy has to be consumed by final users, which are either households, businesses or the

government. Tan and Floros (2012) on a sample of banks in China reported a negative relationship between GDP growth and bank profitability. Sinha and Sharma (2016) also documented a positive relationship between profitability and GDP in India, while Trujillo-Ponce (2013) on a sample of banks in Spain reported a positive impact of GDP growth on ROA and return on equity (ROE).

Alali, Hussain and Ahmad (2018) in exploring the effect of macroeconomic indicators on profitability of insurance companies in Kuwait over the period 2011 to 2017, they used panel data analysis and proved that GDP had no significant effect on the performance of the Kuwaiti insurance companies. Investigating the effect of macroeconomic indicators on profitability of commercial banks listed at NSE, Simiyu (2015) used data from 2001 to 2012 based on panel analysis which showed that GDP positively but insignificantly influenced profitability of commercial banks measured by ROA.

Simiyu (2015) investigated the effect of macroeconomic variables on financial profitability of listed commercial banks listed in the Nairobi Securities Exchange (NSE) from 2001 to 2012 using panel data showed that GDP had positive but insignificant effect on profitability of commercial banks measured by ROA.

### **2.3.2 Inflation and Financial Performance**

Inflation can be defined in different ways and with its effect such as inflation and its effect on the output growth. The traditional aggregate supply-aggregate demand set up shows that a positive relationship exists between inflation and output growth. That is, when an economy grows, inflation also grows. However, in 1970's it was revealed that when stagflation occurs, high levels of unemployment and stagnant goods and services are

experienced (Mohd and Siddiqui (2020)). There have been no uniform findings or no common agreement has since been a dream as different countries; different approaches and different situations have revealed contradicting results on the relation between inflation and output growth. A growing economy is usually characterized by reduced unemployment rates and the gross domestic product. Manufacturing firms play a greater role in both situations such that, they create employment and at the same time have end products exported or used domestically. Therefore, a thriving economy shows the health of the manufacturing industry in a given fourteen countries. Economists, financial analysts and policymakers always emphasize on the cost of a fluctuating inflation.

Inflation refers to the continuous increase in prices of commodities for a certain period of time. It usually shows how expensive a set of goods and services have become in a given period of time, in most cases a year

Inflation occurs due to increasing the price of goods in general during ongoing periods. This is also due to several factors related to the market mechanism, namely the increased consumption power of the community, the distribution of goods, and speculation that triggered consumption because of the added liquidity in the market.

It can also be identified as the constant increase in the general level of price. It can assess in numerous ways. Nonetheless, two frequently used evaluations are the GDP Deflator or a CPI indicator. Higher prices are apt to lessen aggregate buyer's spending leading to a reduction in GDP. However, in this situation, inflation itself is not negative; swiftly increasing the rates of inflation indicates the likelihood of poor macroeconomic health. In various studies, results showed that inflation rate was significantly related with the



profitability firms. Inflation Rate can also be described as a constant increase in the general level of price it can be assessed in numerous ways, however there are two frequently used evaluations are the GDP Deflator or a CPI indicator. Higher prices are apt to lessen aggregate buyer's spending leading to a reduction in GDP. In various studies, results showed that inflation rate was significantly related with the profitability firms, studies have shown suggested significant relationship between inflation rate and performance of manufacturing firms with ROA and Inflation rate being significantly correlated.

Mohd and Siddiqui (2020) steered a study on the effect of macroeconomic indicators on performance of various industries in Pakistan that comprised of textile industry, sugar, automotive, ceramics and cement industries. Results revealed that inflation significantly affected sugar industry; exchange rate significantly influenced textile industry; both inflation and unemployment influenced the financial performance of textile and automotive industry, cement industry was influenced by exchange rate while the macroeconomic variables had no financial effect on the ceramic industry.

Alibabae and Mohammad (2016) studying macroeconomic indicators and company performance measured by ROA in Iran with a biased towards automotive, pharmaceutical and oil products industries from 2009 to 2014, established that exchange rates positively influenced performance of pharmaceutical and oil products industries but negatively for automotive industry while inflation had a insignificant influence on performance of pharmaceutical and oil products industries but positively influenced financial performance in the automotive industry.

Iqmal and Putra (2020) in seeking to know the influence of macroeconomic indicators on stock return, assessed performance of the agriculture sector using 22 companies by the using regression analysis, the results showed inflation and interest rate negatively and significantly affected return on shares while exchange rate positively and significantly affected stock return contrary to the findings, Alali et al. (2018) focusing on the profitability of general insurance companies in Kuwait found no effect of inflation on profitability.

Emase (2017) in probing the effect of macroeconomic variables of GDP, inflation and exchange rate on profitability of Commercial Banks trading at NSE using panel design for 11 trading banks noted that GDP growth and inflation had positive significant effect on banks' return on assets while exchange rate had significant negative influence on profitability of trading banks which contradicted the findings of Chepkirui and Kalui (2021) who found that inflation had insignificant effect.

To examine the effect of macroeconomic indicators on financial performance of savings and credit cooperatives in Nairobi, Mwaniki (2018) used a descriptive design with 35 institutions based on quarterly data from 1997 to 2016. Vector error correction analysis findings showed lack of statistically significant relationship between return on assets and inflation.

Investigating macroeconomic indicators role on firms' returns: evidence from United Kingdom Issah and Antwi (2017) established that GDP and unemployment rate had negative and positive significant effects on ROA respectively. Similarly, Haider et al. (2018) examined the macroeconomic variables impact on financial performance

automobile companies in Pakistan using general method of movement. The results revealed that inflation, GDP and exchange rate had a significant negative influence on return on.

Nyamu (2016) studying insurance firms in Kenya by employing descriptive research design using 50 Insurance firms and regression findings indicated positive insignificant relationship between performance of insurance firms and inflation and an insignificant. Similarly, Njenga and Kariuki (2020) evaluated the macroeconomic variables' effect on financial performance of Kenya's microfinance banks. Using longitudinal and descriptive research design for seven-year panel data from 2012 to 2018, analysis results indicated inflation rate had an insignificant positive effect on ROA while average lending rate, exchange rate had a significant inverse influence on ROA.

Issah and Antwi (2017) by investigating the role of macroeconomic variables on firms' performance: evidence from United Kingdom established that GDP and unemployment rate had negative and positive significant effects on ROA respectively. Similarly, Haider et al. (2018) examined the macroeconomic variables impact on financial performance of listed companies in automobile sector of Pakistan stock exchange for the period 2007 to 2016. Using general method of movement, the results revealed that inflation, GDP and exchange rate had a significant negative relationship with return on equity, return on assets and gross profit margin. Inflation rate is primarily measured in Nigeria as the percentage change in the CPI which has the food and core index, to give the headline inflation. The CPI measures the price of the representative food and services components such as food, alcoholic beverages, energy, housing, clothing, transport, health, communication, transport. Several studies have shown a negative effect of inflation on economic growth. For instance, the study by Usman and Adejare (2013) in Nigeria reported a negative

relationship between market all share index, market volume and GDP with inflation. Similarly, Alimi (2014) reported a deleterious effect of inflation on financial development; proxied as broad definition of money as ratio of GDP; quasi money as share of GDP; and credit to private sector as share of GDP. The study by Djalilov and Piesse (2016) found a negative relationship with profitability of early transition countries and positive relationship in late transition countries.

The typical cause of hyperinflation is a large increase in a money supply relative to demand. Often this occurs in an economy where the central bank assists the government in a budget crisis by monetizing the debt created through significant deficits. Historically, these deficits commonly stem from one of two causes. First, the deficits are often created quickly, sometimes as a result of required rebuilding in the aftermath of a war. The needed funds may initially be borrowed, but if economic growth lags, the government may have difficulty repaying loans or rolling over debt as the maturity approaches. This situation can be intensified if sellers lose faith in the country 's currency and raise prices as a premium for payment.

Inflation often leads to redistributions of income. The substitution effect illustrates that as inflation affects certain sectors of the economy, consumers shift spending to competing industries. This is not necessarily a negative consequence, but it may affect the relative distribution of incomes quickly if inflation is not evenly distributed across all goods and services. Other redistribution effects result from inflation too. If retiree income is not adjusted for prices, the purchasing power of retirees declines relative to current workers who may be able to demand raises. Tax revenues may also be affected as earned income increases and the income brackets on tax tables are not adjusted appropriately. In both

deflationary and hyperinflation environments, it can be difficult to impede existing price pressures. Hyperinflation often compounds as consumers avoid a diminishing currency and exchange money for real goods. The opposite occurs in deflationary environments where prices are decreasing and consumers may simply hold on to cash instead of consuming since future prices will be lower than current prices. This aggravates aggregate demand further and sustains deflationary pressures.

Nyamu (2016) investigated the effect of macroeconomic factors on financial performance of insurance firms in Kenya by employing a descriptive research design with a population of 50 Insurance firms. Multiple linear regression and correlation was used to analyze data for the study where findings indicated an insignificant positive relationship between financial performance of insurance firms and GDP growth rate and inflation and an insignificant negative relationship between financial performance of insurance firms and lending rates, exchange rates and money supply. Similarly, Njenga and Kariuki (2020) determined the macroeconomic variables' effect on financial performance of Kenya's microfinance banks. Using longitudinal and descriptive research design for seven-year panel data from 2012 to 2018, analysis results indicated inflation rate had an insignificant positive effect on ROA while average lending rate, exchange rate had a significant inverse influence on ROA.

In studying the relationship of macroeconomic variables and financial performance Kairuthi (2014) examined the relationship between inflation and interest rates on stock market performance of companies quoted at the NSE. Secondary monthly data was collected on the variables; stock returns, inflation rates, spot exchange rates and month end liquidity. Data was analyzed using descriptive time series correlation design and found an

inverse negative relationship between inflation rates and stock returns. Furthermore, a positive significant relationship was found to exist between the study variables with Ordinary least squares regression approach being applied to ascertain the relationship of the variables used. Time series analysis ought to have been applied because of the nature of data employed.

Issah and Antwi (2017) did a study on relationship between macroeconomic variables and financial performance of private equity (PE) firms in Kenya and had the objective of establishing the effect of macroeconomic variables: inflation, lending interest rates, GDP growth, non - diversifiable risk and currency exchange rate and financial performance, between the periods January 2011 to March 2012. Regression analysis and time series were applied to examine the causal relationship between selected macroeconomic variables and financial performance. This study made use of various analysis software such as STATA version 11.0, advanced Microsoft Excel and SPSS version 16. The study findings indicated that the selected variables which.GDP growth rate, inflation rate, foreign exchange rates and banking lending rates had the highest impact on financial performance of PE firms. The research recommended that future plans should consider inflation rate and GDP in particular since they have the highest effect on PE firm's earnings

### **2.3.3 Exchange Rate and Financial Performance**

Exchange rate is the relative national price levels between two countries or two economies that use different currencies with nominal exchange rate being a measure in converting the currency in a way that the two price levels are measured in one currency

If exchange rate fluctuations are not controlled by the central bank it leads to speculation in the foreign exchange market and might led to its collapse. In such a case, the economy will plunge into recession because the firm in order to reduce the risk of exchange rate may begin to decline in production and sales of their products which in turn has reduces the level of sales, profits, stock prices, the level of employment and income and many others at the end corporate performance will get a serious Impact from this process. The exchange rate is a key variable in the economy and affects the economy in different ways.

Exchange rate fluctuations disrupt the business plan because they cannot predict the future exchange rate and product pricing are confused, if the currency is converted to an asset, all economic factors try to save their wealth as foreign exchange holdings. In this case, firms face a shortage of capital such as the part of the savings is placed in the hands of banks and firms' runs directly into the exchange, therefore in these circumstances, firms will face a shortage of working capital. Exchange rate fluctuations lead to changes cash available to corporations and their value and the effect on the production and their sale, stock price and corporate value will change. From the point of view of macroeconomic fluctuations in the exchange rate is a factor which creates uncertainty in the economy and fluctuations in the company will be expected. Much of the economic transactions are in kind. If the exchange rate is fluctuating, since prices are unknown even in the future all transactions move towards cash.

To evaluate the effect of macroeconomic indicators on liquidity of banks in Kenya, Soy and Kalui (2021) studied 37 commercial banks using a census study and multiple regression analysis. Results indicated that exchange rate and inflation effect on liquidity was not statistically significant but Simiyu (2015) by investigating commercial banks

trading at the NSE established that exchange rate had a positive significant effect on ROA. Simiyu (2015) by investigating the effect of macroeconomic variables on financial profitability of listed commercial banks in the Nairobi Securities Exchange (NSE) from 2001 to 2012 established that exchange rate had a positive significant effect on ROA. Ahmad et al. (2020) in examining 300 Nigerian companies using enterprise value ratio to measure firm value and GDP growth and Inflation as macroeconomic variables. Results based on panel analysis indicated that GDP had negative significant influence on company value while there was a significant positive influence by exchange rate. Egbunike and Okerekeoti (2018), similarly exploring financial performance of Nigerian firms indicated that exchange rate had no significant effect on financial performance. Bhattarai (2018) examined the impact of bank specific variables and macroeconomic variables on the performance of commercial banks in Nepal for the period 2011 to 2016. Regression results revealed that macroeconomic variables; economic growth, inflation and exchange rate had no significant impact on bank performance.

Alibabae and Mohammad (2016) studying the effect of macroeconomic factors on firm performance measured by ROA in Iran with a focus on automotive, pharmaceutical industries and oil products from 2009 to 2014, established that exchange rates positively influenced performance of pharmaceutical and oil products industries but negatively for automotive industry. Inflation had an insignificant influence on performance of pharmaceutical and oil products industries but positively influenced performance in the automotive industry. Exchange rate.

According to Business Dictionary, exchange rate is the price for which the currency of a country can be exchanged for another country's currency, consequently exchange rate is



the value of two currencies relative to each other. It is the price of one currency expressed in terms of another currency. It is the price at which the currency of one country can be converted to the currency of another. Exchange rates are either fixed or floating. Fixed exchange rates are decided by central banks of a country whereas floating exchange rates are decided by the mechanism of market demand and supply (The Economic Times, 2017). Factors that influence exchange rate include: interest rates; inflation rate; trade balance; political stability; internal harmony; general state of economy; and quality of governance. Martin and Mauer (2003) showed that understanding the impact of foreign exchange risk is a critical element for purposes of firm valuation and risk management.

Exchange rate risk occurs when there are influential foreign liabilities which are not compensated by investments in the same currency. Recently, there have been significant exchange rate movements of the US Dollar and the Swiss Franc when both currencies appreciated against the Euro. This fact might have negative impact on the profitability of insurance companies and their solvency. The problem arises when big firms finance their business activities in countries with the Euro currency from Switzerland and vice versa. Thus analogously holds for the appreciation of the US Dollar against the Euro. Therefore, particularly insurers conducting business in foreign countries should consider application of suitable hedging strategies. Exchange rate risk management is an integral part in every firm 's decisions about foreign currency exposure. Currency risk hedging strategies entail eliminating or reducing this risk, and require understanding of both the ways that the exchange rate risk could affect the operations of economic agents and techniques to deal with the consequent risk implications. By selecting the appropriate hedging strategy is often a daunting task due to the complexities involved in measuring accurately current risk

exposure and deciding on the appropriate degree of risk exposure that ought to be covered. The need for currency risk management started to arise after the break down of the Bretton Woods system and the end of the U.S. dollar peg to gold in 1973. The issue of currency risk management for non-financial firms is independent from their core business and is usually dealt by their corporate treasuries.

Currency fluctuations enter into the import price, producer price and Consumer Price Index (CPI). Exchange rate movements are transmitted to domestic prices through three channels. First is through prices of imported consumption goods, exchange rate movement affects domestic prices directly. Secondly is through prices of imported intermediate goods, exchange rate movement affects production cost of domestically produced goods. Thirdly is through prices of domestic goods priced in foreign currency. The extent to which those changes reflect in the consumer price index (CPI) depends on the share of imports in the consumption basket. When depreciation results in higher prices for imported goods, then demand for domestic goods which compete with imports increases. As demand rises there will be upward pressure on domestic prices and nominal wages. Rising wages will exert further upward pressure on domestic prices. Pass-through consists of two stages. In the first stage, changes in exchange rates are transmitted into the prices of imported goods. Depreciation of a country's domestic currency is typically expected to result in an increase in import prices. If the effect of the depreciation is fully reflected in import prices, then pass through is said to be full or complete. If only a portion of the depreciation is reflected in import prices, then pass-through's described as partial or incomplete. In the second stage of pass-through, change in import prices are transmitted to consumer prices. Exchange rate fluctuations may have implications on the general price level in any economy depending

on the share of imported goods in overall consumption (imports penetration ratio). Open economy macroeconomics theory postulates that a small open economy is an international price taker. Therefore, in every aspect of trade in exports, the government will make deliberate efforts to encourage exports at all costs. In this pursuit, the government will deflate the exchange rate.

Examining impact of macroeconomic indicators on banks' performance in Nepal, Bhattarai (2018) using regression revealed that macroeconomic variables; economic growth and exchange rate had no significant impact on performance. Alibabae and Mohammad (2016) in their study in Iran by focusing on automotive, pharmaceutical companies and oil products from 2009 to 2014, established that exchange rates positively influenced performance of pharmaceutical and oil products industries but negatively for automotive industry. Inflation had an insignificant influence on performance of pharmaceutical and oil products industries but positively influenced performance in the automotive industry. Exchange rate fluctuation produces an effect on a firm's performance through a number of factors such as cost of imported goods, price of exports as compared to the foreign firms and even the cost of borrowing (Mohammad, Morteza, & Nadia, 2018). Mohammad et al. (2018) suggest that manufacturing firms that are involved in exporting business have high productivity and hence high profitability. An economy that is hinged on a performing export sector is associated with spillovers which move to other sectors in the economy hence leading to economic growth overall. Exchange rate volatility commonly referred to as fluctuation in exchange rate is that time when the domestic currency depreciates or appreciates. It has been noted that, developing countries do not consider exchange rate volatility as a threat rather changing foreign reserves. The countries usually use their

reserve stock in interfering with the forex market in pursuit of containing the exchange rate volatility.

Dewi, Soei and Surjoko (2019) in determining influence of macroeconomic indicators on profitability of fast-moving consumer goods companies in Indonesia using regression established that Gross Domestic Product (GDP) positively and significantly influenced profitability while inflation and exchange did not. Conversely, Nurlaily et al. (2011) investigating influence of macroeconomic variables on performance of Indonesian food and beverage companies from 2004 to 2010 depending on OLS established that inflation and exchange rates had significant negative influence on financial performance. In an attempt to understand the effect of macroeconomic variables on financial performance indicators of Nigerian conglomerates sector, Cyril and Okechukwu (2014), used panel data from 2011 to 2014 involving three firms listed at the Nigerian stock exchange. Using monetary policy rate, exchange rate and inflation rate as macroeconomic variables and earnings per share, return on equity and return on asset as measures of performance it was noted that from the ordinary least squares regression there was a positive significant relationship between monetary policy rate and earning per share, negative relationship between exchange rate and the company's returns in addition inflation rate had an insignificant negative relationship with the return on equity.

## **2.4 Critique and Research Gaps**

An analysis of studies linking economic growth and financial performance indicated a focus on firms dealing with consumer goods, insurance companies and commercial banks which may not give a true reflection of how growth affects the performance of manufacturing companies. Alali et al. (2018), Egbunike and Okerekeoti (2018), and

Simiyu (2015) finding positive significant and insignificant influence of GDP on firms performance points to conflicting results making the results inconclusive and pointing to a scenario where they might be varying depending of the industry hence not generalizable to the manufacturing firms.

Studies linking inflation and financial performance indicated a focus on firms dealing with agriculture sector, banking and SACCOs whose results may not be generalized to manufacturing firms. For a study by Mohd and Siddiqui (2020) on textile, automotive, food, ceramics and cement industries indicated divergent results where inflation significantly affected performance of textile and auto industry but not the food, cement and ceramic industry. The contradicting results make it impossible to conclude how inflation affects financial performance.

Investigations linking exchange rate and financial performance showed that majority of the studies focused the banking sector, automotive, pharmaceutical industries and oil products as opposed to manufacturing firms. Furthermore, contradicting significant positive and negative results as noted by Alibabae and Mohammad (2016) for pharmaceutical and automotive industry make it difficult to conclude how exchange rates affect financial performance. Many researches have been conducted in other countries which have focused on impact of macroeconomic variables on the entire country's economic performance and the majority of these researches concentrate on the financial markets of the developed countries, which do not suffer from the inefficiency problems in developing countries. Similarly, studies conducted in Kenya have majorly focused on the impact of macroeconomic variables on economic development rather than focusing their research on several companies and focusing on several industries.

Kipkirui (2019) in determining how selected macroeconomic indicators affect performance of real estate investment using correlational research design for a period of 36 months from 2016 to 2018 showed that interest rates and exchange rate had insignificant effect while inflation rates had negative and statistically significant effect on performance. The goal of the study is to do a comparative analysis of different firms with respect to how their performance got effected from macroeconomic variables in Kenya as we already know the effect of macroeconomic factors on firms' performance in overall and firm specific context, but how these individual effects can be compared to get a meaningful picture has still not been worked on.

Several studies globally, regionally and locally have been conducted to establish how macroeconomic factors affect financial performance of firms. However, it is imperative to note that there are mixed results pointing to positive, negative, significant and insignificant influence of macroeconomic indicators of economic growth, inflation and exchange rate on financial performance. More importantly, studies conducted in Kenya never focused on listed manufacturing companies in Kenya. This makes it unknown how the macroeconomic factors of economic growth, inflation and exchange rates affect financial performance of manufacturing companies in Kenya. This is summarized in Table 2.1.

**Table 2.1:** Research Gap.

| <b>Author</b>                  | <b>Focus</b>   | <b>Design</b> | <b>Findings</b>  | <b>Gap</b>  |
|--------------------------------|--|---------------|--|---|
| Egbunike and Okerekeoti (2018) | Consumer goods manufacturing firms in Nigeria              | ex post facto | Insignificant effect for exchange rate but positive significant effect for inflation and GDP growth on ROA | The study focused purely on consumer goods manufacturing firms operating in Nigeria. This presents gap with regard to how macroeconomic factors influence non-consumer goods manufacturing firms. |
| Ahmad et al. (2020)            | Listed Nigerian companies' firm value                      | Descriptive   | GDP had significant negative effect on firm value.   | Use of firm's value as a measure of performance may not give true reflection on how GDP affects ROA.  |
| Alali et al. (2018)            | Insurance firms trading in Kuwait                          | panel         | macroeconomic indicators didn't have significant effect on the profitability                               | Findings in service industry may not be generalized to manufacturing firms.   |
| Simiyu (2015)                  | Commercial banks in the Nairobi Securities Exchange (NSE). | Panel         | GDP had positive but insignificant effect on ROA of commercial banks                                       | Findings in service industry may not be generalized to manufacturing firms.   |

|                              |  |             |  |   |
|------------------------------|--|-------------|--|---|
| Mohd and Siddiqui (2020)     | Sugar, textile, garments, automotive, food, ceramics and cement industries in Pakistan | Descriptive | Inflation significantly affected sugar industry, garment and auto industry; exchange rate significantly influenced textile industry; food and cement industry while the macroeconomic variables had no effect on the ceramic industry. | The study did not consider GDP as one of the macroeconomic variable hence impossible to predict the influence of GDP on firm's performance.                                     |
| Alibabae and Mohammad (2016) | Automotive, pharmaceutical and oil products industries in Iran                         | Descriptive | Inflation had an insignificant influence on performance of pharmaceutical and oil products industries but positively influenced performance in the automotive industry.  | The study did not consider GDP and exchange rate as other macroeconomic variables making it impossible to predict the influence of GDP and exchange rate on firm's performance. |



|                               |  |             |  |  |
|-------------------------------|--|-------------|--|--|
| Emase (2017);<br>Kalui (2021) | Commercial Banks listed at<br>the Nairobi Securities<br>Exchange | Panel       | For Emase (2017), GDP<br>growth rate, inflation<br>rate had positive<br>significant ROA while<br>insignificant for Kalui<br>(2021) | Contradicting results make it impossible to<br>get the actual link and also a focus on service<br>industry may not be generalized to<br>manufacturing firms.   |
| Mwaniki<br>(2018)             | Deposit taking savings and<br>credit cooperatives in<br>Nairobi  | descriptive | Inflation had no<br>significant effect on<br>ROA.  | The study focused on banking sector and did<br>not consider GDP and exchange rate as other<br>macroeconomic variables making it<br>impossible to predict the influence of GDP<br>and exchange rate on ROA. |
| Soy and Kalui<br>(2021)       | Commercial banks in<br>Kenya                                     | Census      | Exchange rate had<br>insignificant effect on<br>liquidity.   | Liquidity as a measure of performance is not<br>same as ROA hence results are not<br>comparable.   |
| Bhatarai<br>(2018)            | Commercial banks in<br>Nepal                                     | Descriptive | economic growth,<br>inflation and exchange<br>rate had no significant<br>impact on bank<br>performance                             | Findings in service industry may not be<br>generalized to manufacturing firms.   |

## CHAPTER THREE

### METHODOLOGY

#### **3.1 Introduction**

The chapter described study methodology which is a systematic strategy embraced researchers to reliably and correctly test research hypotheses. Processes and techniques for collection and analysis of data are detailed while collecting processing and analyzing data. The chapter describes the design, population, collection instruments, data sources and analysis techniques employed.

#### **3.2 Research design**

Descriptive correlational design based on quantitative research paradigm was employed where Mugenda (2010) pointed out that descriptive survey research provided data that objectively showed whether significant relationship among variables existed. The design is therefore suitable as it established influence of selected macroeconomic indicators on financial performance of listed manufacturing companies in Kenya.

#### **3.3 Target Population**

As noted by Bartlett *et al.* (2001) and Creswell (2003), target population is a complete set of items from which information is collected from (Bartlett *et al.*, 2001; Creswell, 2003). The population for this study consisted of eight trading manufacturing companies at the NSE by 2020. A population is the entire pool that contains all the elements that the researcher wants to draw a sample from

### 3.4 Data Collection Procedure

According to Burns and Grove (2003), data collection is a detailed and logical process for gathering of facts important to the research objective. The study employed quarterly panel data spanning six years from 2015 to 2020 on economic growth, inflation, exchange and return on assets (ROA) as this provided sufficient information and covered scope period of study as most firms had published their financial reports. Data on economic growth: GDP growth rate, inflation, and exchange rate was obtained from published financial statistics reports of CBK and KNBS websites while ROA information was obtained from published financial records of the NSE trading manufacturing companies.

### 3.5 Data Processing and Analysis

Panel data denotes samples of similar cross-sectional units observed at multiple points at regular intervals where the study adopted panel data analysis based on fixed and random effect model using STATA. The Hausman test was conducted to select random or fixed effect model based on the null hypothesis that the random model is appropriate. A panel regression model 3.1 was relied upon to get the influence of economic growth, inflation and exchange rate on financial performance of trading manufacturing companies. T-Test was used to test hypothesis on individual parameter.

$$ROA_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 EXR_{it} + \beta_4 CVD_{it} + \varepsilon_{it} \quad (3.1)$$

Where;

*ROA* = Return on assets a measure of financial performance

*GDP* = Gross Domestic Product growth rate, a measure of economic growth

*INF* = Inflation rate, measured by quarterly rate of inflation

*EXR* = Exchange rate, measured by quarterly USD dollar exchange rate

$$CVD = \begin{cases} 1 \\ 0 \end{cases}, 1 \text{ with Covid-19 while } 0 \text{ without Covid-19}$$

$\varepsilon$  = Error term capturing other factors

$t$  = Time period, from Quarter 1 2015 to Quarter 4 2020

$i$  = Eight manufacturing firms

$\beta_i$  = Panel regression coefficients

$\alpha$  = Constant

### **3.6 Diagnostic Test**

The study conducted multi linearity, autocorrelation, residual normality and heteroskedastic tests. To ensure that the regression meet the classical assumptions of no multi linearity, no autocorrelation and no heteroscedasticity. The study adopted Wooldridge autocorrelation test, Breusch-Pagan heteroscedasticity test, variance inflation factors (VIF) for multi linearity and Shapiro-Wilk W test for residual normality.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSION

#### 4.1 Research Findings

The chapter will present the outcome of data analysis and findings with respect to the objectives of Study. The general objective was to assess the effect of macroeconomic variables on the financial performance of manufacturing firms listed at NSE. The study employed quarterly panel data spanning six years from 2015 to 2020 on economic growth, inflation, exchange and return on assets (ROA) A discussion of findings is then made to establish the effect of selected macro-economic variables on the financial performance of firms listed at the Nairobi Securities Exchange.

##### 4.1.1 Descriptive Statistics

Mean, standard deviation, minimum and maximum were run to understand the distribution of the variables used that included return of assets (ROA), inflation rate (INF), exchange rate (EXR) and economic growth (ECG).

**Table 4.1: Descriptive statistics**

| Variable | Obs. | Mean     | Std. Dev. | Min      | Max      |
|----------|------|----------|-----------|----------|----------|
| ROA      | 42   | 6.5      | 10.82452  | -34.3    | 36.7     |
| INF      | 42   | 6.031667 | 1.105646  | 4.69     | 8        |
| EXR      | 42   | 102.1629 | 2.490892  | 98.25583 | 106.4592 |
| ECG      | 42   | 4.633333 | 2.280957  | -.3      | 6.3      |

Results in Table 4.1 for the study period 2015 to 2020, we had 42 observations arising from the multiplication between 6 years' study and 7 firms producing a panel of 42 observations where the average return on assets (ROA) for the manufacturing sector, inflation rate (INF),

exchange rate (EXR) and economic growth (ECG) were 6.5, 6.0%, Ksh.102.20 and 4.6% respectively. The standard deviation of 10.82 for ROA which was greater than the mean showed that during the study period there was a wider variability in the performance of the various manufacturing firms as it can be noted that the minimum ROA was at -34.3 which was reported for Eveready in 2020 while the maximum return on assets was 36.7 for Orchard in 2015. The year 2020 was marred with wide spread of COVID 19 that led to lockdowns but the situation seems to have affected Eveready most since the firm had been recording losses from 2018. Inflation rate, exchange rate and economic growth had standard deviation values less than the mean where,  $1.1 < 6.0$ ,  $2.5 < 102.20$  and  $2.3 < 4.6$  for INF, EXC and ECG respectively, an indication that the variability in the variables over time was small. The minimum inflation rate was 4.69% and maximum 8.0% recorded in years 2018 and 2017. The lowest exchange rate was 98.30 and maximum 106.50 for the years 2015 and 2020 while the smallest economic growth rate of -0.3% and maximum economic growth of 6.3 % were record in 2020 and 2018 respectively.

#### 4.1.2 Variables Normality Distribution

The study conducted normality test for the variables to ascertain their distribution over time. Shapiro-Wilk W test was employed with the null hypothesis that the variable is normally distributed at 5% level of significance.

**Table 4.2: Shapiro-Wilk W test for normal data**

| <b>Variable</b> | <b>Obs.</b> | <b>W</b> | <b>Z</b> | <b>Prob.</b> |
|-----------------|-------------|----------|----------|--------------|
| ROA             | 42          | 0.99370  | -0.509   | 0.81030      |
| INF             | 42          | 0.96331  | 0.782    | 0.77115      |
| EXR             | 42          | 0.95571  | 1.048    | 0.52027      |
| ECG             | 42          | 0.94227  | 1.486    | 0.70342      |

**Note.** P-values > 0.05 indicate normal distribution

Normality test for variables guides us on whether to apply parametric or non-parametric tests if the variables are normality or not normally distributed. Shapiro-Wilk W test results in Table 4.2 depicted all W-values being approximately 1, probability values greater than 0.05 and z-values less than the z-critical value of 1.96. This implied the acceptance of the null hypothesis that variables of financial performance (ROA), inflation (INF), exchange rate (EXR) and economic growth (ECG) were normally distributed at 5% level of significance.

#### **4.1.3 Stationarity Test**

To ensure reliability and validity of results when conducting panel data analysis, it is prudent to establish that the variables are stationary. The study employed Levin-Lin-Chu stationarity test based on null hypothesis that the variable is not stationary and alternative hypothesis that the variable is stationary.

**Table 4.3: Levin-Lin-Chu stationarity test results**

| <b>Variable</b> | <b>Panels</b> | <b>Periods</b> | <b>Test Statistic</b> | <b>P-value</b> |
|-----------------|---------------|----------------|-----------------------|----------------|
| ROA             | 7             | 6              | -22.7608              | 0.0000         |
| INF             | 7             | 6              | -4.8277               | 0.0000         |
| EXR             | 7             | 6              | -2.1534               | 0.0156         |
| ECG             | 7             | 6              | -4.0217               | 0.0002         |

**Note.** P-values indicate statistically significant given p-value < 0.05

The critical value for the test static is -1.9470. Test results in Table 4.3 showed probability values less than 0.05 while all the test statistic values for the variables were less than the critical value -1.9470. This implied the rejection of the null hypothesis that the variables

were not stationary at 5% level of significance an indication that financial performance (ROA), inflation (INF), exchange rate (EXR) and economic growth ECG) were stationary hence their usage for analysis would yield valid and reliable results.

#### 4.1.4 Correlation Analysis

Correlation analysis was conducted to establish the association between the variables of ROA, INF, EXR and ECG with COVID-19 as an influencing factor. Since the variables were normally distributed, the study employed Pearson correlation analysis a parametric test whose correlation coefficients ( $r$ ) value range between -1 and 1 ( $-1 \leq r \leq 1$ ). A negative value shows negative association while a positive value signifies a positive association between the variables.

**Table 4.4: Pearson Correlation Coefficients without COVID 19**

| VARIABLE | ROA                  | INF                 | EXR                  | ECG    |
|----------|----------------------|---------------------|----------------------|--------|
| ROA      | 1.0000               |                     |                      |        |
| INF      | 0.3063*<br>(0.0485)  | 1.0000              |                      |        |
| EXR      | -0.3158*<br>(0.0416) | -0.0901<br>(0.5706) | 1.0000               |        |
| ECG      | 0.2442*<br>(0.0191)  | 0.1027<br>(0.5176)  | -0.8243*<br>(0.0000) | 1.0000 |

**Note.** Values in parenthesis ( ) are p-values and \* indicate statistically significant given p-value < 0.05

Test results in Table 4.4 depicted correlation coefficients of  $r = 0.3063$  for financial performance (ROA) and inflation (INF) with a p-value  $0.0485 < 0.05$ ,  $r = -0.3158$  for financial performance (ROA) and exchange rate (EXR) with a p-value  $0.0416 < 0.05$ ,



$r = 0.2442$  for financial performance (ROA) and economic growth (ECG) with a p-value  $0.0191 < 0.05$ ,  $r = -0.0901$  for exchange rate (EXR) and inflation (INF) with a p-value  $0.5706 > 0.05$ ,  $r = 0.1027$  for economic growth (ECG) and inflation (INF) with a p-value  $0.5176 > 0.05$  and  $r = -0.8243$  for economic growth (ECG) and exchange rate (EXR) with a p-value  $0.0000 < 0.05$ . The Pearson correlation coefficients with p-values  $< 0.05$  indicated that there was a significant positive association between; financial performance (ROA) and inflation (INF), financial performance (ROA) and economic growth (ECG) while there was a significant negative association between financial performance (ROA) and exchange rate (EXR), economic growth (ECG) and inflation (INF) but there was no association between; exchange rate (EXR) and inflation (INF), economic growth (ECG) and inflation (INF) given p-values greater than 0.05

An analysis involving COVID-19 (CVD) as an influencing factor produced varying results in comparison to when COVID-19 was not considered as a variable.

**Table 4.5: Pearson Correlation Coefficients with COVID 19**

| VARIABLE | ROA                  | INF                 | EXR                  | ECG                  | CVD    |
|----------|----------------------|---------------------|----------------------|----------------------|--------|
| ROA      | 1.0000               |                     |                      |                      |        |
| INF      | 0.2655*<br>(0.0392)  | 1.0000              |                      |                      |        |
| EXR      | -0.4147*<br>(0.0424) | -0.1082<br>(0.4952) | 1.0000               |                      |        |
| ECG      | 0.2039*<br>(0.0404)  | 0.1793<br>(0.2560)  | -0.8950*<br>(0.0000) | 1.0000               |        |
| CVD      | -0.2481*<br>(0.0131) | 0.4570*<br>(0.0023) | -0.5852*<br>(0.0000) | -0.6432*<br>(0.0000) | 1.0000 |

**Note.** Values in parenthesis ( ) are p-values and \* indicate statistically significant given p-value < 0.05

Table 4.5 results showed Pearson correlation coefficients of  $r = 0.2655$  for financial performance (ROA) and inflation (INF) with a p-value  $0.0392 < 0.05$ ,  $r = -0.4147$  for financial performance (ROA) and exchange rate (EXR) with a p-value  $0.0424 < 0.05$ ,  $r = 0.2039$  for financial performance (ROA) and economic growth (ECG) with a p-value  $0.0404 < 0.05$ ,  $r = -0.2481$  for financial performance (ROA) and COVID-19 (CVD) with a p-value  $0.0131 < 0.05$ ,  $r = -0.1082$  for exchange rate (EXR) and inflation (INF) with a p-value  $0.4952 > 0.05$ ,  $r = 0.1793$  for economic growth (ECG) and INF with a p-value  $0.2560 > 0.05$ ,  $r = 0.4570$  for COVID-19 (CVD) and inflation (INF) with a p-value  $0.0023 < 0.05$ ,  $r = -0.8950$  for economic growth (ECG) and exchange rate (EXR) with a p-value  $0.0000 < 0.05$ ,  $r = -0.5852$  for COVID-19 (CVD) and exchange rate (EXR) with a p-value  $0.0000 < 0.05$  and  $r = -0.6432$  for COVID-19 (CVD) and economic growth (ECG) with a p-value  $0.0000 < 0.05$ . During COVID-19, the Pearson correlation coefficients with p-values less than 0.05 indicated that there was a significant positive association between; financial performance (ROA) and inflation (INF), financial performance (ROA) and economic growth (ECG), COVID-19 (CVD) and inflation (INF) while there was a significant negative association between financial performance (ROA) and exchange rate (EXR), financial performance (ROA) and COVID-19 (CVD), economic growth (ECG) and exchange rate (EXR), CVD and exchange rate (EXR), COVID-19 (CVD) and economic growth (ECG) but there was no association between; exchange rate (EXR), and inflation (INF), economic growth (ECG) and inflation (INF) given p-values greater than 0.05.

#### 4.1.5 Fixed and Random Effect Panel Regression Analysis

After conducting Pearson correlation analysis, fixed and random effect panel regressions were conducted to predict the changes in ROA due to the changes in the macroeconomic variables of INF, EXR and ECG with COVID-19 as an influencing factor.

**Table 4.6: Fixed Effect Results**

| ROA      | Coef.     | Std. Error. | <i>t</i> | $p >  t $ |
|----------|-----------|-------------|----------|-----------|
| INF      | 1.76372   | 1.34140     | 1.31     | 0.064     |
| EXR      | -1.21233  | 0.18971     | -6.39    | 0.000     |
| ECG      | 0.45751   | 0.27672     | 1.65     | 0.751     |
| Constant | 149.26718 | 117.1429    | 1.27     | 0.882     |

**Table 4.7: Random Effect Results**

| ROA      | Coef.    | Std. Error. | <i>t</i> | $p >  t $ |
|----------|----------|-------------|----------|-----------|
| INF      | 2.76372  | 1.27043     | 2.18     | 0.042     |
| EXR      | -1.53183 | 0.09867     | -15.52   | 0.001     |
| ECG      | 0.35751  | 0.06867     | 5.21     | 0.025     |
| Constant | 147.9827 | 114.0604    | 1.30     | 0.204     |

**Table 4.8: Hausman Test Results**

| ROA | (b)<br><i>fe</i> | (B)<br><i>re</i> | S.E. | $p >  Chi^2 $ |
|-----|------------------|------------------|------|---------------|
| INF | 1.76372          | 2.76372          | 9.19 | 1.000         |
| EXR | -1.21233         | -1.53183         | 1.83 |               |
| ECG | 0.45751          | 0.35751          | 1.62 |               |

*b* = consistent under null hypothesis; random effect appropriate

*B* = inconsistent under alternative hypothesis; fixed effect appropriate

Before the interpretation of fixed and random effect results, Hausman test was run to identify the appropriate model between fixed effect and random effect. The Hausman test was based on the null hypothesis that random effect model is appropriate while the alternative hypothesis was that the fixed effect model was appropriate. Results in Table 4.6 capture the variables where ROA as the dependent while INF, EXR and ECG as independent. Columns b (fe) and B (re) captured the fixed and random effect models coefficients with S.E. denoting the standard errors. Given the chi-square p-value ( $p > |Chi^2|$ ) of 1.000 which is greater than 0.05 implied the null hypothesis that the random effect model is appropriate was accepted at 5% level of significance.

From the Hausman test results, Table 4.8 results on random effect were used to extract a regression model (4.1) that establishes the influence of selected macroeconomic indicators of INF, EXR and ECG on financial performance of manufacturing companies (ROA) trading at NSE.

$$ROA_{it} = 147.98 + 0.358ECG_{it} + 2.764INF_{it} - 1.532EXR_{it} \quad (4.1)$$

The regression coefficients 2.764 and 0.358 with p-values  $0.042 < 0.05$  and  $0.025 < 0.05$  for inflation (INF) and economic growth (ECG) respectively having t-statistics  $2.18 > 2.02$  and  $5.21 > 2.02$  showed that inflation (INF) and economic growth (ECG) had a significant positive influence on financial performance (ROA) at 5% level of significance. On the other hand exchange rate having a coefficient -1.532 with a p-value  $0.001 < 0.05$  and t-statistic -15.52 smaller than t-critical -2.02 implied exchange rate (EXR) had a significant negative influence on financial performance (ROA) at 5% level of significance.

**Table 4.9: Random Effect Results (With COVID-19)**

| ROA      | Coef.    | Std. Error. | <i>t</i> | <i>p</i> >   <i>t</i> |
|----------|----------|-------------|----------|-----------------------|
| INF      | 2.08096  | 0.15412     | 13.50    | 0.023                 |
| EXR      | -1.58217 | 0.21209     | -7.46    | 0.004                 |
| ECG      | 0.17345  | 0.02932     | 5.92     | 0.019                 |
| CVD      | -1.79300 | 0.07165     | -25.02   | 0.000                 |
| Constant | 149.7622 | 115.769     | 1.29     | 0.196                 |

The random effect test results in Table 4.9 with COVID-19 variable led to the extraction of a regression model (4.2).

$$ROA_{it} = 149.762 + 0.173ECG_{it} + 2.081INF_{it} - 1.582EXR_{it} - 1.793CVD_{it} \quad (4.2)$$

With COVID-19 as an influencing factor, the regression coefficients 2.081 and 0.173 with p-values  $0.023 < 0.05$  and  $0.019 < 0.05$  for inflation (INF) and economic growth (ECG) respectively having t-statistics  $13.50 > 2.02$  and  $5.91 > 2.02$  showed that inflation (INF) and economic growth (ECG) had a significant positive influence on financial performance (ROA) at 5% level of significance though. On the other hand exchange rate (EXR) and COVID-19 (CVD) had coefficients -1.582 and -1.793 with p-values  $0.004 < 0.05$  and  $0.000 < 0.05$  for exchange rate (EXR) and COVID-19 (CVD) respectively having t-statistics -7.46 and -25.02 smaller than t-critical -2.02 implied exchange rate (EXR) and COVID-19 (CVD) had a significant negative influence on financial performance (ROA) at 5% level of significance.

#### 4.1.6 Diagnostic Tests

The diagnostic tests of residual normality, Multicollinearity, heteroscedasticity and autocorrelation were conducted to ensure that the regression results conform to the assumptions of regression that resulted in the confirmation of the reliability of the test results.

##### 4.1.6.1 Residual Normality

The study conducted normality test for the residuals using the Shapiro-Wilk W test where the null hypothesis was that the residuals are normally distributed at 5% level of significance.

**Table 4.10: Shapiro-Wilk W test for normal data**

| Variable  | Obs. | W       | Z      | Prob.   |
|-----------|------|---------|--------|---------|
| Residuals | 42   | 0.98391 | -0.875 | 0.80931 |

Shapiro-Wilk W test results in Table 4.10 for the residuals indicated W-value approximately equal 1, probability value  $0.809 > 0.005$  and z-value of  $-0.875$  less than the z-critical value of 1.96. This meant that we accept the null hypothesis that the residuals were normally distributed at 5% level of significance.

##### 4.1.6.2 Multicollinearity

Multicollinearity refers to a situation in which there is a strong correlation between independent variables in a study. This test will be employed in the study using Variance. Multicollinearity is meant to test whether the independent variables are highly correlated.

The study employed Variance Inflation Factors (VIF) to test for Multicollinearity based on null hypothesis of no Multicollinearity.

**Table 4.11: Multicollinearity Test Results**

| Variable                | VIF  | 1/VIF    | Variable             | VIF  | 1/VIF    |
|-------------------------|------|----------|----------------------|------|----------|
| <b>Without COVID-19</b> |      |          | <b>With COVID-19</b> |      |          |
| ECG                     | 3.13 | 0.319661 | ECG                  | 3.73 | 0.267945 |
| EXR                     | 3.12 | 0.320447 | EXR                  | 3.17 | 0.315008 |
| INF                     | 1.01 | 0.989366 | CVD                  | 2.51 | 0.398836 |
|                         |      |          | INF                  | 1.43 | 0.698199 |

Test results in Table 4.11 depict VIF values less than 10 and  $\frac{1}{VIF} < 0.1$  for all the independent variables of ECG, EXR, INF and CVD. This implied that the null hypothesis of no Multicollinearity was accepted an indication that the variables were not highly correlated.

#### 4.1.6.3 Heteroscedasticity

Heteroscedasticity is a scenario where the residuals have a constant variance. Breusch-Pagan test for heteroscedasticity was conducted. The null hypothesis for the test was that there is no heteroscedasticity.

**Table 4.12: Heteroscedasticity Test Results**

| Breusch-Pagan / Cook-Weisberg test for heteroscedasticity |          |
|---|----------|
| Ho: Constant variance                                     |          |
| Variables: re   |          |
| chi2(1)   | = 1.08   |
| Prob > chi2   | = 0.2984 |

Breusch-Pagan test results in Table 4.12 indicated a chi-square value of 1.08 that is less than the critical chi-square value of 5.99 and a p-value 0.2984 greater than 0.05. This meant that the null hypothesis of no heteroscedasticity was accepted at 5% level of significance.

#### 4.1.6.4 Autocorrelation

Autocorrelation arises when the residuals in different time periods are correlated. Wooldridge test for autocorrelation involving the null hypothesis that there is no first-order autocorrelation.

**Table 4.13: Autocorrelation Test Results**

| Wooldridge test for autocorrelation in panel data |        |
|---|--------|
| H0: no first-order autocorrelation                |        |
| F( 4, 37) =                                       | 0.53   |
| Prob > F =  | 0.1963 |

Wooldridge test for autocorrelation test results in Table 4.13 indicated an F-value of 0.53 that is less than the critical F-statistic of 2.61 and a p-value 0.1963 greater than 0.05. This meant that the null hypothesis of no first-order autocorrelation was accepted at 5% level of significance.

## 4.2 Discussion

The results on correlation analysis and regression were discussed in-line with the study objectives to examine the influence of inflation (INF), exchange rate (EXR) and economic growth (ECG) on financial performance (ROA) with COVID-19 (CVD) as an influencing factor.



## 4.2.1 Correlation and Random Effect Analysis

### 4.2.1.1 Economic Growth and Financial Performance

The first objective of the study was to assess the influence of economic growth on financial performance of listed manufacturing companies in Kenya. The objective tested the null hypothesis that economic growth had no significant influence on financial performance of listed manufacturing companies in Kenya which was rejected at 5% level of significance. A Pearson correlation coefficient of  $r = 0.2442$  with a p-value  $0.0191 < 0.05$  for financial performance (ROA) and economic growth (ECG) indicated that there was a significant positive association between financial performance (ROA) and economic growth (ECG) without COVID-19 as an influencing factor. That is as the economy grows financial performance improves.

It was noted that COVID-19 (CVD) and financial performance (ROA) had a Pearson correlation coefficient of  $r = -0.2481$  having a p-value  $0.0131 < 0.05$  hence COVID-19 significantly reduced financial performance of manufacturing companies. Having CVD as an influencing factor financial performance (ROA) and economic growth (ECG) had a Pearson correlation coefficient  $r = 0.2039$ , p-value  $0.0404 < 0.05$ . This indicated that even in the presence of COVID-19 economic growth still had a positive significant association with financial performance (ROA) but COVID-19 significantly reduced the magnitude of association between financial performance (ROA) and economic growth (ECG) by 0.0403 from  $r = 0.2442$  to  $r = 0.2039$ .

The random effect results having a regression coefficient of 0.358,  $0.025 < 0.05$  for economic growth (ECG) implied that without COVID-19 as an influencing factor

economic growth (ECG) had a significant positive influence on financial performance (ROA) such that a percentage increase in economic growth (ECG) led to 0.358% increase in ROA of the manufacturing firms. A coefficient  $-1.793$  with p-value  $0.000 < 0.05$  for CVD implied COVID-19 had a significant negative influence on financial performance (ROA) at 5% level of significance such that as an influencing factor it reduced financial performance (ROA) by 1.793%. In the presence of COVID-19 economic growth (ECG) had a regression coefficient of 0.173, p-value  $0.019 < 0.05$  showing that economic growth (ECG) had a significant positive influence on financial performance (ROA) such that a percentage increase in economic growth (ECG) enhanced financial performance (ROA) by 0.173%.

COVID-19 as an influencing factor significantly reduced the influence of economic growth (ECG) on financial performance (ROA) by 0.185% from 0.358% to 0.173%. This might be linked to the frequent lockdowns that were imposed across the country hence affecting the performance of various sectors that led to the decline in economic growth. The findings though contradicting Alali *et al.* (2018) who established negative relationship for insurance firms in Kuwait, they are similar to those of Egbunike and Okerekeoti (2018) and Simiyu (2015) who conducted studies in Nigeria and Kenya on manufacturing firms and commercial banks respectively.

#### **4.2.1.2 Inflation and Financial Performance**

The second objective of the study was to evaluate the influence of inflation on the financial performance of listed manufacturing companies in Kenya based on the null hypothesis that inflation had no significant influence on financial performance of listed manufacturing companies in Kenya pre and post which was rejected at 5% level of significance. A Pearson

correlation coefficient of  $r = 0.3063$  with a p-value  $0.0485 < 0.05$  for financial performance (ROA) and inflation (INF) showed that there was a positive significant association between financial performance (ROA) and inflation (INF) without COVID-19 as an influencing factor. That is as the inflation rate increases financial performance improves. Additionally, COVID-19 and inflation (INF) having a Pearson correlation coefficient of  $r = 0.4570$ , p-value  $0.0023 < 0.05$  indicated that COVID-19 significantly increased inflation. Having COVID-19 as an influencing factor financial performance (ROA) and inflation (INF) had a Pearson correlation coefficient  $r = 0.2655$  for financial performance (ROA) and inflation (INF) with a p-value  $0.0392 < 0.05$ . This showed that even in the presence of COVID-19 inflation still had a positive significant association with financial performance (ROA) but COVID-19 significantly decreased the magnitude of association between financial performance (ROA) and inflation (INF) by 0.1915 from  $r = 0.4570$  to  $r = 0.2655$ .

In the absence of COVID-19 as an influencing factor, random effect results produced a regression coefficient of 2.764, p-value  $0.042 < 0.05$  for inflation (INF) where INF had a positive significant influence on ROA such that a percentage increase in INF led to 2.764% increase in financial performance (ROA) for the manufacturing firms. COVID-19 as an influencing factor resulted in a regression coefficient of 2.081 with a p-value  $0.023 < 0.05$  for INF showing that inflation had still a significant positive influence on ROA such that a percentage increase in inflation (INF) improved financial performance (ROA) by 2.081%. Therefore, as an influencing factor COVID-19 significantly reduced the influence of inflation (INF) on financial performance (ROA) by 0.683% from 2.764% to 2.081% which might be adduced to shortages and hoarding of commodities leading to an increase in their

prices which fetched higher revenues for the manufacturing firms. The findings though contradicting Alibabae and Mohammad (2016); Iqmal and Putra (2020) who found insignificant relationship for automotive industry and agriculture sector respectively they are similar to those of Emase (2017) who conducted studies in on commercial banks in Kenya.

#### **4.2.1.3 Exchange rate and Financial Performance**

The third objective of the study was to examine the effect of exchange rate on the financial performance of listed manufacturing companies in Kenya. It was based on the null hypothesis that exchange rate had no significant influence on financial performance of listed manufacturing companies in Kenya which was rejected at 5% level of significance. A Pearson correlation coefficient of  $r = -0.3158$  for financial performance (ROA) and exchange rate (EXR) with a p-value  $0.0416 < 0.05$ , for ROA and exchange rate (EXR) indicated that there was a significant negative association between financial performance (ROA) and exchange rate (EXR) without COVID-19 as an influencing factor. That is the weakening or fall in value of the Kenya shilling against the dollar reduced financial performance (ROA). Furthermore, it was noted that COVID-19 (CVD) and exchange rate (EXR) had a Pearson correlation coefficient of  $r = -0.5852$  for COVID-19 (CVD) and exchange rate (EXR) with a p-value  $0.0000 < 0.05$  hence COVID-19 significantly reduced the value of the Kenya shilling against the dollar.

Having COVID-19 (CVD) as an influencing factor financial performance (ROA) and exchange rate (EXR) had a Pearson correlation coefficient of  $r = -0.5852$  for COVID-19 (CVD) and exchange rate (EXR) with a p-value  $0.0000 < 0.05$ . This indicated that in the presence of COVID-19 exchange rate (EXR) had a negative significant association with

financial performance (ROA) but COVID-19 significantly reduced the magnitude of association between financial performance (ROA) and exchange rate (EXR) by 0.2694 from  $r = -0.3158$  to  $r = -0.5852$ .

The random effect results having a regression coefficient of coefficient -1.532 with a p-value  $0.001 < 0.05$  for exchange rate (EXR) implied that without COVID-19 as an influencing factor, exchange rate (EXR) had a significant negative influence on financial performance (ROA) such that a percentage increase in exchange rate (EXR) led to 1.532% decrease in financial performance (ROA) of the manufacturing firms. With COVID-19 exchange rate (EXR) as an influencing factor a regression coefficient of -1.582 with p-value  $0.004 < 0.05$  showed that exchange rate (EXR) had a significant negative influence on financial performance (ROA) such that a percentage increase in exchange rate (EXR) reduced financial performance (ROA) by 1.582%. Therefore, as an influencing factor COVID-19 significantly reduced the influence of exchange rate (EXR) on financial performance (ROA) by 0.05% from -1.532% to -1.582%. This can be attributed to the decline the value of the Kenyan shilling against the dollar which made imported raw materials for the manufacturing firms to be expensive thus raising the cost of production that in turn reduced financial performance.

The findings though contradicting Soy and Kalui (2021); Simiyu (2015) who established insignificant and negative influence for commercial banks in Kenya, they are similar to results of Nurlaily et al. (2011) who assessed the influence of exchange rate on financial performance of Indonesian food and beverage companies.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATION

#### 5.1 Introduction

The chapter discusses the findings of analysis based on various analysis techniques employed, provides summary, conclusions, recommendations, study limitations and areas of further study.

#### 5.2 Summary

This study sought to establish the influence of selected macroeconomic indicators on financial performance of listed manufacturing companies in Kenya. It was guided by the specific objectives of investigating, determining and examining the influence of economic growth, inflation and exchange rate on financial performance of listed manufacturing companies in Kenya. A panel of 7 manufacturing firms that included BOC, Carbacid, EABL, Eveready, Flame Tree, Orchard and Unga group were studied for a period of 6 years from 2015 to 2020 giving a total of 42 observations.

Financial performance was measured using return on assets (ROA) while the selected macroeconomic variables were economic growth (ECG), inflation (INF) and exchange rate (EXR). Economic growth was measured by annual gross domestic product (GDP) growth rate, inflation was measured by annual change in producer price index (PPI) while exchange rate was measure by US Dollar exchange rate. Descriptive statistics indicated average return on assets (ROA) for the manufacturing sector, inflation rate (INF), exchange rate (EXR) and economic growth (ECG) to be 6.5, 6.0%, Ksh.102.20 and 4.6% respectively for the period 2015 to 2020.

All the variables of ROA, ECG, INF and EXR were normally distributed for having a w-statistic value that was approximately 1 based on the Shapiro-Wilk W test. This led to the employment of parametric tests of Pearson correlation, fixed and random effect analysis. Levin-Lin-Chu stationarity test confirmed that all the variables were stationary. Hausman test led to the adoption of the random effect results of analysis.

### **5.2.1 Economic Growth and Financial Performance**

The first objective of the study was to assess the influence of economic growth on financial performance of listed manufacturing companies in Kenya. Pearson correlation analysis yielded correlation coefficients of  $r = 0.2442$  with a p-value  $0.0191 < 0.05$  and  $r = 0.2039$  having a p-value  $0.0404 < 0.05$  when COVID-19 was not an influencing factor and when COVID-19 was an influencing factor respectively which indicated a significant positive association between economic growth (ECG) and financial performance (ROA) and COVID-19 as an influencing factor significantly reduced the magnitude of association from  $r = 0.2442$  to  $r = 0.2039$ . Random effect results indicated regression coefficients of 0.358, p-value  $0.025 < 0.05$  and 0.173, p-value  $0.019 < 0.05$  when COVID-19 was an intervening and not influencing factor respectively.

Economic growth (ECG) had a significant positive influence on financial performance (ROA) such that a percentage increase in economic growth (ECG) led to 0.358% and 0.173% increase in financial performance (ROA) of the manufacturing firms with and without COVID-19 respectively. As an influencing factor it was established that COVID-19 significantly reduced the influence of economic growth (ECG) on financial performance (ROA) by 0.185%.

### **5.2.2 Inflation and Financial Performance**

The second objective of the study was to evaluate the influence of inflation on the financial performance of listed manufacturing companies in Kenya. Pearson correlation coefficients of  $r = 0.3063$  with a p-value  $0.0485 < 0.05$  and  $r = 0.2655$  for financial performance (ROA) and inflation (INF) with a p-value  $0.0392 < 0.05$  indicated a positive significant association between financial performance (ROA) and INF without and with COVID-19 as an influencing factor respectively.

Random effect regression coefficients of 2.764, p-value  $0.042 < 0.05$  and 2.081 with a p-value  $0.023 < 0.05$  in the absence and presence of COVID-19 respectively implied a positive significant influence of INF on financial performance (ROA) such that a percentage increase in INF led to 2.764% and 2.081% increase in financial performance (ROA) for the manufacturing firms with and without COVID-19 as an influencing factor respectively. COVID-19 as an influencing factor was found to significantly reduce the influence of inflation (INF) on financial performance (ROA) by 0.683%.

### **5.2.3 Exchange rate and Financial Performance**

The third objective of the study was to examine the effect of exchange rate on the financial performance of listed manufacturing companies in Kenya. Correlation coefficients of  $r = -0.3158$  with a p-value  $0.0416 < 0.05$  and  $r = -0.5852$  with a p-value  $0.0000 < 0.05$  with and without COVID-19 presence indicated a significant negative association between financial performance (ROA) and exchange rate (EXR). The random effect results having regression coefficient of coefficients -1.532 with a p-value  $0.001 < 0.05$  and -1.582 with p-value  $0.004 < 0.05$  implied a significant negative influence of exchange rate (EXR) on financial performance (ROA) such that a percentage increase in exchange rate (EXR) led



to 1.532% and 1.582% decrease in financial performance (ROA) without and with COVID-19 as an influencing factor respectively. However, it was also noted that as an influencing factor COVID-19 significantly reduced the influence of exchange rate (EXR) on financial performance (ROA) by 0.05%.

## **5.3 Conclusions**

### **5.3.1 Economic Growth and Financial Performance**

The first objective of the study was to assess the influence of economic growth on financial performance of listed manufacturing companies in Kenya. The study findings established that the null hypothesis for the objective was rejected at 5% level of significance. That is, economic growth (ECG) had significant influence on Return on Assets (ROA). Therefore, it was concluded that economic growth positively influenced the financial performance of listed manufacturing companies in Kenya. As the economy grows, there are increased investment opportunities and consumer consumption due higher incomes which raises demand for firm's products hence higher profits.

### **5.3.2 Inflation and Financial Performance**

The second objective of the study was to evaluate the influence of inflation on the financial performance of listed manufacturing companies in Kenya. The study findings established that the null hypothesis for the objective was rejected at 5% level of significance. That is, inflation (INF) had significant influence on ROA. Therefore, it was concluded that inflation positively influenced the financial performance of listed manufacturing companies in Kenya and this might be linked to higher selling prices of products.

### **5.3.3 Exchange rate and Financial Performance**

The third objective of the study was to examine the effect of exchange rate on the financial performance of listed manufacturing companies in Kenya. The study findings established that the null hypothesis for the objective was rejected at 5% level of significance. That is, exchange rate (EXR) had significant influence on ROA. Therefore, it was concluded that exchange rate influenced negatively the financial performance of listed manufacturing companies in Kenya which might be associated with the weakening of the Kenyan shilling during the period making imports too expensive since majority of the companies buy some raw materials from other countries.

### **5.3.4 COVID-19 and Financial Performance**

The study also examined COVID-19 as an influencing factor where it was noted that COVID-19 had significant negative influence on ROA. This can be linked to a decline in business opportunities due to lockdowns that reduced working hours. Therefore, it was concluded that COVID-19 influenced financial performance and more importantly it reduced the influence of the selected macroeconomic indicators of economic growth, inflation and exchange rate on financial performance.

## **5.4 Recommendations**

### **5.4.1 Economic Growth and Financial Performance**

Management of the manufacturing firms should come up with strong research departments that will monitor the economic growth trends such that in the anticipation of enhanced growth, firms should expand their businesses since consumption and income levels in the economy are bound to increase. This will help firms to reap more from the expanding

market as the economy grows and in turn improve financial performance. On the other hand, government policy makers should put in place prudent macroeconomic policies that are geared towards enhancing growth and come up with economic stimulus packages that can enhance the performance of manufacturing firms during pandemics and other calamities which might include bail outs for struggling manufacturing firms for them to be able to remain afloat and improve their financial performance.

#### **5.4.2 Inflation and Financial Performance**

Management of the manufacturing firms should come up with strong research departments that will monitor the inflation trends such that in the anticipation of rising inflation, the firms can expand their businesses to reap more from the higher prices to generate more profits hence improved financial performance.

#### **5.4.3 Exchange rate and Financial Performance**

Firms to establish empowered research departments and teams that can predict the volatility in exchange rates which may direct firms as to when to stock more of the imported raw materials to reap from a stronger Kenyan shilling and cut on cost when the shilling weakens against the US dollar.

#### **5.5 Areas of Further study**

Future study should consider studies that encompass small manufacturing firms not listed at the NSE so that knowledge may be created with regard to how macroeconomic factors affect their performance.

Future studies should also focus on agricultural firms so as to come up with proper findings that can help the stake holders and the investors in their decision making in regard to the

macroeconomic indicators and their effect on the financial performance on the Nairobi Securities exchange.

Future researchers should carry out studies to establish other macro-economic variables as well as other factors that influence manufacturing companies' financial performance. Research should also find out other macro-economic factors that influence manufacturing companies' financial performance such as exchange rate inflations, international remittances etc can help the regulators to safeguard the market performance so that appropriate results are obtained for the good of investors, stake holders and the listed corporate bodies.

Studies can be done on other macroeconomic indicators such as the oil prices. In addition, future studies should include comparison of a simultaneous effect of the macro-economic variables on stock market performance. Comparison of different markets can help reach concrete conclusions as regards the subject of the study.

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## **APPENDICES**

### **APPENDIX I: COMPANIES LISTED AT THE NSE.**

#### **Agricultural**

1. Eaagads Ltd
2. Kakuzi Ltd
3. Kapchorua Tea Co. Ltd
4. Limuru Tea Co. Ltd
5. Sasini Ltd
6. Williamson Tea Co.(k) Ltd

#### **Automobiles and Accessories**

7. Car & General (K) Ltd
8. Marshalls (E.A.) Ltd
9. Sameer Africa Ltd

#### **Banking**

10. Barclays Bank of Kenya Ltd
11. CFC Stanbic of Kenya Holdings Ltd
12. Diamond Trust Bank Kenya Ltd
13. Equity Bank Ltd
14. Housing Finance Co. Kenya Ltd
15. I&M Holdings Ltd
16. Kenya Commercial Bank Ltd
17. National Bank of Kenya Ltd
18. NIC Bank Ltd
19. Standard Chartered Bank Kenya Ltd

20. The Co-operative Bank of Kenya Ltd

**Commercial and Services**

21. Atlas African Industries Development & Support Services Ltd

22. Deacons (E.A) Ltd

23. Nairobi Business Ventures Services Ltd

24. Express Kenya Ltd

25. Kenya Airways Ltd

26. Longhorn Kenya Ltd

27. Nation Media Group Ltd

28. Scangroup Ltd

29. Standard Group Ltd

30. TPS Eastern Africa(Serena) Ltd

31. Uchumi Supermarket Ltd

**Construction and Allied**

32. ARM Cement Ltd

33. Bamburi Cement Ltd

34. Crown Paints Kenya Ltd

35. E.A. Cables Ltd

36. E.A.Portland Cement Co. Ltd

**Energy and Petroleum**

37. Ken Gen Co. Ltd

38. Kenol Kobil Ltd

39. Kenya Power & Lighting Co Ltd

40. Total Kenya Ltd

41. Umeme Ltd

**Insurance**

- 42. British-American Investment(Kenya) Ltd
- 43. CIC Insurance Group Ltd
- 44. Jubilee Holdings Ltd
- 45. Kenya Re Insurance Corporation Ltd
- 46. Liberty Kenya Holdings Ltd
- 47. Pan Africa Insurance Holdings Ltd

**Investment**

- 48. Centum Investment Co Ltd
- 49. Home Afrika Ltd
- 50. Olympia Capital Holdings Ltd
- 51. Trans-Century Ltd

**Investment Services**

- 52. Nairobi Securities Exchange Ltd
- 53.B.O.C (K) Ltd
- 54.BAT(K) Ltd
- 55.Carbacid Investment Ltd
- 56.E.A. Breweries Ltd
- 57.Eveready E.A. Ltd
- 58.Kenya Orchards Ltd
- 59.Mumias Sugar Co. Ltd
- 60.Unga Group Ltd
- 61.Flame Tree Group Holdings Ltd

**Telecommunication and Technology**

- 62.Safaricom Ltd

**Appendix II: List of Companies listed at the Nairobi Securities Exchange**

| <b>NO</b> | <b>COMPANY</b>             | <b>SECTOR</b>   |
|-----------|----------------------------|-----------------|
| 1.        | East African Breweries     | Consumer goods  |
| 2         | B.O.C Kenya                | Basic materials |
| 3         | Unga group                 | Consumer goods  |
| 4         | Kenya Orchads              | Consumer goods  |
| 5         | Carbacid Investment        | Basic materials |
| 6         | Flame Tree Group Holding   | Consumer goods  |
| 7         | Eveready Batteries Limited | Basic materials |
| 8         | Mumias Sugar Company       | consumer goods  |

**Appendix III: Data Collection Sheet**

| <b>YE<br/>AR</b> | <b>COMP<br/>ANY</b> | <b>RETURN ON<br/>ASSETS</b> | <b>INFLATION<br/>RATE</b> | <b>EXCHANGE<br/>RATE</b> | <b>ANNUAL<br/>GDP RATE</b> |
|------------------|---------------------|-----------------------------|---------------------------|--------------------------|----------------------------|
| 201<br>5         |                     |                             |                           |                          |                            |
| 201<br>6         |                     |                             |                           |                          |                            |
| 201<br>7         |                     |                             |                           |                          |                            |
| 201<br>8         |                     |                             |                           |                          |                            |
| 201<br>9         |                     |                             |                           |                          |                            |
| 202<br>0         |                     |                             |                           |                          |                            |

**Appendix IV: Data Set**

| <b>YEAR</b> | <b>COMPANY</b> | <b>RETURN ON ASSETS</b> | <b>INFLATION RATE</b> | <b>EXCHANGE RATE</b> | <b>ANNUAL GDP RATE</b> |
|-------------|----------------|-------------------------|-----------------------|----------------------|------------------------|
| 2015        | CARBACID       | 13.3                    | 6.6                   | 98.25583             | 5.7                    |
| 2016        | CARBACID       | 12.2                    | 6.3                   | 101.5083             | 5.9                    |
| 2017        | CARBACID       | 10.7                    | 8                     | 103.4067             | 4.8                    |
| 2018        | CARBACID       | 8.9                     | 4.69                  | 101.3875             | 6.3                    |
| 2019        | CARBACID       | 7.6                     | 5.2                   | 101.96               | 5.4                    |
| 2020        | CARBACID       | 8.9                     | 5.4                   | 106.4592             | -0.3                   |
| 2015        | EVEREADY       | 4.6                     | 6.6                   | 98.25583             | 5.7                    |
| 2016        | EVEREADY       | 4.7                     | 6.3                   | 101.5083             | 5.9                    |
| 2017        | EVEREADY       | 34.6                    | 8                     | 103.4067             | 4.8                    |
| 2018        | EVEREADY       | -20.3                   | 4.69                  | 101.3875             | 6.3                    |
| 2019        | EVEREADY       | -1.2                    | 5.2                   | 101.96               | 5.4                    |
| 2020        | EVEREADY       | -34.3                   | 5.4                   | 106.4592             | -0.3                   |
| 2015        | ORCHARD        | 36.7                    | 6.6                   | 98.25583             | 5.7                    |

|      |         |     |      |          |      |
|------|---------|-----|------|----------|------|
| 2016 | ORCHARD | 4.2 | 6.3  | 101.5083 | 5.9  |
| 2017 | ORCHARD | 5.3 | 8    | 103.4067 | 4.8  |
| 2018 | ORCHARD | 7.8 | 4.69 | 101.3875 | 6.3  |
| 2019 | ORCHARD | 8.4 | 5.2  | 101.96   | 5.4  |
| 2020 | ORCHARD | 6.5 | 5.4  | 106.4592 | -0.3 |

**Source: KNBS, CBK, Company Financial Statements**

**Appendix V: Data Set Cont....**

| <b>YEAR</b> | <b>COMPANY</b> | <b>RETURN ON ASSETS</b> | <b>INFLATION RATE</b> | <b>EXCHANGE RATE</b> | <b>ANNUAL GDP RATE</b> |
|-------------|----------------|-------------------------|-----------------------|----------------------|------------------------|
| 2015        | BOC            | 6.6                     | 6.6                   | 98.25583             | 5.7                    |
| 2016        | BOC            | 5.7                     | 6.3                   | 101.5083             | 5.9                    |
| 2017        | BOC            | 1.4                     | 8                     | 103.4067             | 4.8                    |
| 2018        | BOC            | 2.3                     | 4.69                  | 101.3875             | 6.3                    |
| 2019        | BOC            | 2.3                     | 5.2                   | 101.96               | 5.4                    |
| 2020        | BOC            | 6.1                     | 5.4                   | 106.4592             | -0.3                   |
| 2015        | EABL           | 14.3                    | 6.6                   | 98.25583             | 5.7                    |
| 2016        | EABL           | 16.6                    | 6.3                   | 101.5083             | 5.9                    |
| 2017        | EABL           | 12.8                    | 8                     | 103.4067             | 4.8                    |
| 2018        | EABL           | 10.2                    | 4.69                  | 101.3875             | 6.3                    |
| 2019        | EABL           | 13.2                    | 5.2                   | 101.96               | 5.4                    |
| 2020        | EABL           | 7.9                     | 5.4                   | 106.4592             | -0.3                   |
| 2015        | FLAME TREE     | 13                      | 6.6                   | 98.25583             | 5.7                    |
| 2016        | FLAME TREE     | 2.9                     | 6.3                   | 101.5083             | 5.9                    |
| 2017        | FLAME TREE     | 6.1                     | 8                     | 103.4067             | 4.8                    |
| 2018        | FLAME TREE     | 1.8                     | 4.69                  | 101.3875             | 6.3                    |
| 2019        | FLAME TREE     | 1.9                     | 5.2                   | 101.96               | 5.4                    |



|      |            |      |      |          |      |
|------|------------|------|------|----------|------|
| 2020 | FLAME TREE | 3    | 5.4  | 106.4592 | -0.3 |
| 2015 | UNGA GROUP | 7.2  | 6.6  | 98.25583 | 5.7  |
| 2016 | UNGA GROUP | 5.5  | 6.3  | 101.5083 | 5.9  |
| 2017 | UNGA GROUP | -0.7 | 8    | 103.4067 | 4.8  |
| 2018 | UNGA GROUP | 8.7  | 4.69 | 101.3875 | 6.3  |
| 2019 | UNGA GROUP | 5.1  | 5.2  | 101.96   | 5.4  |
| 2020 | UNGA GROUP | 0.5  | 5.4  | 106.4592 | -0.3 |

**Source: KNBS, CBK, Company Financial Statement**