# MACROECONOMIC FACTORS AND FINANCIAL PERFORMANCE OF KENYA TEA DEVELOPMENT AGENCY MANAGED FACTORIES IN WESTERN RIFT OF KENYA

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## ABSTRACT

The research project focused on investigating how macroeconomic variables impact the financial performance of the tea industry in Kenya. Guided by economic theories like the Purchasing Power Parity, Keynesian Economic Theory, the Cost-Push Inflation Theory, and the Quantity Theory of Money, the study aimed to evaluate how exchange rates, inflation rates, interest rates, and money supply influence the financial performance of Kenya Tea Development Agency (KTDA) managed factories located in the Western Rift region of Kenya.

The literature review conducted for the research project provided a strong foundation for examining the effects of these macroeconomic variables on the financial performance of the KTDA managed factories. Through a critical analysis of existing literature, the study contextualized its investigation within the broader academic discourse on the topic. The research adopted a longitudinal approach to study the effects of macroeconomic variables on the performance of KTDA managed factories over a five-year period, spanning from 2017 to 2021. The secondary data necessary for the analysis were obtained from the financial statements of the factories, the Central Bank of Kenya (CBK), and the Kenya Bureau of Statistics (KNBS). The study's population consisted of all 19 KTDA managed factories located in the Western Rift region of Kenya. To examine the relationships between the independent variables (exchange rate, interest rate, inflation rate, and money supply) and the dependent variable (Return on Equity on a quarterly basis), the research employed regression analysis. The chosen analytical model was multivariate and descriptive in nature, where the coefficients of the macroeconomic variables were represented as "β." In order to establish the significance of the relationships between the variables, the research conducted several diagnostic tests. These tests included the assessment of multicollinearity, heteroscedasticity, autocorrelation, linearity, and normality. These tests aimed to ensure the validity and reliability of the regression analysis results. For the data analysis process, the research project utilized Statistical Software SPSS version 28. This software facilitated the thorough examination of the collected data and enabled the drawing of meaningful conclusions about the impact of macroeconomic variables on the financial performance of the KTDA managed factories. The study highlighted the key findings based on the research objectives, concluding that lending rates, consumer price index, and money supply significantly impacted the financial performance of KTDA managed factories. However, exchange rates were not found to have a statistically significant effect. The study recommended implementing proactive measures to mitigate the impacts of lending rates, consumer price index, and money supply on the financial performance of KTDA managed factories, while also highlighting the need for additional research in exploring the dynamics of exchange rates in the context of the tea industry.

## INTRODUCTION

### Background of the Study

A firm's financial performance is a key determinant of its success, and thus, understanding the factors that affect it can help firms make informed decisions and improve their performance. The macroeconomic factors that have been found to have a significant impact on financial performance include exchange rates, interest rates, inflation rates, and money supply (Adekoya & Alade, 2018). Exchange rates are particularly important for firms that engage in international trade as they can affect the cost of inputs and the price of exports. Interest rates, on the other hand, can affect a firm's borrowing costs and its ability to finance its operations. Inflation rates can also have a significant impact on a firm's financial performance, as they can affect the cost of production and reduce the purchasing power of consumers. Finally, money supply is a critical determinant of the overall health of the economy since it influences the level of economic activity. Brinkmann and Wachtel (2017), argue that changes in the money supply have a significant impact on the level of economic activity and employment.

Financial performance, is a critical aspect of this study. Financial performance is typically measured through a range of financial ratios such as return on assets, return on equity, and profit margins (Tariq, Ahmed, & Ali (2021)). By analyzing these ratios, the study seeks to understand how macroeconomic factors impact the financial performance of the Kenya Tea Development Agency (KTDA)-managed factories in Western Rift of Kenya. The findings of this study can provide valuable insights for policymakers and investors in the tea industry in Kenya and other developing economies facing similar challenges.

### Global Perspective on the Effect of Macroeconomic Factors & Financial Performance

A study by Kim and Yoon (2018) found that GDP growth rate and Consumer Price Index (CPI) have a positive impact on hotel industry performance, while inflation rate has a negative effect. Exchange rate was found to have an insignificant impact. Additionally, the authors found that the impact of macroeconomic factors on hotel industry performance varies depending on the segment of the industry, such as luxury or budget hotels in the United States. The authors used a sample of 200 hotels listed on the New York Stock Exchange (NYSE) between 2005 and 2015.

The independent variables used in the analysis were inflation rate, exchange rate, GDP growth rate, and (CPI). The authors used a regression analysis to explore the relationship between these macroeconomic factors and the dependent variables, such as return on assets, return on equity, and operating profit margin.

Ribeiro, de Oliveira, and Pereira (2018) in their study found that macroeconomic factors significantly impact the financial performance of Brazilian banks. Specifically, they found that GDP growth rate and interest rate have a positive impact on the return on assets and return on equity of Brazilian banks. On the other hand, inflation rate and exchange rate were found to have a negative impact on the financial performance of banks in Brazil. Overall, the study suggests that Brazilian

banks are sensitive to changes in macroeconomic factors, and that these factors should be carefully considered when assessing the financial performance of banks in Brazil. The authors used regression analysis to explore the relationship between the independent variables (GDP growth rate, inflation rate, interest rate, and exchange rate) and the dependent variables (return on assets and return on equity) for a sample of 10 Brazilian banks.

A study by Sujit, & Pavithra, (2018) found that the macroeconomic factors had a significant impact on the financial performance of tea companies in India. Inflation and exchange rate had a negative impact, while interest rate had a positive impact on the profitability of tea companies. The study analyzed the financial performance of tea companies in India over a period of ten years (2006-2015) using secondary data from the Centre for Monitoring Indian Economy (CMIE). The macroeconomic factors examined were inflation, exchange rate, and interest rate.

Jayawardena & Sujit, (2019) in their study found that inflation and exchange rate had a negative impact on the financial performance of tea companies in Sri Lanka, while interest rate had a positive impact. The study examined the relationship between macroeconomic factors and the financial performance of tea companies in Sri Lanka using secondary data from the Central Bank of Sri Lanka and the Colombo Stock Exchange. The macroeconomic factors examined were inflation, exchange rate, and interest rate.

## Regional Perspective of Macroeconomic Factors and Financial Performance

Adefulu and Adedipe (2018) found that macroeconomic factors significantly affect the stock returns of non-financial firms in Nigeria. Specifically, they found that inflation rate and exchange rate negatively impact stock returns, while GDP growth rate has a positive effect. Interest rate was found to have an insignificant impact on stock returns. The study examined the relationship between macroeconomic factors and stock returns of non-financial firms in Nigeria. The authors used a sample of 50 non-financial firms listed on the Nigerian Stock Exchange (NSE) between 2005 and 2015. The independent variables used in the analysis were inflation rate, exchange rate, interest rate, and GDP growth rate.

In their study findings Olokunde, Oladokun, and Olubusoye (2020) suggested that macroeconomic factors have a significant impact on the performance of the South African stock market. Specifically, GDP growth positively affects stock market performance, while inflation and interest rates have a negative impact on stock market performance. Moreover, the authors find that the effect of exchange rate on stock market performance is mixed. The authors used the autoregressive distributed lag (ARDL) approach to investigate the relationship between macroeconomic factors and stock market performance for the period of 2000-2018.

A study by Omolade, Ayodele, Yaya (2021) suggest that macroeconomic factors have a significant impact on Nigerian banks' financial performance. Specifically, GDP growth positively affects financial performance, while inflation and interest rates have a negative impact on financial performance. Moreover, the authors find that the effect of exchange rate on financial performance

is mixed. The authors used panel data analysis to investigate the relationship between macroeconomic factors and financial performance for 10 banks over the period of 2005-2019.

## Local Perspective of Macroeconomic Factors and Financial Performance

Opiyo, Ogutu and Ochieng (2015) investigated the effect of macroeconomic variables on the profitability of tea production in Kenya. The study utilized a regression analysis to test the relationship between macroeconomic variables such as inflation, exchange rate, and GDP growth rate, and the profitability of tea production. The study found that inflation and exchange rate had no significant effect on the profitability of tea production in Kenya. However, the study did find that GDP growth rate had a positive and significant effect on the profitability of tea production in Kenya. The researchers suggested that the positive impact of GDP growth rate on profitability may be due to the increased demand for tea in the domestic and international markets. The study used panel data from 36 KTDA-managed factories for the period between 2000 and 2012. The study employed a fixed-effect regression model to control for unobserved factory-specific effects that could potentially affect the profitability of tea production. The study also controlled for other variables such as rainfall, temperature, and tea prices in the regression analysis.

A study by Korir and Langat (2019) found that inflation and exchange rate had a negative impact on the financial performance of tea companies in Kenya, while interest rate had a positive impact. The study also found that exchange rate had the most significant impact on the financial performance of tea companies in Kenya. The study analyzed the financial performance of tea companies in Kenya using secondary data from the Nairobi Securities Exchange and the Central Bank of Kenya over a period of ten years (2007-2016). The macroeconomic factors examined were inflation, exchange rate, and interest rate.

## The Kenya Tea Development Agency

KTDA is a private company owned by about 600,000 smallholder tea farmers spread across 16 tea growing counties in Kenya. Currently the small scale growers under the umbrella of KTDA accounts for 60% of the total tea production. The farmers are shareholders to 54 tea companies that own KTDA (H) and its 8 subsidiary companies. Some of the 54 tea factory companies have expanded by setting up satellite factories in their neighborhoods to accommodate the extra leaf. The satellite factories are 15, adding up to 69 the total number of tea factories owned by smallholder tea farmers. Out of the 54 tea companies 19 are from the West of the Rift of Kenya spread across 8 counties of Kericho, Bomet, Kisii, Nyamira, Vihiga, Kakamega, Nandi and Trans-Nzoia counties.

KTDA was created following the privatization of the parastatal Kenya Tea Development Authority in 2000. The Agency is contracted by the tea factory companies to; manage tea cultivation, develop and maintain tea husbandry, collect, weigh, handle and pay farmers for green leaf delivered. It is further mandated to manufacture green leaf into tea, market the manufactured tea, provide services in procurement, Information and Communication Technology (ICT) and human resource (HR) as well as develop and provide sound technical, financial and managerial infrastructure. KTDA, through its subsidiaries, also engages in buying, bulk packing, and selling tea to local and

international destinations and customers; provides insurance brokerage services to the general public; and exports packed tea to destinations around the world. (KTDA Corporate Communications).

## Statement of the problem

Tea is the leading export crop in Kenya, contributing significantly to the country's foreign exchange earnings. The tea sector accounts for about 26% of Kenya's total export earnings, making it a critical driver of economic growth. The tea sector has had a positive impact on poverty reduction and employment creation in Kenya (Omiti, Otieno, Nyanamba, & McCullough, 2016). According to the financial data, the KTDA managed factories located in the western region of the Kenyan Rift Valley have experienced a downward trend in their financial performance over the past five years, from 2017 to 2021.

The payment to growers of KTDA's factories including the initial payment and second payment commonly known as bonus have fluctuated over the last five years between 2017 and 2021, with the highest recorded profit of KES 24,939 million in 2018 and the lowest of KES 15,048 million in 2021, representing a 40% decrease. In 2017, the profit was KES 20,742 million, and it increased by 20% to KES 24,939 million in 2018, resulting in a net change of KES 4,197 million. However, the profit decreased by 34% to KES 16,514 million in 2019, resulting in a net decrease of KES 8,425 million. In 2020, the profit increased by 12% to KES 18,528 million, resulting in a net change of KES 2,014 million. In 2021, the gross profit decreased by 19% to KES 15,048 million, resulting in a net decrease of KES 3,480 million. Overall, the data shows that KTDA managed factories in the West of the Rift's returns to growers has been volatile over the past five years, with significant increases in 2018 and 2020 but a substantial decrease in 2019 and a moderate decrease in 2021. If the tea sector experiences a decline in financial performance, it would affect the income of farmers, as well as the wages and employment of workers. This, in turn, could lead to a decrease in the sector's contribution to the country's GDP and export earnings. Moreover, a decline in the tea sector's financial performance would also have a ripple effect on the supply chain, including transport, packaging, and marketing. Overall, a decline in the financial performance of the tea industry would have negative implications for the economy of Kenya, making it crucial to monitor and respond to changes in macroeconomic conditions to maintain the sector's financial performance.

A study by Olopade and Adegbaju (2018) analyzing the relationship between exchange rate and stock market performance in South Africa indicate that there is no significant effect of exchange rate on stock market performance in South Africa. Abila and Adeleke (2018) examines the impact of macroeconomic factors on the financial performance of banks in Nigeria. The study concludes that exchange rates, interest rates, inflation rates, and GDP growth rate have a significant effect on the financial performance of banks in Nigeria. A study by Asamoah, Osei-Kyei, and Amoah (2020) investigated the impact of macroeconomic factors on the financial performance of manufacturing firms in Ghana. The study found that inflation, exchange rate, and GDP growth rate had a significant negative effect on the financial performance of the manufacturing firms. However, interest rate had a positive effect on the financial performance of the firms. A study by Nayan and Hameed (2019) examined the impact of macroeconomic factors on the financial performance of insurance

companies in Malaysia. The study found that inflation, exchange rate, and GDP growth rate had a significant negative impact on the financial performance of the insurance companies. However, interest rate had a positive impact on the financial performance of the companies.

Korir & Langat (2019) investigated the impact of macroeconomic variables on financial performance of tea companies in Kenya. The study found that inflation and exchange rate had a negative impact on the financial performance of tea companies in Kenya, while interest rate had a positive impact. Studies on the impact of macroeconomic variables on financial performance have given contradictory findings. By investigating the effect of exchange rate, interest rate, inflation rate and money supply on financial performance of the nineteen KTDA factories in the West of the Rift of Kenya over a period of five years (2017-2021) this study will close the gap.

## Objectives of the study

The study objectives are classified into general & specific objectives.

## General objective

To establish the relationship between macroeconomic variables and financial performance for KTDA managed factories in Western Rift of Kenya.

## Specific objectives

The following are the specific objectives of this study:
1. To determine the effect of exchange rate on the financial performance for KTDA managed factories in Western Rift of Kenya.
2. To ascertain the effect of interest rate on the financial performance for KTDA managed factories in Western Rift of Kenya.
3. To examine the effect of inflation rate on the financial performance for KTDA managed factories in Western Rift of Kenya.
4. To establish the effect of money supply on the financial performance for KTDA managed factories in Western Rift of Kenya.

## Justification of the study

The beneficiaries of this study are:

## Academics and Researchers

Academics and researchers would find this study insightful as it contributes to the body of knowledge on the relationship between macroeconomic factors and firm performance. By examining the impact of these factors, researchers can either support or refute existing theories. The study's findings can serve as a starting point for future research studies, inspiring other researchers to explore the topic in different settings or sectors. They may also be encouraged to remove any constraints encountered in this study, thus expanding the understanding of macroeconomic influences on firm performance.

## Directors and Managers of Factories

Directors and managers of factories can greatly benefit from this research as well. Macroeconomic variables have diverse and varying effects on the national and industry environment. By gaining insights into how these variables affect business success, directors and managers can make informed decisions and develop effective strategies. Understanding the relationship between macroeconomic factors and firm performance can help them navigate challenges and capitalize on opportunities in their respective industries.

## Tea Business Investors

Current and potential tea business investors can make better-informed investment decisions based on the findings of this study. By evaluating their investment goals and portfolios in light of the study's insights, investors can assess the potential impact of macroeconomic factors on their investments. This knowledge allows them to make sound investment choices and mitigate risks. Additionally, fund managers and financial analysts can utilize the study's findings to provide suitable recommendations and advice to their clients, aligning investment strategies with the understanding of macroeconomic influences on the tea business.

## Fund Managers and Financial Analysts

Fund managers and financial analysts can leverage the study's findings to inform their client recommendations and advice. By understanding how macroeconomic factors influence the financial health of tea factories, financial professionals can provide tailored guidance to their clients. They can consider the implications of macroeconomic variables on the performance of tea businesses and incorporate this knowledge into investment strategies, risk assessments, and portfolio management. The study's insights can enhance the quality of advice provided by fund managers and financial analysts, enabling them to deliver more suitable recommendations to their clients.

## Government and Policy-Making Branches

The government and its policy-making branches can benefit from the research as well, considering the significance of the tea industry in the economy, particularly as a source of tax revenue. By examining how macroeconomic policies affect the financial health of tea factories, the government can develop more informed and effective macroeconomic plans. Understanding the impact of these policies on the success of the tea industry can guide policy decisions that promote its growth and, consequently, increase tax contributions from the factories. This knowledge can lead to the creation of sound economic policies that benefit both the tea industry and the broader economy.

## Scope of the study

The scope of this study was to investigate the impact of macroeconomic factors on the financial performance of the Kenya Tea Development Agency-managed factories located in the West of the Rift of Kenya. The variables of exchange rate, interest rate, inflation rate, and money supply were

relevant for this study, as they are expected to have a significant effect on the tea sector's financial performance. The exchange rate affects the competitiveness of tea in international markets, while interest rates impact borrowing costs and profitability. Inflation rates affect the cost of inputs and consumer demand, and money supply impact the overall economic environment.

Secondary sources of data were utilized in this study, covering the period from 2017 to 2021, which includes the period when economic activities were disrupted by the COVID-19 pandemic and the 2022 general elections. The research encompassed all nineteen factories situated in the western region of the Kenyan Rift Valley. These factories primarily depend on tea cultivation as their main source of economic income and have a substantial number of tea growers. During the study period, their performance was notably impacted. The average return on assets for the period under study for western Rift stood at 29%, while in the eastern Rift, it was comparatively higher at 40%. The findings from this study will provide valuable insights into how changes in macroeconomic factors affect the financial performance of the tea sector, and inform recommendations for improving its profitability.

## Limitations of the study

There could be more than four macroeconomic factors influencing financial performance, and various other factors such as corporate governance, climate considerations, management styles, farm management practices, and government regulations may also have an impact on a firm's financial performance. However, this study focused solely on four macroeconomic factors: exchange rates, interest rates, inflation rates, and money supply. Additionally, the study had a time limitation of five years. It remains uncertain whether conducting a study over a longer time frame would yield different outcomes, or if the same study would yield different results in the coming years. The rationale behind the five-year duration was to assess the effects of significant events such as the Covid-19 pandemic, the 2022 general elections, and government-initiated changes in management and boards within the KTDA group.

## LITERATURE REVIEW

This chapter reviewed earlier research on macroeconomic performance and variables. The chapter provides a conceptualization as well as a theoretical review, performance determinants, and empirical review.

### Theoretical Review

The theoretical underpinnings of a study are referred to as the theoretical review. A theoretical study has no real-world applications and bases its conclusions on accepted ideas and hypotheses. According to Bhatt (2009), a theory is a group of accepted truths, claims, or presumptions that seeks to provide a logical justification for causal links within a group of observed phenomena. The Purchasing Power Parity Theory, Keynesian Theory, Cost-Push Inflation Theory, and Quantity Theory of Money will be the main theories examined in the theoretical review.

### The Purchasing Power Parity (PPP)

The purchasing power theory, also known as the law of one price, is an economic theory that states that in an efficient market, the price of a particular product should be the same across all locations

when expressed in a common currency. The theory suggests that if two countries produce the same product, the exchange rate between their currencies should adjust to make the product equally affordable in both countries. This theory has its roots in the concept of the gold standard, which was used to regulate international trade in the 19th century. The theory was first postulated by David Ricardo, a British economist, in the early 19th century. Ricardo was one of the pioneers of classical economics, and his theory of comparative advantage was a foundational concept in the field. The purchasing power theory was an extension of Ricardo's work, and it gained popularity among economists in the late 19th and early 20th centuries.

PPP theory could be used to analyse the impact of currency fluctuations on the tea sector. If the exchange rate between two currencies deviates from the PPP rate, this can lead to price discrepancies and changes in the relative cost of production and consumption. This can have implications for the competitiveness of tea producers in different countries, as well as for the profitability of tea companies. It could also be used to compare the relative costs of production and consumption of tea in different countries. If the PPP theory holds, then the exchange rate between two currencies should reflect the relative cost of goods and services in each country, including the cost of tea production. This could help to explain why certain countries may have a comparative advantage in producing tea, and why others may be better suited for consumption.

## Keynesian Economic Theory

John Maynard Keynes postulated the Keynesian Economic Theory in the 1930s. According to the idea, aggregate demand is impacted by a variety of variables and periodically exhibits intermittent behavior, which has an impact on output, employment, and inflation but does not fundamentally equal the economic system's capacity for production. In the short term, aggregate demand has a significant impact on economic production. According to Keynesian theory, private sector decisions can occasionally have negative macroeconomic effects, necessitating immediate public sector policy responses. According to the theory, policies concentrate on the immediate needs and how economic policies can make prompt corrections to a nation's economy.

The theory supports an alternative structure that includes direct government control of investment and advanced that financial deepening can occur due to expansion in government expenditure. Since higher interest rates reduces private savings, an upsurge in government expenditure stimulates investment. Keynesian theory can be applied to help understand the role of government policies and regulations in shaping the tea industry. The liquidity preference concept could be relevant to the tea sector since the demand for tea could be influenced by factors such as the availability of credit or interest rates, which could impact consumers' ability or willingness to purchase tea. Therefore, the government could implement policies to ensure that credit is available to tea farmers and that interest rates are at reasonable levels, which would help to stimulate the demand for tea.

Additionally, government subsidies or tax incentives can incentivize tea producers to increase their output or improve the quality of their product. However, there are also limitations to Keynesian theory. Critics argue that government intervention can lead to inefficiencies and distortions in the market, and that excessive government spending can lead to inflation and other economic problems. Keynesian policies may not be effective in addressing long-term structural issues in the economy.

## The Cost-Push Inflation Theory

The Cost-Push Inflation theory was first proposed in the 1970s, during a period of high inflation and economic instability in many countries around the world. The theory was developed as an alternative to the more traditional Demand-Pull Inflation theory, which suggests that inflation is

caused by an increase in demand for goods and services that exceeds the economy's ability to supply them. The Cost-Push Inflation theory was postulated by several economists, including James Tobin, Arthur Okun, and Milton Friedman. They argued that changes in production costs due to factors such as rising wages, energy prices, or supply disruptions could lead to an increase in prices and inflation, even if there is no increase in demand for goods and services.

The Cost-Push Inflation theory is a macroeconomic theory that explains the relationship between inflation and changes in production costs. According to this theory, inflation is caused by an increase in production costs, such as labor costs or the cost of raw materials. When production costs increase, firms may increase the prices of their goods and services to maintain their profit margins, leading to an increase in the general price level in the economy. In the tea sector, cost-push inflation can occur if there is an increase in the cost of production inputs such as labor, fertilizers, or pesticides. If the tea producers have to pay more for these inputs, their cost of production will increase, and they will have to raise the price of their tea to maintain their profit margins. This increase in price will then be passed on to consumers, leading to inflation.

The financial performance of the tea sector can be affected by cost-push inflation. If the cost of production increases, the profit margins of tea producers will decrease. If they raise the price of their tea to maintain their profit margins, they may lose customers to competitors who offer lower prices. This can lead to a decrease in sales revenue and profitability. On the other hand, if the tea producers absorb the increase in production costs and do not raise the price of their tea, their profit margins will be reduced, leading to a decrease in profitability.

## Quantity Theory of Money

The Quantity Theory of Money is a macroeconomic theory that describes the relationship between the money supply in an economy and its price level. The theory was first postulated by the 16th-century Spanish scholar and economist, Juan de Mariana, but it was later developed by several economists, including David Hume, John Locke, and Irving Fisher. According to the Quantity Theory of Money, there is a direct relationship between the quantity of money in circulation in an economy and the level of prices. In other words, if the money supply increases, prices will rise, and if the money supply decreases, prices will fall. This theory is based on the idea that money is a medium of exchange, and the demand for money is primarily determined by its usefulness in making transactions.

Money supply has a considerable impact on inflation rate, according to Keynes (1936). Moreover, loan rates are significantly impacted by inflation, which also has an impact on tea prices. So, any anti-inflationary strategy will, for the majority of monetarists, be based on the fundamental idea that the money supply should be steadily decreased. Monetarists believe that letting non-inflationary policies drive an economy toward full employment is healthier than governments constantly adjusting economic policy. The Cambridge cash balance formulation of quantity theory provides the foundation for modern quantity theory. The quantity theory of money, which claims that there is a direct correlation between the amount of money in an economy and the level of prices of goods sold, is pertinent to the study because it predicts that the level of money in the economy will have an impact on the financial performance of tea factories.

In the context of the tea sector, the Quantity Theory of Money can help explain the relationship between the money supply and the price of tea. For example, if the government increases the money supply by printing more money or lowering interest rates, this can lead to an increase in the demand for tea, as people have more money to spend. This increased demand can, in turn, drive up the price

of tea. Similarly, if the money supply decreases, perhaps due to a contraction in the economy or a decrease in the money supply, this can lead to a decrease in demand for tea and lower prices. The Quantity Theory of Money has been criticized by some economists for oversimplifying the relationship between money supply and price level. In particular, critics argue that the theory does not take into account the fact that changes in the money supply may not affect all sectors of the economy equally and may lead to changes in economic activity and output in addition to changes in prices.

## Conceptual Framework

Conceptual framework is a scheme of concept (Variables) which the researcher operationalizes in order to achieve the set objectives (Mugenda and Mugenda, 2008). According to Blanchard (2014) macro-economic factors can and does affect financial performance of firms. The independent variables in the study are exchange rate, interest rate, inflation rate and money supply while the dependent variable is the financial performance.

**Exchange Rate**

- Average quarterly Kenyan Shilling against US Dollar Rate

**Interest Rate**

- Average quarterly Commercial Banks Lending Rates

**Inflation Rate**

- Average quarterly Consumer Price Index

**Money Supply**

- Average quarterly Monetary Base (M3)

**Financial Performance**

Return on Equity (ROE)

$$ROE = \frac{Net\ income}{Average\ Total\ Equity}$$

**Independent Variables**                     **Dependent Variable**

*Figure 2.1 Conceptual Framework*
*(Source: Researcher, 2023)*

## Exchange Rate

Exchange rate is the value of one currency in terms of another currency (Krugman, Obstfeld, & Melitz, 2021). It is an important economic indicator that affects various aspects of the economy, including international trade, investment, and capital flows. In the tea sector, exchange rate fluctuations can affect the cost of production inputs such as fertilizers, pesticides, and labor. A depreciating exchange rate can make these inputs more expensive, which can increase the cost of production and reduce the profit margin for tea producers (Wachira, 2020). On the other hand, an appreciating exchange rate can reduce the cost of production inputs, which can increase the profit margin for tea producers. Moreover, exchange rate fluctuations can also affect the price of tea exports, which can impact the competitiveness of tea in the global market. A depreciating exchange rate can make tea exports cheaper, which can increase the demand for Kenyan tea and improve the profitability of the tea sector (Wachira, 2020). Conversely, an appreciating exchange rate can make tea exports more expensive, which can reduce demand and affect the profitability of the tea sector.

## Interest Rate

Interest rate refers to the cost of borrowing money, expressed as a percentage of the total amount borrowed (Mishkin, 2016). It is an important economic indicator that affects various aspects of the economy, including investment, consumption, and savings. In the tea sector, interest rate fluctuations can affect the cost of borrowing for tea producers who rely on loans to finance their operations. An increase in interest rates can increase the cost of borrowing, which can reduce the profitability of tea production (Wanyama, 2020). Conversely, a decrease in interest rates can reduce the cost of borrowing, which can increase the profitability of tea production. Interest rate fluctuations can also affect the availability of credit for tea producers. Higher interest rates can make it more difficult for tea producers to access credit, which can reduce their ability to invest in their operations and expand their businesses (Wanyama, 2020). On the other hand, lower interest rates can make it easier for tea producers to access credit, which can facilitate their ability to invest and expand.

## Inflation Rate

Inflation rate refers to the rate at which the general level of prices for goods and services in an economy is increasing over time (Mankiw, 2020). In the tea sector, inflation rate fluctuations can affect the cost of production inputs such as fertilizers, pesticides, and labor. An increase in inflation rate can increase the cost of production inputs, which can reduce the profit margin for tea producers (Murage &Ng'ang'a, 2018). On the other hand, a decrease in inflation rate can reduce the cost of production inputs, which can increase the profit margin for tea producers. Inflation rate fluctuations can also affect the purchasing power of consumers, which can impact the demand for tea products. Higher inflation rates can erode the purchasing power of consumers, which can reduce their ability to purchase tea products and affect the profitability of the tea sector (Murage & Ng'ang'a, 2018). Lower inflation rates can increase the purchasing power of consumers, which can increase their ability to purchase tea products and improve the profitability of the tea sector.

## Money Supply

Money supply refers to the total amount of money in circulation within an economy at a given time. The money supply is a critical determinant of the overall health of the economy since it influences the level of economic activity, interest rates, and inflation. Brinkmann and Wachtel (2017), argue that changes in the money supply have a significant impact on the level of economic activity and employment. They highlight that an increase in the money supply can lead to an expansion in economic activity, while a decrease can lead to a contraction. The authors argue that the money supply can influence the allocation of resources within an economy, with an excessive money supply leading to misallocation and a decrease in efficiency. An increase in the money supply can lead to an expansion in economic activity, which may lead to an increase in demand for tea and higher prices. This can result in increased revenues and profits for the tea factories in the short term. On the other hand, a decrease in the money supply can lead to a contraction in economic activity, which may lead to a decrease in demand for tea and lower prices, resulting in reduced revenues and profits for the tea factories. Changes in the money supply can affect the exchange rate, which can impact the competitiveness of the tea industry in the global market. For example, an increase in the money supply can lead to a depreciation in the exchange rate, making the exports of tea more competitive in the global market and potentially improving the financial performance of the tea factories.

## Financial Performance

Financial performance refers to the evaluation of a company's financial health, which is measured by its ability to generate profits, manage costs, and generate cash flows (Damodaran, 2007). In the tea sector, financial performance is crucial as it determines the long-term sustainability of tea businesses and their ability to compete in the market. Financial performance indicators commonly used in the tea sector include profitability ratios such as return on investment (ROI), return on assets (ROA), and net profit margin (NPM) (Gómez &Torres, 2019). These ratios can be used to assess a company's profitability and its ability to generate income from its assets and operations. Other financial performance indicators in the tea sector include liquidity ratios such as current ratio and quick ratio, which measure a company's ability to meet its short-term financial obligations (Singh & Mohapatra, 2020). Additionally, solvency ratios such as debt-to-equity ratio and interest coverage ratio are used to assess a company's long-term financial stability and its ability to manage its debt obligations. The relevance of financial performance in the tea sector lies in its impact on the sustainability and competitiveness of tea businesses. A strong financial performance can provide companies with the necessary resources to invest in research and development, marketing, and other activities that can improve the quality of their products and increase their market share (Gómez & Carmona, 2019). On the other hand, poor financial performance can lead to decreased investment and competitiveness, which can ultimately result in decreased market share and profitability.

## Empirical Review of Literature

Empirical literature review is published work obtained from periodicals and books, that deliberates on theories and offers empirical results that are pertinent to the topic of study (Zikmund, Babin,

Carr, and Griffin (2010). The study reviewed how exchange rate, interest rate, inflation rate and money supply affects financial performance.

## Exchange Rates and Financial Performance

A study by Yakubu & Atiku, (2016) found that exchange rate volatility has a significant negative impact on the financial performance of manufacturing firms in Nigeria. Specifically, the authors found that exchange rate volatility had a significant negative effect on the return on assets (ROA) and return on equity (ROE) of the firms studied. The study investigated the impact of exchange rate volatility on the financial performance of manufacturing firms in Nigeria using data from 2001 to 2013. The authors collected financial data from 30 manufacturing firms listed on the Nigerian Stock Exchange and analyzed the data using regression analysis. However, the study by Githinji, Mwabu, and Wachira (2018) used a quantitative research methodology to investigate the impact of exchange rate volatility on the financial performance of tea companies in Kenya. The study used a census approach to collect data from all the 69 tea companies in Kenya. Data was collected from secondary sources, such as annual reports and financial statements, and analyzed using descriptive statistics and regression analysis. The study found that exchange rate volatility has no significant impact on the financial performance of tea companies in Kenya. The study concludes that other factors such as management efficiency and government policies may have a more significant impact on the financial performance of tea companies in Kenya.

## Interest Rates and financial performance

Nguyen, Nguyen, & Hoang (2020) in their study found a significant negative relationship between interest rate changes and financial performance of banks in Vietnam. Specifically, an increase in interest rates led to a decrease in return on assets (ROA), return on equity (ROE), and net interest margin (NIM) of banks, and vice versa. The study used a sample of 29 banks listed on the Ho Chi Minh City Stock Exchange from 2010 to 2019 and employed a panel regression model to analyze the impact of interest rate changes on the financial performance of these banks. Wong, L. (2019) on his study on interest Rates and Financial Performance in the Real Estate Sector in Canada found no significant relationship between interest rates and financial performance in the real estate sector in Canada. The correlation analysis did not show any statistically significant correlation between interest rates and financial performance indicators such as net operating income, cash flow, and return on investment. The study examined the relationship between interest rates and financial performance in the real estate sector in Canada. The study used data from 75 real estate companies over a period of three years and performed correlation analysis to assess the relationship between interest rates and financial performance.

## Inflation rate and financial performance

A study by Karunaratne, Madurapperuma and Nishshanka (2017) used a quantitative research methodology to investigate the impact of inflation on the profitability of tea companies in Sri Lanka. The study used a purposive sampling technique to select a sample of 12 tea companies in Sri Lanka. Data was collected from secondary sources, such as annual reports and financial statements, and

analyzed using regression analysis and statistical software. The study found that inflation has a negative impact on the profitability of tea companies in Sri Lanka. The study concluded that inflation management is crucial for the profitability of tea companies in Sri Lanka. In contrast, the study by Waiganjo & Wawire, (2017) found no significant impact of inflation rate on the financial performance of commercial banks in Kenya. Specifically, the authors found that inflation rate did not have a significant effect on the return on assets (ROA), return on equity (ROE), or net interest margin (NIM) of the banks studied. The study investigated the relationship between inflation rate and financial performance of commercial banks in Kenya using data from 2005 to 2015. The authors collected financial data from 11 commercial banks operating in Kenya and analyzed the data using regression analysis.

## Money supply and financial performance

In their study, Oladapo and Adebusuyi, (2017) found a positive relationship between money supply and stock prices in Nigeria. An increase in money supply led to an increase in stock prices. The study used a time-series analysis using monthly data from January 2000 to December 2016. In another study by Muyambiri and Chiwira, (2017) they found a negative relationship between money supply and economic growth in Sub-Saharan Africa. An increase in money supply had a negative impact on economic growth. Panel data analysis using data from 22 Sub-Saharan African countries from 1990 to 2014 was used in the study. A study by Oluwafemi and Afolabi, (2018) found no significant relationship between money supply and the financial performance of Nigerian deposit money banks. The study investigated the effect of Money Supply on the Financial Performance of Nigerian Deposit Money Banks and authors concluded that money supply was not a major determinant of the banks' financial performance. The study used correlation analysis for annual data from 2010 to 2017.

## Critique of the existing Literature Review relevant to the Study

From reviewed relevant literature, it has come out strongly from several scholars like; Karunaratne, et al (2017), Yakubu, et al (2016), Nguyen et al (2020), Oladapo and Adebusuyi, (2017) that macroeconomic factors have an effect on financial performance.  However other scholars like; Waiganjo and Wawire, (2017), Githinji, et al (2018), Wong, L. (2019) established that macroeconomic factors have no significant impact on financial performance. The varied results from the different researchers and alternative views from different countries are predominantly as an outcome of lack of summarized analysis of multiple macroeconomic factors and performance indicators. This study intends to take a departure from past studies and incorporate several macroeconomic factors and their effect on financial performance of KTDA managed factories in the West of the Rift.

## Summary of the Literature

The relevance of the purchasing power theory to the tea sector is significant. Tea is one of the most widely consumed beverages in the world, and it is produced in many countries. The price of tea can vary widely depending on where it is produced and where it is sold. The purchasing power theory

suggests that the price of tea should be the same in all countries when expressed in a common currency. Keynesian Economic Theory's liquidity preference concept could be relevant to the tea sector since the demand for tea could be influenced by factors such as the availability of credit or interest rates, which could impact consumers' ability or willingness to purchase tea. Therefore, the government could implement policies to ensure that credit is available to tea farmers and that interest rates are at reasonable levels, which would help to stimulate the demand for tea. The Cost-Push Inflation theory is a macroeconomic theory that explains the relationship between inflation and changes in production costs. The financial performance of the tea sector can be affected by cost-push inflation, if the cost of production increases, the profit margins of tea producers will decrease. The Quantity Theory of Money can help explain the relationship between the money supply and the price of tea. For example, if the government increases the money supply by printing more money or lowering interest rates, this can lead to an increase in the demand for tea, as people have more money to spend. This increased demand can, in turn, drive up the price of tea.

Nguyen et al (2020) in their study found a significant negative relationship between interest rate changes and financial performance of banks in Vietnam. Karunaratne et al (2017) found that inflation has a negative impact on the profitability of tea companies in Sri Lanka. Wong, L. (2019) found that interest rates have no significant impact on the financial performance of the real estate in Canada while Oladapo and Adebusuyi, (2017) found a positive relationship between money supply and stock prices in Nigeria. The literature review discusses several studies that examine the relationship between macroeconomic variables and financial performance. Specifically, studies focused on exchange rates, interest rates, inflation rate, and money supply.

The studies used quantitative research methodologies, such as regression analysis, to analyze the impact of these variables on the financial performance of different sectors in Sri Lanka, Kenya, Nigeria, Canada and Vietnam. While some studies found a significant negative impact of certain variables on financial performance, others found no significant impact. Overall, the literature suggests that various macroeconomic factors can affect financial performance, but the specific impact can vary depending on the sector and context.

## Research Gap

The review of literature presented the contradictory and contextual research gaps. Evidence contradictory gap arises when results from studies are contradictory. Contextual research gap arises because the studies are conducted in different geographical as well as sectoral contexts and a need arises to compare results. Some of the reviewed studies for instance studies by Yakubu, et al (2016) which examined impact of exchange rate volatility on the financial performance of manufacturing firms in Nigeria and Githinji, et al (2018) which investigated the impact of exchange rate volatility on the financial performance of tea companies in Kenya presented both contradictory and contextual research gaps while the study by Waiganjo & Wawire, (2017) which investigated the relationship between inflation rate and financial performance of commercial banks and a study by Karunaratne, Madurapperuma and Nishshanka (2017) which investigated the impact of inflation on the profitability of tea companies in Sri Lanka presented contextual research gap. While some studies have examined the impact of one or two of these variables in either Sri Lanka, Kenya, Nigeria, Vietnam or Canada there appears to be a lack of comprehensive studies that consider all four

variables. Due to these mixed results as well as research gaps, the study seeks to establish the effect of Macroeconomic factors on financial performance of KTDA managed Factories in the West of the Rift.

## RESEARCH METHODOLOGY

This chapter describes methodology and procedures used in conducting the study. The contents include; research design, data collection, data reliability and validity, data analysis and analytical model used. Statistical Software used to assist in data processing and analysis is also indicated in this section.

### Research Design

According to Kothari (2014) research design is a plan, a roadmap and blueprint strategy of investigation conceived so as to obtain answers to research questions. Research design refers to the overall strategy, plan, and framework used to conduct research and gather data in order to answer a research question or test a hypothesis. It includes the selection of research methods, sampling techniques, data collection and analysis procedures, as well as the interpretation and generalization of results (Creswell, 2014). Panel research design also known as longitudinal or repeated measures design was used and was preferred in this study since it allowed for observation and analysis of changes, trends, and relationships within the studied variables over multiple time points. In this case, the study described the relationship between macroeconomic factors and financial performance in Kenya Tea Development Agency managed factories in the Western Rift of Kenya.

### Population

A population is a well-defined set of people, services, elements, events and group of things or households that are being investigated (Kothari and Garg, 2014). According to Bryman and Bell (2019), the target population refers to "the total group of individuals or entities in a research project that the researcher is interested in, and from which he or she will draw a sample" (p. 205). The study was seeking to establish the relationship between macroeconomic factors and financial performance of KTDA-managed factories in the Western Rift region of Kenya and the target population for this study was the 19 KTDA-managed tea factories in the Western Rift region of Kenya.

### Data Collection instruments

Data collection instruments refer to the tools, techniques, or methods used to gather data for research purposes. These instruments can be both quantitative and qualitative and include surveys, questionnaires, interviews, observations, and existing data sources such as databases or financial statements. According to Kumar (2019), data collection instruments "are the means by which data are collected from research participants" (p. 145). These instruments play a crucial role in ensuring the validity and reliability of research findings as they help to ensure that data collected are accurate, consistent, and relevant to the research objectives.

## Data Collection Procedures

The research used secondary data. A time series of quarterly data spanning from Years 2017 to 2021 was used employing 20 data points considered enough for effective inference. For this study, secondary data was collected using the data collection Sheet as in Appendix v & vi. The data for Return on Equity was obtained from the financial statements of the factories. Data on exchange rate, money supply and interest rates was obtained from the Central Bank of Kenya while data on inflation was obtained from the Kenya National Bureau of Statistics. Dawson (2009) states that secondary research data involves the data collected using information from studies that other researchers have made of a subject. Ember and Ember (2009) describe secondary data as data collected by others and found by the comparative researcher in ethnographies, censuses and histories.

## Data Analysis and presentation

The study focused on analyzing and presenting data related to macroeconomic factors and the financial performance of Tea Factories in the West of the Rift of Kenya. The data collected was entered into an Excel sheet, and descriptive analysis was conducted, utilizing line graphs to illustrate the trends of exchange rate, interest rate, inflation rate, and money supply from 2017 to 2021. To understand the interdependence between these macroeconomic factors and financial performance, regression analysis was employed, using a multivariate function as the regression equation. Before proceeding with regression analysis, pre-tests were conducted to ensure data integrity, such as checking for multicollinearity, heteroscedasticity, autocorrelation, linearity, and normality. Multicollinearity was assessed using variance inflation factor, heteroscedasticity with the Breusch-Pagan test, autocorrelation with Durbin-Watson statistic, linearity with Pearson correlation coefficient, and normality with the Jarque-Bera test. The Time Series model was then used to estimate and provide empirical evidence on the relationship between return on equity and the macroeconomic factors. The comprehensive data analysis and presentation process ensured the validity and reliability of the study's findings, offering valuable insights into the impact of macroeconomic factors on the Tea Factories' financial performance.

## Model Specification

The analytical model was mathematical and multivariate. Regression analysis of dependable against independent variables was done to investigate the relationship between the dependent variable Y and the independent variables $X_1$, $X_2$, $X_3$, and $X_4$, along with an error term $\varepsilon$. The independent variables of the study comprised; Exchange rate, Interest rate, Inflation rate and Money supply. The dependent variable was expressed as a percentage Return on Equity on quarterly basis. The macro economic variables coefficients in the analytical model was denoted as "$\beta$". The resulting regression equation therefore was expressed as;

$$Y = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon$$

Where:

**Y** represents the value of the dependent variable (Return on Equity)

$\beta_0$ represents constant, intercept of the equation

**β₁- β4** represents regression coefficients of independent variables

**X₁** represents the exchange rate

**X₂** represents the interest rate

**X₃** represents the inflation rate

**X₄** represents money supply

t represents the time series

**ε** represents the error term which is assumed to be normally distributed.

## Model Diagnostic Tests

Diagnostic tests were needed to establish if assumption of multiple regression analysis addressed various forms of biasness that may occur. Prior to carrying out the regression analysis the following tests were carried out; multicollinearity test, heteroscedasticity test, autocorrelation test, linearity test and normality test.

## Multicollinearity Test

When two or more predictor variables in a multiple regression model have a high degree of correlation, this statistical phenomenon is known as multicollinearity, or near-linear dependency. (Jensen and Ramirez, 2012). In order to assess the degree of correlation between variables, multicollinearity is used. To check for multi-collinearity, Variance Inflation Factor (VIF) for each independent variable was used, If the VIF value is higher than 10, it was considered to have a high correlation with other independent variables.

## Heteroscedasticity Test

When the conditional variance in your data is not constant, heteroscedasticity takes place. The model's heteroscedasticity results from the absence of certain variables. The Breusch-Pagan test, which is a more reliable test that determines whether all the variances are equal throughout your data if it is not normally distributed as claimed by Wiggins and Poi, (2001). was employed in this study to test for heteroscedasticity.

## Autocorrelation Test

The Durbin Watson test was used to determine whether autocorrelation exists. As it tests correlations between errors, the module assumes the error terms are distributed normally, with a mean of zero, and are stationary. According to Woolridge (2002), inaccurate parameter estimates and biased standard errors would come from failing to recognize and take into account serial correlation in the idiosyncratic error factor in a panel model. An uncorrelated residual is indicated by a statistic test value of 2, which ranges from 0 to 4 and falls inside that range. Positive correlation is indicated by a value 2 and negative correlation by a value > 2.

## Linearity Test

Linearity test is performed to determine the linear reportable range of an analysis (Mugenda & Mugenda, 2003). The test attempts to establish whether the association between independent variable and dependent variable is linear or not. The test used a Pearson correlation coefficient, to test the association between independent variables with the dependent variable. If the value deviation $> 0.05$, subsequently association between independent variables are linearly dependent and if the value deviation $< 0.05$, then the association between independent variables with the dependent are not linear.

## Normality Test

To check if sample data is representative of a normally distributed population, a normality test is utilized. Performing procedures to determine if the data distribution is normal or not is known as testing for data normality. Normality tests the assumption that variable is normally distributed around the mean. Normality testing is performed using the Goodness of fit test, which checks how normally distributed the sample data is by calculating the kurtosis and Skewness. To test normality, a Jarque-Bera test was used, which is a goodness-of-fit test that determines whether or not sample data have skewness and kurtosis that matches a normal distribution. If the p-value that corresponds to the test statistic is less than $\alpha = .05$, then we can reject the null hypothesis and conclude that the data is not normally distributed.

## RESEARCH FINDINGS AND DISCUSSION

This chapter provides an in-depth examination of the research analysis and presents the key findings. The primary aim of this study was to assess how macroeconomic variables impact the financial performance of factories managed by the Kenya Tea Development Agency (KTDA) in the Western Rift region of Kenya.

## Pre Testing of Data

### Multicollinearity Testing

When two or more predictor variables in a multiple regression model have a high degree of correlation, this statistical phenomenon is known as multicollinearity, or near-linear dependency. (Jensen and Ramirez, 2012). In order to assess the degree of correlation between variables, multicollinearity is used. To check for multi-collinearity, Variance Inflation Factor (VIF) for each independent variable was used, if the VIF value is higher than 10, it was considered to have a high correlation with other independent variables.

*Table 4.1 Multicollinearity Results on Macroeconomic factors*

| Variable | VIF |
|---|---|
| Exchange Rates | 2.626725029 |
| Interest rate | 4.158147275 |
| Inflation rate | 4.740550425 |
| Money supply | 1.780087249 |

*Source: Study Data 2023*

The VIF results presented in Table 4.2 indicate that there is no evidence of multicollinearity in the model. This is supported by the fact that the VIF values for all the explanatory variables are below ten.

## Heteroscedasticity Test

When the conditional variance in your data is not constant, heteroscedasticity takes place. The model's heteroscedasticity results from the absence of certain variables. The Breusch-Pagan test, which is a more reliable test that determines whether all the variances are equal throughout your data if it is not normally distributed as claimed by Wiggins and Poi (2001), was employed in this study to test for heteroscedasticity. The P value for this study was **0. 5809.** Because P value is not less than 0.05, we do not have sufficient evidence to say that the variance between the four groups is different.

## Autocorrelation Test

The Durbin Watson test was used to determine whether autocorrelation exists. As it tests correlations between errors, the module assumes the error terms are distributed normally, with a mean of zero, and are stationary. According to Woolridge (2002), inaccurate parameter estimates and biased standard errors would come from failing to recognize and take into account serial correlation in the idiosyncratic error factor in a panel model. An uncorrelated residual is indicated by a statistic test value of 2, which ranges from 0 to 4 and falls inside that range. Positive correlation is indicated by a value 2 and negative correlation by a value > 2. In our study, we obtained a Durbin-Watson statistic of **2.065**, which falls within the acceptable limits. This result suggests that there is no significant auto correlation issue present in the data. Having a value close to 2 further supports the notion that the model's residuals exhibit no substantial auto correlation, providing confidence in the reliability of the linear regression analysis performed in this study.

## Linearity Test

Linearity test is usually undertaken by the use of P-P plots that shows whether the data points are showing linear tendency or not.
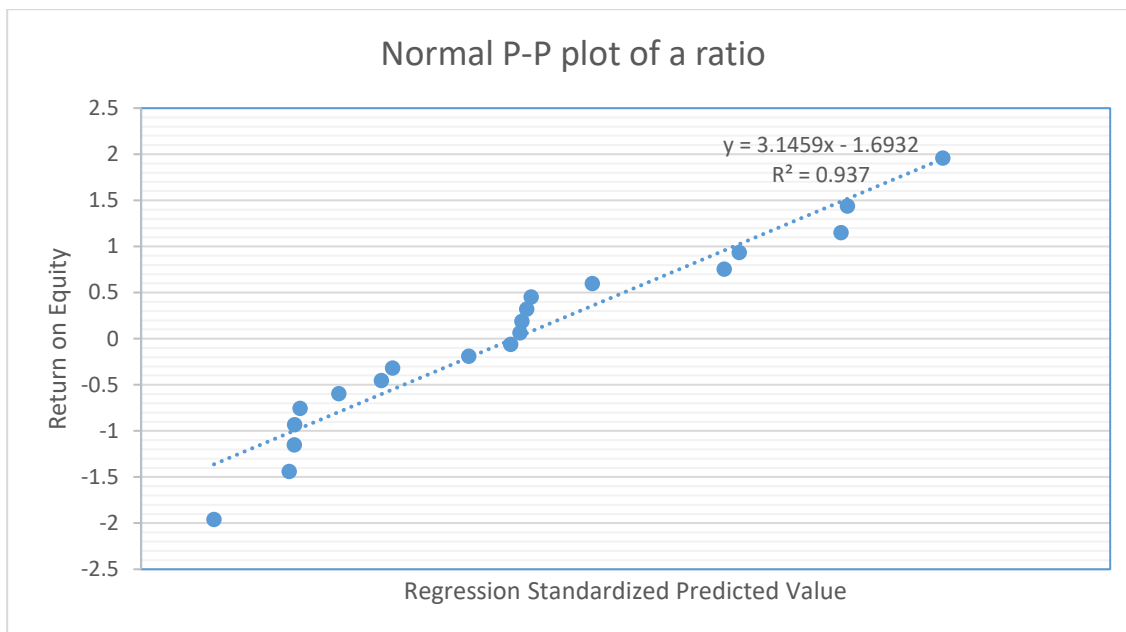
*Figure 4.1 P-P Plot*
*Source: Study Data 2023*

Figure 2.1 indicates that the P-P plot is linear in form and therefore the data passes linearity test.

## Normality Test

To check if sample data is representative of a normally distributed population, a normality test is utilized. Performing procedures to determine if the data distribution is normal or not is known as testing for data normality. Normality tests the assumption that variable is normally distributed around the mean. Normality testing is performed using the Goodness of fit test, which checks how normally distributed the sample data is by calculating the kurtosis and Skewness. To test normality, a Jarque-Bera test was used, which is a goodness-of-fit test that determines whether or not sample data have skewness and kurtosis that matches a normal distribution. If the p-value that corresponds to the test statistic is less than $\alpha = .05$, then we can reject the null hypothesis and conclude that the data is not normally distributed.

*Table 4.2 Jarque-Bera Test*

|  | ROE | CPI | EXCHANGE RATE | MONEY SUPPLY | LENDING RATES |
|---|---|---|---|---|---|
| **p-value** | 0.486 | 0.630 | 0.259 | 0.555 | 2.113E-08 |

*Source: Study Data 2023*

Given that the p-value is greater than 0.05, we do not have enough evidence to reject the null hypothesis. Therefore, we cannot conclude that the dataset is not normally distributed.

## Descriptive Analysis

*Table 4.3 Macroeconomic Variables*

|  | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Exchange rates | 103.658 | 2.9537 | 1.05902 | -0.1801 |
| Interest rates | 12.9498 | 1.0919 | 1.92493 | 5.2529 |
| Inflation rate | 100.648 | 8.1953 | 0.10691 | -1.0314 |
| Money supply | 3707404 | 475651.4464 | 0.27103 | -1.1233 |

*Source: Study Data 2023*

Table 4.3 shows the descriptive statistics of macroeconomic variables used in the study. The mean exchange rate stands at 103.658, with a relatively low standard deviation of 2.9537, indicating a fairly stable trend. However, the skewness value of 1.05902 suggests a slight positive skew in the data, potentially indicating some rightward tailing of the distribution. Interest rates, with a mean of 12.9498, exhibit moderate variability as indicated by a standard deviation of 1.0919. Notably, the skewness of 1.92493 indicates a significant positive skew, suggesting a potential concentration of higher interest rates. Inflation rate data is centered around a mean of 100.648, showing relatively low variability, yet the slight negative skew (-0.10691) implies a slightly leftward tail. Money supply exhibits a substantially higher mean of 3,707,404 but also notably higher variability with a standard deviation of 475,651.4464. The positive skew (0.27103) suggests a rightward tail in the data distribution, possibly indicating periods of increased money supply. The kurtosis values for all variables indicate some departure from a normal distribution, with interest rates exhibiting the highest kurtosis of 5.2529, suggesting the presence of outliers or heavy tails in the data.
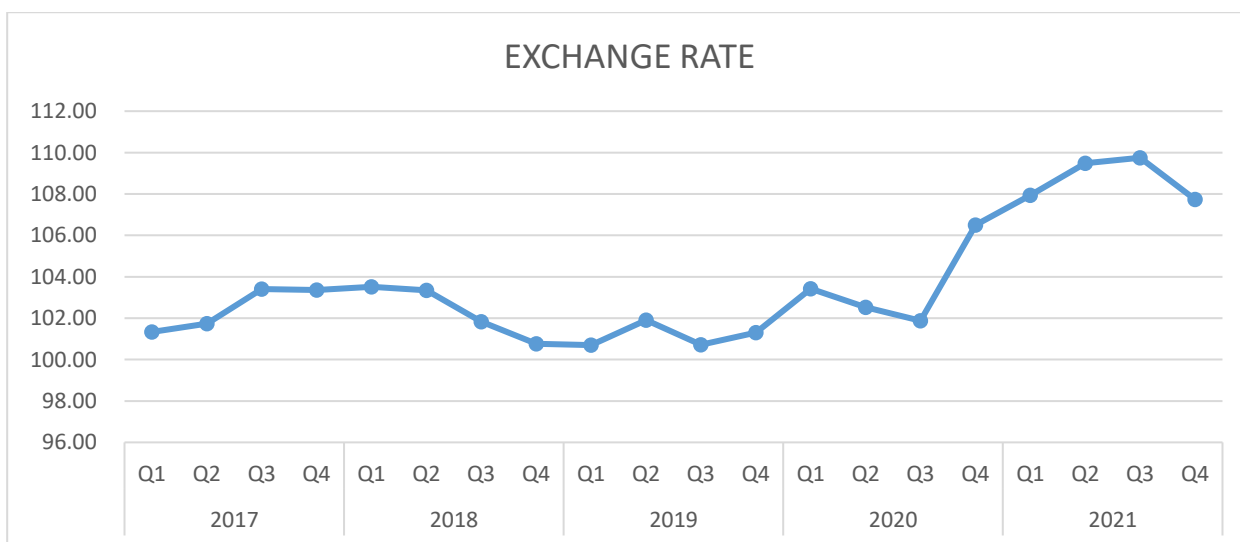
## Exchange rate



*Figure 4.2 Average monthly exchange rate from 2017 to 2021*
*(Source: Researcher, 2023)*

The exchange rate had a mean of 103.6575 and a standard deviation of 2.9537 over the study period. It was lowest in 2019 and this may have been caused by positive market sentiment which led to increased investment and a stable or appreciating exchange rate. The Government through Central

Bank of Kenya (CBK) reviewed the Central Bank Rate (CBR) downwards from 9.00 per cent in July 2018 to 8.50 per cent in November 2019 signaling an easing of monetary policy with the aim of boosting economic growth. Similarly, the capping of bank interest rates previously enshrined in section 33B of the 2016 Banking Act, was repealed in November through enactment of the Finance Act, 2019 (KNBS Economic Survey 2020). The exchange rate was highest in quarter 3 2021 again this was the period just before the general election.

## Interest rate
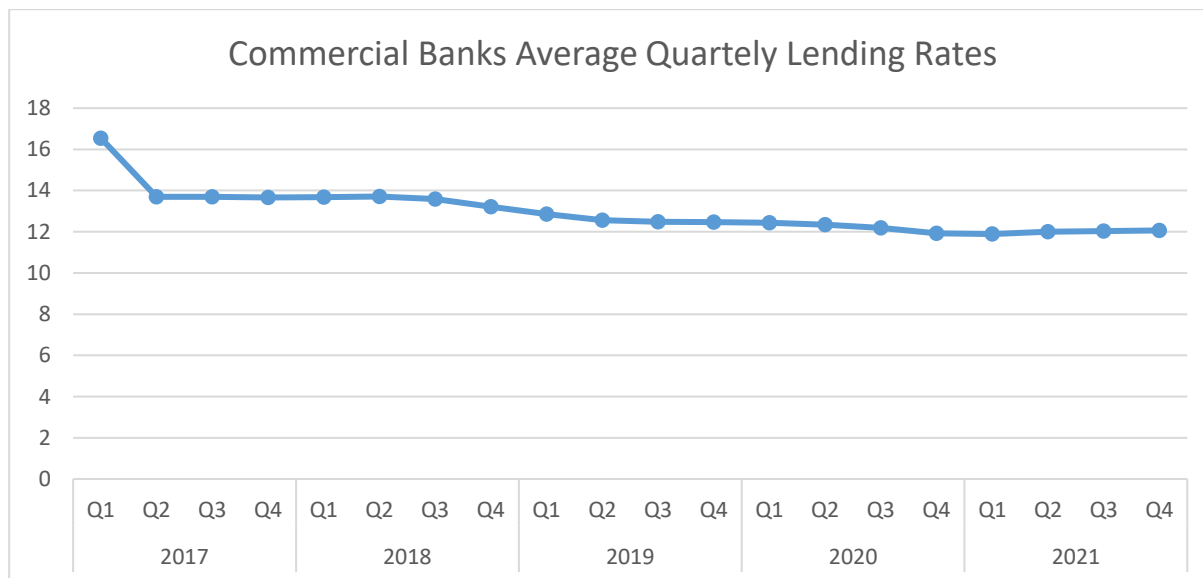


*Figure 4.3 Average quarterly Interest rates from 2017 to 2021*
*(Source: Researcher, 2023)*

From Figure 4.3, we see that interest rates (Commercial Banks lending rates) The given lending rates data spans from the first quarter (Q1) of 2017 to the fourth quarter (Q4) of 2021. Over this period, the lending rates have shown a declining trend. Starting at 16.54 in the first quarter of 2017, the rates gradually decreased to 11.89 in the fourth quarter of 2021. The initial decline was relatively steep, followed by a more gradual and sustained decrease. The rates experienced some minor fluctuations during this period but consistently moved downwards. This trend suggests that the cost of borrowing has reduced over time, potentially influenced by changes in economic conditions, monetary policies, or market forces. Over the study period, interest rates had mean of 12.94975 and a standard deviation of 1.0919 as shown in table 4.3
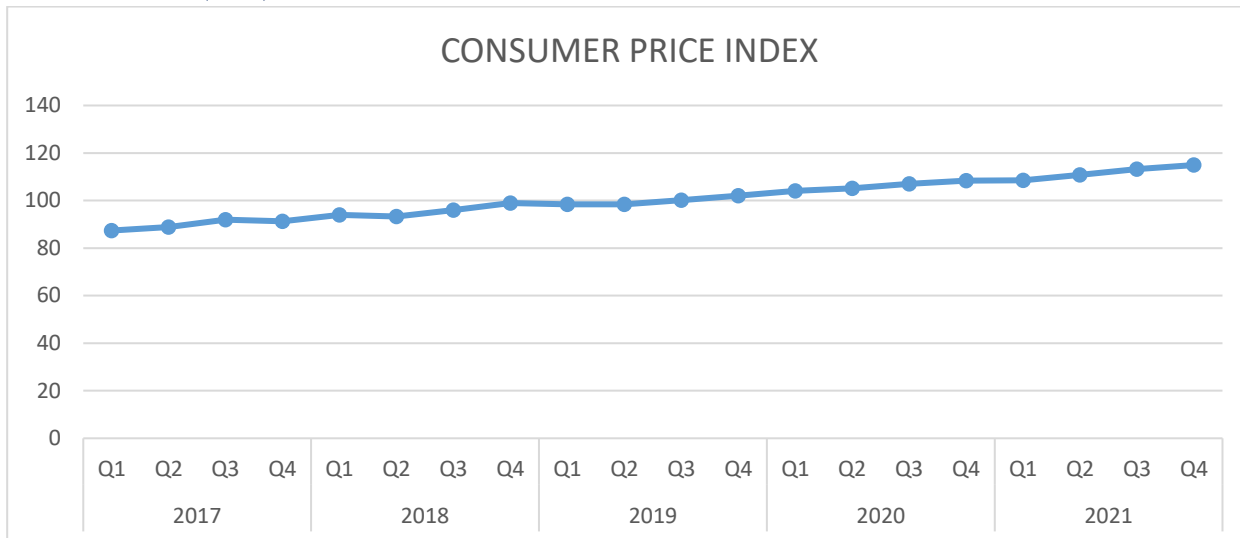
## Inflation rate (CPI)



*Figure 4.4 Average quarterly CPI from 2017 to 2021*
*Source: Researcher, 2023*

The period under study, Inflation rate (CPI) had a mean of 100.6475 and a standard deviation of 8.1953 during the study period. The CPI data suggests a persistent inflationary trend during the mentioned period, indicating a general increase in the cost of goods and services over time. This rise in consumer prices may have implications for consumers, businesses, and policymakers, and could reflect changes in the overall economic environment and the purchasing power of the currency.
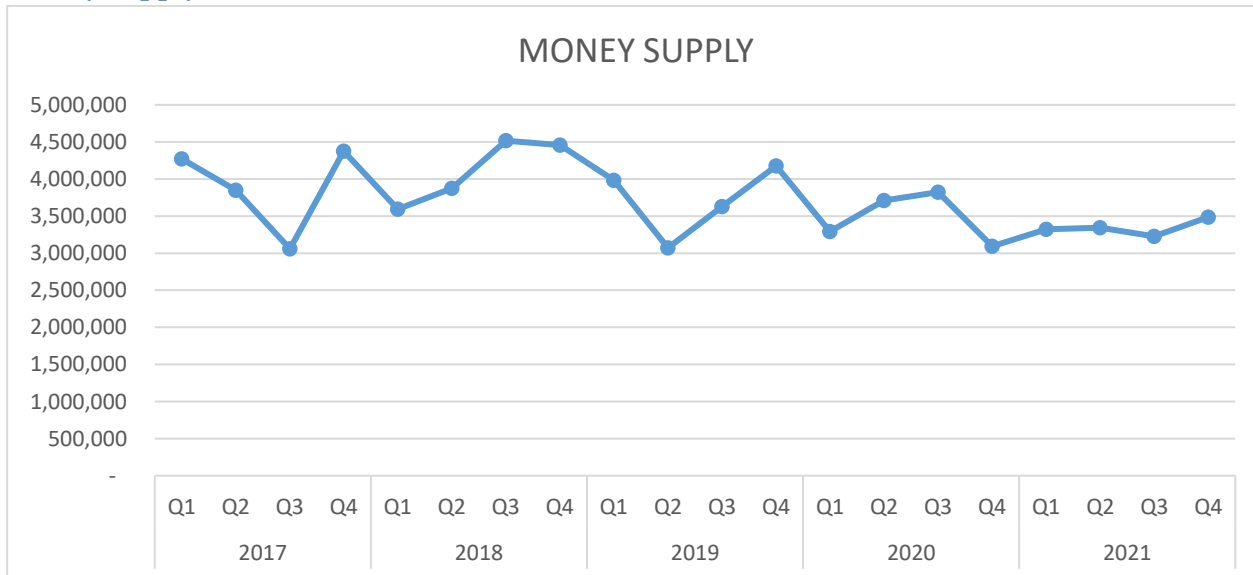
## Money supply (M3)



*Figure 4.5 Average quarterly money supply from 2017 to 2021*
*(Source: Researcher, 2023)*

The money supply data demonstrates a fluctuating trend over the provided periods, with alternating phases of expansion and contraction. There are periods of both growth and decline in the money supply, which can have significant implications for economic activity and inflationary pressures.

## Financial Performance Analysis

*Table 4.4 ANOVA Analysis Results*

ANOVA

|  | df | SS | MS | F | Significance F |
|---|---|---|---|---|---|
| Regression | 4 | 0.890028356 | 0.222507089 | 3.761818544 | 0.025964446 |
| Residual | 15 | 0.887232145 | 0.05914881 |  |  |
| Total | 19 | 1.777260501 |  |  |  |

*Source: Study Data 2023*
a. Dependent Variable: ROE
b. Predictors: (Constant), Exchange rates, Interest rates, Inflation rate & Money supply

From the Anova analysis results table 4.4, the given multiple linear regression analysis explores the relationship between a dependent variable financial performance (Return On Equity) and four independent variables: exchange rate, lending rates, inflation rate (Consumer Price Index), and money supply. The model shows that the combined effect of these independent variables is statistically significant (p-value = 0.025964446), indicating that at least one of the independent variables has a significant impact on the dependent variable.

From the coefficient in table 4.5 when all the variables are regressed together, lending rates, consumer price index, and money supply show statistical significance ($p < 0.05$), meaning they have significant relationships with the dependent variable. Specifically, as lending rates and consumer price index increase, the dependent variable tends to decrease, while an increase in money supply corresponds to a small increase in the dependent variable. In contrast, exchange rate does not have a statistically significant relationship with the dependent variable. When all independent variables are zero, the estimated value of the dependent variable is around 2.997. However, the p-value is greater than 0.05, indicating that the intercept is not statistically significant.

*Table 4.5 Model Coefficients of Macroeconomic variables and Financial Performance*

|  | Coefficients | Standard Error | t Stat | P-value |
|---|---|---|---|---|
| Intercept | 2.997471138 | 3.052848801 | 0.981860332 | 0.341741119 |
| Exchange rates | 0.024033991 | 0.030615549 | 0.785025642 | 0.444661245 |
| Interest rates | -0.229101981 | 0.104194202 | -2.198797794 | 0.043996395 |
| Inflation | -0.035326446 | 0.016005037 | -2.207208051 | 0.043295582 |
| Money Supply | 4.23956E-07 | 1.56505E-07 | 2.708900531 | 0.016167559 |

*Source: Study Data 2023*

The coefficients of the exchange rate were generated from the data analyzed as presented in table 4.5 which shows that exchange rate does not significantly contributes to the model since the p-value equal to .4447 is more than .05 significance level. Positive coefficient equal to 0.0240 shows that exchange rate and financial performance move in the same direction and that a unit change in exchange rate would lead to 0.0240 units change in the financial performance of the factories. The

study findings on the effect of exchange rate on financial performance of factories indicated that exchange rates have no significant negative effect on financial Performance corroborating a study by Olopade and Adegbaju (2018) analyzing the relationship between exchange rate and stock market performance in South Africa indicating that there is no significant effect of exchange rate on stock market performance in South Africa. However, the results contradict the findings of Lagat, C. C., & Nyandema, D. M. (2016) who studied the influence of foreign exchange rate fluctuations on financial performance of commercial banks listed at the Nairobi Securities Exchange found that there existed a strong positive relationship between foreign exchange rates and financial performance indicators of banks. The study by Korir & Langat (2019) investigated the impact of macroeconomic variables on financial performance of tea companies in Kenya. The study found that exchange rate had a negative impact on the financial performance of tea companies in Kenya.

The coefficients of inflation rate as shown in table 4.5 indicates that inflation rate has a significant Negative influence on financial Performance because their p-value equal to .043 is less than .05 significance level. The coefficient of inflation rate equal to -0.035, shows that inflation rate and financial performance of the factories move in the opposite direction. A unit change in inflation rate would lead to .035 units change in the Return on Equity of the factories. The results of this study on effects of inflation on stock market Performance are very coherent with the findings of Almansour, A. Y., Alzoubi, H. M., Almansour, B. Y., & Almansour, Y. M. (2021) whose results indicated that there is a significant and negative association between inflation rate and return on assets, return on equity and margin of net interest. Moreover, the results showed that the Banks' performances are significantly affected by inflation. The findings are further confirmed by those of Fama (1981) who concluded that an increase in inflation reduces real Performance on stocks.

The coefficients of interest rate as presented in table 4.5 shows that interest rate significantly contributes to the model since their p-values equal to .044 is less than .05 significance level. Negative coefficient of interest rate equal to -0.229 shows that, interest rate and financial performance move in the opposite direction. A 1 unit change in interest rate would lead to 0.229 units change in the Return on Equity. The findings of this study corroborates the findings of Nguyen, Nguyen, & Hoang (2020) in their study who found a significant negative relationship between interest rate changes and financial performance of banks in Vietnam. Specifically, an increase in interest rates led to a decrease in return on assets (ROA), return on equity (ROE), and net interest margin (NIM) of banks, and vice versa. The findings are in agreement with Mnang'at, Namusonge, and Oteki (2016) who found a significant relationship between interest rate and financial performance of micro enterprises in Kenya & also Barnor (2014) found a significant negative effect of interest rate on stock market returns of listed firms in Ghana. The findings however contradict those of Egbunike, C. F., & Okerekeoti, C. U. (2018) who found no significant effect for interest rate on financial performance of selected quoted manufacturing firms in Nigeria.

The coefficients of money supply rate as presented in table 4.5 shows that money supply significantly contributes to the model since their p-values equal to .000 is less than .05 significance level. Positive coefficient of interest rate equal to .016 shows that, money supply and financial performance move in the same direction. A 1 unit change in money supply would lead to .016 units change in the return on equity of the factories. The findings of this study corroborates the study of

Qing, Y. K., & Kusairi, S. (2019) who found money supply and stock market performance as having a positive relationship. The findings also corroborate those of Galadima, M. D., & Ngada, M. H. (2017) whose study found money supply to have positive significant impact on the economy.

*Table 4.6 Model Summary of Macroeconomic variables and financial Performance*

| *R* | R Square | Adjusted R Square | Standard Error |
|------|----------|-------------------|----------------|
| 0.708 | 0.501 | 0.368 | 0.243 |

*Source: Study Data 2023*

As shown in table 4.6, the model is significant at 95% level and is a good fit with a value of R Square of 0.501 indicating that the model is able to explain 50% of the financial performance of the factories and is therefore a good estimate. After ascertaining that a significant relationship exists between, exchange rate, interest rate, inflation rate, money supply and financial performance of the factories, the study evaluated the model results as presented in the Anova table 4.4. The fitted model is thus summarized in equation 4.1

$$Y = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon$$

$Y = 2.997 + 0.024 X_{1t} - 0.229 X_{2t} - 0.035 X_{3t} - + 4.24e\text{-}07 X_{4t}$ …...Equation (4.1)

$\beta_0$ represents constant, intercept of the equation

$\beta_1 - \beta_4$ represents regression coefficients of independent variables

$X_1$ represents the exchange rate

$X_2$ represents the interest rate

$X_3$ represents the inflation rate

$X_4$ represents money supply

$\varepsilon$ represents the error term which is assumed to be normally distributed.

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study sought to determine the effect of macroeconomic factors on the performance of KTDA managed factories in the West of the Rift of Kenya. Macroeconomic factors studied include exchange rate, interest rate, inflation rate, and the money supply. A summary of the study findings as well as conclusions are described in this chapter from which recommendations have been drawn with suggestions for further studies highlighted as a way of advancing knowledge in this area of study. Conclusions of the study have been aligned clearly against the four objectives and their respective questions answered.

## Summary of Findings

The findings are outlined in this section based on the research objectives guiding the study. The study findings revealed that the macro economic factors studied have a varying effect on the performance of the KTDA managed factories and that when they are regressed together their combined effect is significant given the p value equals 0.026 which is less than 0.05 significance level used in this study. The macroeconomic factors have significant effect on the financial Performance.

## Exchange Rate and financial Performance

The findings on the first study objective on whether exchange rate has an effect on the financial performance of the KTDA managed factories in the West of the Rift of Kenya found no strong evidence to suggest that changes in the exchange rate had a significant impact on the average return on equity of KTDA managed factories in the Western Rift of Kenya over the observed time period. The coefficient for the exchange rate was approximately 0.0240. However, it is not statistically significant at the 5% level of significance (p-value = 0.445).

## Interest Rates and financial Performance

The findings in this study is on whether interest rate has an effect on financial performance of KTDA managed factories in the West of the Rift of Kenya. Specifically, the study findings revealed that interest rate plays an important role in influencing the changes or variations of Return on Equity on the KTDA managed factories in the West of the Rift. The coefficient for lending rates was approximately -0.2291. It is statistically significant at the 5% level of significance (p-value = 0.044). Therefore, a conclusion that changes in lending rates have a significant negative impact on the average ROE of the factories. As lending rates increase, the average ROE is expected to decrease, and vice versa.

## Inflation Rate and financial Performance

Based on the third objective in this study seeking to determine whether inflation rate has an effect on financial Performance, the study findings found out that inflation rate significantly influences financial Performance of the KTDA managed factories in the West of the Rift. The coefficient for the consumer price index was approximately -0.0353. It is statistically significant at the 5% level of significance (p-value = 0.043). This suggests that changes in the consumer price index have a significant negative impact on the average ROE of KTDA managed factories. As the consumer price index rises, the average ROE is expected to decrease, and vice versa.

## Money Supply and Stock Market Performance

Based on the forth objective in this study seeking to establish whether money supply has an effect on financial Performance of KTDA managed factories in the West of the Rift of Kenya, the study findings found out that money supply significantly influences financial Performance. The

coefficient for money supply was approximately 4.24e-07 (equivalent to 0.000000424). It is statistically significant at the 5% level of significance (p-value = 0.016). Changes in the money supply have a significant positive impact on the average ROE of the factories. As the money supply increases, the average ROE is expected to increase as well.

## Conclusion

The study's findings reveal that changes in lending rates, consumer price index, and money supply significantly influence the average Return on Equity (ROE) of KTDA managed factories in the Western Rift of Kenya. Specifically, higher lending rates and inflation levels are associated with lower ROE, while an increase in money supply corresponds to improved ROE. However, fluctuations in the exchange rate do not show a statistically significant impact on ROE during the observed time period. These insights emphasize the importance of monetary policy and inflation management in driving the profitability of the factories, warranting prudent financial decisions to maintain sustainable ROE levels.

Based on the findings, this study concludes the following;
The study did not find strong evidence suggesting that changes in the exchange rate significantly affected the average Return on Equity (ROE) of KTDA managed factories in Kenya's Western Rift region during the observed time frame. While a depreciation of the Kenyan shilling could result in foreign exchange gains for factories due to their reliance on exports, factors like tea market fluctuations and balance of payment issues have diminished the value of the Kenyan shilling. To mitigate forex losses, companies should adopt strategies like borrowing foreign-denominated loans, using hedging techniques, and monitoring currency movements against major global currencies.

The research revealed that interest rates play a vital role in influencing the financial performance of KTDA managed factories in the Western Rift of Kenya. Rising interest rates since the 2008 global credit crisis have led to increased financial expenses for companies due to expensive loan repayments. To counter this, companies need to comprehend market dynamics affecting interest rates and adjust their strategies accordingly. Close monitoring of interest rate trends and alignment of liabilities to these trends, timely loan repayment during high-interest periods, offshore borrowing, and effective negotiation for favorable borrowing terms are essential measures.

Inflation was found to significantly affect the financial performance of KTDA managed factories in the West Rift of Kenya. The country faces challenges in managing inflation due to external shocks like oil price fluctuations, conflicts, and natural disasters, which disrupt export markets and impact disposable income and purchasing power. To thrive during periods of high inflation, companies should adapt strategies that ensure operational excellence, and the Central Bank should implement suitable monetary and fiscal policies to manage inflation effectively.

Money supply was identified as a pivotal factor influencing the financial performance of factories in Kenya's Western Rift region. Adequate money availability drives productivity and economic growth. Established sources of money supply, including banks and microfinance institutions, play a significant role in lubricating the economy, given the underdeveloped capital market. However,

excessive money circulation can lead to inflation and currency devaluation, negatively affecting company performance. To counter this, the Central Bank and other authorities should employ effective strategies to monitor and manage money supply through instruments like treasury bills and bonds. Reforms in the financial sector are also necessary to provide flexible and alternative financing sources for companies.

## Recommendations

The study recommends the following based on the findings;
Given that a depreciation of the Kenyan shilling against the dollar benefits factories in terms of foreign exchange differences, stakeholders can consider a more flexible approach to borrowing during periods of currency depreciation. Instead of solely focusing on fixed-rate financing, factories can strategically use variable-rate loans during times of expected currency depreciation. By doing so, they can benefit from lower borrowing costs while simultaneously gaining from the foreign exchange differences. However, this strategy should be approached with caution and based on a thorough analysis of currency trends, as excessive exposure to foreign exchange risk can also lead to financial vulnerabilities.

It's also crucial for management to hedge against currency risks selectively. Factories can consider hedging a portion of their foreign currency exposures, especially when entering into long-term contracts that involve significant foreign currency transactions through direct sales overseas. Hedging can provide stability and protect against adverse currency movements, reducing the impact of sudden currency depreciation on their financial performance. To further mitigate the risks associated with exchange rate fluctuations, management of the factories can focus on diversifying revenue streams and markets. Expanding sales to different regions and countries with varying currencies can help balance the impact of currency movements on overall profitability. Finally, irrespective of the benefits gained from currency depreciation, it is essential for stakeholders to maintain strong financial resilience. This includes prudent cash flow management, maintaining adequate liquidity, and conducting stress tests to assess the impact of adverse economic scenarios. By ensuring financial stability, factories can better withstand currency volatility and other economic challenges.

To mitigate the negative effects of rising interest rates, factories can explore fixed-rate financing options or negotiate interest rate caps with lenders. Long-term planning and adequate cash flow management are essential to ensure that factories have the financial stability to withstand periods of higher borrowing costs. Additionally, management of the factories can work towards improving their credit ratings, which may lead to more favorable borrowing terms, enabling them to access financing at lower rates even during economic downturns.

Implementing cost-control measures, such as lean manufacturing practices, supply chain optimization, and energy-efficient technologies, can help offset rising input costs. Moreover, diversifying product offerings and targeting different market segments can enable factories to adjust pricing strategies in response to changing consumer preferences during inflationary periods.

Collaborating with suppliers and customers to negotiate longer-term contracts with stable pricing terms can also provide protection against sudden CPI fluctuations.

To benefit from favorable money supply conditions, the factories' management should adopt prudent financial management practices. During periods of increased money supply, factories can consider expanding their operations, investing in modernization and technological upgrades, and pursuing growth opportunities. However, it is crucial to avoid excessive risk-taking and maintain a balanced approach to financial decision-making. Factories should also be prepared for potential changes in monetary policies and adjust their strategies accordingly to sustain growth during periods of tighter money supply.

## Areas for further research

The study recommends further research to compare the performance of KTDA managed factories in East of the Rift with the West of the Rift & other multinational companies. The study recommends further research to include more macroeconomic factors apart from the four investigated in this study for a longer period of say 10 years to ascertain whether the result would be same.

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