EFFECT OF SELECTED MACROECONOMIC VARIABLES ON GROWTH OF THE TEA SUB-SECTOR IN KENYA

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A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

NOVEMBER, 2021

DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed: _____JKM_____ Date: __19|11|2021__

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D63/27628/2019

This research project has been submitted for examination with my approval as the University Supervisor.

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ACKNOWLEDGEMENT

A number of persons merit my profound appreciations for being so supportive in this project. However, I wish to thank the Almighty God for good health and the wealth to undertake this investigation.

I sincerely wish to thank the following for their involvement towards the conclusion of this proposal: My supervisor Dr. Kennedy Okiro who was always available for me whenever I needed him. I particularly appreciate his concern, keenness to detail, guidance, patience, believing in me and for keeping me on my toes. Gratitude is due to my moderator Dr. Herick Ondigo and the instructors from the University of Nairobi's School of Business, who dedicatedly shared their expertise and abilities during the course.

I appreciate my classmate for the support and encouragement as we undertook the course. They gave me hope and strength to overcome the challenges we encountered throughout the course. Additionally I thank my family and friends for their moral support.

DEDICATION

To my family for their monetary and moral encouragement. May the Almighty God,

reward them.

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LIST OF ABBREVIATIONS

ANOVA   Analysis of Variance

APT   Arbitrage Pricing Theory

CMA   Capital Markets Authority

CPI   Consumer Price Index

DT-SACCO   Deposit TakingSavings and Credit Cooperative Societies

GDP   Gross Domestic Product

IFE   International Fisher Effect

KNBS   Kenya National Bureau of Statistics

KTDA   Kenya Tea Development Agency

NSE   Nairobi Securities Exchange

ROA   Return on Assets

ROE   Return on Equity

ROS   Return on Sales

SPSS   Statistical Package for Social Sciences

VAR   Vector Auto Regression

VIF   Variance Inflation Factors

ABSTRACT

Kenya's subsector of tea was confronted with a difficult macroeconomic climate, including interest-rate capping in August 2016 and reversed in 2019. Other macroeconomic issues affecting the industry include: rising price levels, unpredictability in interest rates, and fluctuation in exchange rates. The Kenyan currency has been on a consistent decline over the last decade and this might have an impact on the performance of the tea sub-sector. In addition, the country inflation levels have also fluctuated significantly. These adverse macroeconomic trends may lead to serious difficulties with the expansion of the tea subsector. The objective of this study was to determine the impact that selected macro-economic variables have on the growth of the tea sub-sector in Kenya. Exchange rates, interest rates, the unemployment rate, and inflation were all considered independent factors in this study. The response variable that the researchers attempted to explain was the growth of the tea subsector.The data was collected on a quarterly basis over a period of ten years (from January 2011 to December 2020). A descriptive research approach was employed in the study, with a multiple linear regression model used to examine the connection between the study variables. The data were analyzed using Statistical Packages version 24. The study's findings yielded an R-square value of 0.526, indicating that the chosen independent variables could explain 52.6 percent of the variance in the teasub-sector's growth in Kenya, while the remaining 47.4 percent was due to other factors not investigated in this study. The independent factors exhibited a significant relationship with tea sub-sector growth (R=0.725), according to the research. The F statistic was noteworthy at a 5% level with a p=0.000, according to the findings of the ANOVA. This suggests that the model was adequate for explaining tea sub-sector growth. Further, the findings revealed that exchange rate and unemployment rate were significant determiners of the tea sub-sector growth and they had a negative influence. Interest rates and inflation had a negative, although statistically insignificant, impact on tea sector growth. The study recommends that there is need to manage the current levels of unemployment since they have a major impact on tea sub-sector growth. Policy makers should also stabilize the existing levels of exchange rates as a depreciation of the currency adversely affects tea sub-sector growth.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Growth is an area of management which, due to its importance in the life of a nation or organization, continues to be the attention of management and academics for a long period of time. This led to research focusing on different external variables and also internal problems that were believed to lead to different development. According to Levine (1996) macroeconomic factors like unemployment, exchange rates, interest rates, money supply and inflation affect growth in a number of ways. Policy makers need to identify macro-economic factors influencing their growth to develop efforts that improve their performance by effectively managing the main factors (Asaolu&Ogunmuyiwa, 2011).

This research was anchored on various theories including the Arbitrage Pricing Theory (APT), international fisher effect theory and modern portfolio theory that have sought to shed light on associations between macro-economic factors and growth. The current theory of the portfolio helps this research, since financial market prices show the disparities in macroeconomic factors. The influence of macro-economic factors on returns of financial market is then reflected on the growth of the firms and the economy as a whole. In addition, Ross (1976) combined the traditional APT model with macroeconomic factors and return on financial asset. The fisher theory contends that because of likelihood of arbitrage opportunities in financial market that occur in capital flows form, the real interest rates throughout countries are equal. This theory informs the current study in that interest rates fluctuations encourage or discourage levels of borrowing (Fisher, 1930).

The focus of this study was on the tea sub-sector and this was due to the immense volatility seen in farm company development that presents the issue of unpredictability, lack of trust and economic risks to tea growers. Furthermore, movement of macroeconomic variables is unwanted since they raise risk and insecurity of foreign transaction and therefore impede commerce. According to Kenya Tea Board Report (2018), dynamics in growth of tea sub-sector is due to fluctuations in macro-economic factors.

1.1.1 Selected Macroeconomic Factors

Chimkono (2020) define macroeconomic factors as the determinant variables which influence countries economic position regionally and globally. These macroeconomic indicators comprise; unemployment, inflation, interest rates, public debt and per capita income. Hendry (2016) define macroeconomic factors as variables that influence the outcome of an economy in a wider level. They include the exact interest rates, inflation, public debt, unemployment rate, money supply and economic growth. Macroeconomic factors denote variables whose slight shift results in a global and material change that is spelt out in the economy or even at the national level (Kotha&Sahu, 2016).

Macroeconomic factors are of importance to policymakers as their impact is not only felt by individuals but also the larger population. In addition, over the long term, macroeconomic factors determine the levels of investment, consumption, factor productivity, economic policy, and institutional environment (David &Ampah, 2020). Kwon and Shin (2017) hold that countries with a strong currency experience higher performance while high unemployment rate leads to reduced performance. Further, countries with high inflation experience low performance, as the value of savings

decreases in the financial system. Mbaabu (2020) holds that high interest rates discourage usage of financial services leading to low growth.

The measurement of macroeconomic factors varies depending on the exact variable in question. Exchange rate measures the strength in a country's currency and is usually given by the rate of the home country to a given foreign currency (Kirui, Wawire&Onono, 2014). Average lending rate is usually used as measure of interest rates (Khan &Sattar, 2014). Inflation is usually measured using either the Consumer Price Index (CPI) or the inflation rate while unemployment rate is measured as the ratio of unemployed people to total labour force (Ozili, 2018). The current study operationalized macro-economic factors in terms of exchange rates, interest rate, inflation rate and unemployment rate.

1.1.2 Growth

Deitiana and Habibuw(2015) suggests that growth is a technique adopted by companies to increase their revenues through selling goods or money generated from service provision. Fatihudin and Mochklas (2018) propose that profitability expansion is accomplished through reducing expenses.Thus a business growth may be defined as a rise in revenue, a growth in the company via its merger or acquisition of other companies, an increase in profits, service and product development, a diversifying and a spike in the proportion of workers of a company. Financially, growth may be defined as increasing a company's revenues and sales. Gudda (2015) said that business expansion is the enhancement of a significant metric of a company's performance. This may be achieved either by raising a primary business or a company's revenue by growing sales revenue or service income, improving business profitability via cost reduction.

Growth produces a legitimate expectation among investors and consumers of continued economic development. This inspires business investment and consumer spending which results to an increase the demand on money supply moving through the economy (Mogaka, Kiweu&Kamau, 2015). Growth makes simpler the way in which the population and society at large accesses the redistribution of incomes. The slight differences and swelling effects of the up-surging rates grow for periods of one decade or more (Boldeanu& Constantinescu, 2015). As the pace of economic growth rises, so does the production of products and services, in turn, the number of job opportunities grows, unemployment rate reduce and the population's living standards improves (Haller, 2012).

The most common metric for growth is national income per capita; a rise in per capita income acts as an indication for economic wellbeing improvement. Physical resources also play an important part in economic development, since they emphasize the notion of broad capital as evidenced in constant or rising returns (Lucas, 1993). In a sector of the economy, it is standard practice to evaluate growth by increasing revenue, increasing profit, increased market share, by improving the firm's worth, by making the contribution to the GDP over a certain financial year (typically one year) among other things (UNCTAD, 2017).The current study used the change in revenue of the tea sub-sector as a measure ofgrowth.

1.1.3 Selected Macroeconomic Factors and Growth

McKinnon (1973) theory states, variables like inflation, exchange rate and real interest rate should have close monitoring since they impact various economic fundamentals and performance of firms. For example, they posit that holding the interest rates below market equilibrium increases the investments' demand and not the real investment.

Contrarily, the market efficiency theory states that all the prices of variable should only be influenced by demand and supply and not any other factors.

Gan, Lee and Zhang (2006) conclude certain macroeconomic variables like GDP, interest rate, exchange rate influences performance of a firm. Financial information shows that investors assume that GDP and other macroeconomic have a substantial impact on the unpredictability of earnings. Consequently, macroeconomic variables impact individuals' investment decision and influence many researchers to examine the association between performance and these variables (Peansupap& Walker, 2005).

Fama's idea of effective market hypothesis (1970) states that security prices will always represent all information available in an efficient market. The management of the bank as such should thus respond rapidly and correctly to current and expected macroeconomic changes via the adaptation or preparation of the adjustments. Such caution helps to guarantee development not just now but also in the future. Macroeconomic factors influence profitability of companies. Variations in macroeconomic factors could provide opportunities and threats to industry players at the same time; those with adequate preparations will gain from opportunities thereby improving their performance, while those with inadequate preparations and threats may afflict them, causing them to perform poorly (Gerlach, Peng&Shu, 2005).

1.1.4 Tea Sub-Sector in Kenya

Tea is a highly popular drink after water and is enjoyed worldwide. Tea is an important ingredient of home usage and is Kenya's top drink. Tea is also regarded to be the cheapest drink accessible from international organizations in Kenya in accordance with the 2018 Sustainable Trade Initiative Report. Kenya exports 21 percent of global tea outside of producing countries with more than 3 million people

employed directly or indirectly by the tea business (Kenya Tea, 2018). According to Kenya Tea Board report (2018), tea output among landowners has gradually risen to 3,059 kg per hectare, while smallholder production has increased to 1,956 kg per hectare tea production. Kenya's tea plantations are controlled in major part by Unilever Tea Kenya, Sasini Limited, Eastern Produce Kenya Limited, Sotik Tea and George Williamsons (Kenya Tea Board Report, 2018).

Kenya's subsector of tea was confronted with a difficult macroeconomic climate, including interest-rate capping in August 2016 and reversed in 2019. Other macroeconomic issues affecting the industry include: rising price levels, unpredictability in interest rates, and fluctuation in exchange rates. The Kenyan currency has been on a consistent decline over the last decade and this might have an impact on the performance of the tea sub-sector. In addition, the country inflation levels have also fluctuated significantly. These adverse macroeconomic trends may lead to serious difficulties with the expansion of the tea subsector (Kenya Tea, 2018).

The tea industry's success is important to the Kenyan economy. Tea is the country's biggest foreign currency gain, providing more than 114 billion ksh (1.1 billion dollars) in 2015, 101 billion ksh (1 billion dollars) in 2016, and 124 billion ksh (1,2 billion dollars) in 2017. More than 650,000 Kenyans live off tea directly. Tea contributes for about 26% of Kenya's export profits and 67% of its tea sold at Mombasa's Tea Auction Centre. Despite its huge contributions to Kenya's economy, tea manufacturing is increasing the subsector's cost of factor inputs, as shown by the average labor expenses of 200 per cent between 2001 and 2017. Although the government subsidized fertilizers costs in June 2015, it was not feasible and would not reduce production costs. Electricity costs have increased by 100 percent and fuel costs

have risen by 345 percent. The higher expenses may overwhelm tea industry, rendering it untenable.

1.2 Research Problem

Growth is a management area that remains and will likely to be the attention of management and scientists for a lot longer because of its fundamental importance in the operation of a business. Because of the significance of growth, significant efforts have been made in terms of variables contributing to its manifestation or no realization throughout time to comprehend it (Abata, 2014). There are a number of academics and practitioners interested in the connection between macroeconomic variables and growth. Interest rates, GDP, currency rates, and inflation are all basic macroeconomic variables that affect growth (Gan, Lee & Zhang, 2006).

Kenya's tea subsector experienced a challenging macro-economic climate with a rate limit on August 2016. Other macroeconomic issues affecting the industry include increasing prices, unpredictability of interest rates and fluctuation in exchange currencies. Such unfavorable macroeconomic factors may cause great problems in growth of the tea sub-sector in Kenya. Although the tea sub-sector is the main foreign exchange earner in the country, this is being threatened by macro-economic factors and therefore the necessity to conduct a study on the influence of macroeconomics variable on growth of tea sub-sector.

Several investigations have been done in this area internationally. Zulfiqar and Din (2015) studied the association amongst macroeconomics variable and performance in Pakistan textile sector. Panel data was utilized and regression analysis adopted. The findings showed that a weak positive relation existed between inflation and firm performance. Baba and Nasieku (2019) investigated how macroeconomic factors

affect the performance of Nigerian commercial banks. The empirical results showed that exchange rate, unemployment rate, and interest rate are negatively and significantly related with the performance of banks whereas inflation was insignificantly related with the performance. An increment in exchange rate positively influences the performance of banks while an increment in the interest rates worsens performance. Although these studies are related to the current study, they are conducted in a different context and their focus was not tea sub-sector.

Locally, Mwaniki (2017) scrutinized the effect of macroeconomic variables on average performance of deposit taking SACCOs in Kenya and established that only money supply had significantly affected their performance. Kamamia (2020) undertook a study to examine impact of macro-economic factors on investment banks performance in Kenya and established that independently, interest, inflation and exchange rates are significant determiners of performance of investment banks in Kenya while economic growth is not a significant determiner. Nderitu (2020) focused on how macro-economic variables impact performance of Kenyan banks and arrived to a conclusion that interest rate and economic growth affect performance positively while exchange rates and inflation rates have a negative significant effect. Although prior research in this area has been done, the results have been mixed. This can be explained by the differences in operationalization of the variables. In addition, some macro-economic variables have been left out. Further, the studies have not focused on the growth of the tea sub-sector in Kenya. This study sought to contribute to this debate by responding to the research question: What is the influence of selected macroeconomic factors on growth of tea sub-sector in Kenya?

1.3 Research Objective

The study's objective was to assess the effect of macroeconomic factors on growth of Kenya's tea sub-sector.

1.4 Value of the Study

The review will be of significance to the management of tea firms as well as KTDA, policy-making entities and to the literature of finance. The management of tea firms may use the conclusions and study recommendations to formulate effective strategies which will mitigate the effects of macro-economic factors, enhance growth of the sub-sector.

The study will also be of value to policymaking organizations like governments, KTDA and economic bodies that formulate various polices on macro-economic factors and performance policies. The policy making bodies may use the study recommendations to come with effective strategies to enhance growth and tea sub-sector growth.

Finally, the review will add on to the available theoretical discussion on the arbitrage pricing theory, modern portfolio theory, and international fisher effect theory. The study will also add on to the empirical literature on macroeconomic factors and tea sub-sector growth. Additionally, studies may also be carried out based on the recommendations and suggestion for future studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter's main aim is to go through theories that are basis of the study. More so, the chapter discusses the prior empirical studies done pertaining to the research topic and areas related to it. Additionally, the chapter contains other sections which elaborates on the determinants of growth, shows the conceptual framework which illuminate on the study variable relationships, study gap and finally a summary of literature.

2.2 Theoretical Framework

This section summarizes key theories explaining link between macroeconomics variables and growth. APT, contemporary portfolio theory and the International Fisher Effect hypothesis are among the theoretical review addressed.

2.2.1 Modern Portfolio Theory

Markowitz (1952) coined the theory on his write up for portfolio mixture. This theory put an emphasis on how it is possible to maximize expected returns by creating weighted portfolio utilizing risks thresholds. The theory stated that institution may build portfolio that optimize anticipated return at specified risk levels. This theory states that profit can be maximized by choosing proportions of different investments that will lower the investment risk level.

The theory identified two types of risks which investors need to be conscious of, that is, unsystematic risks and systematic risks. Systematic risks are inherent in volatility of the entire market or some part of it, while unsystematic risk is associated with the extent to which an individual investment is volatile. Investors are therefore instructed

to combine portfolios by guaranteeing that, specific risk carried by that specific investment in the portfolio is offset by a lower specific risk in another investment (Cuthbertson, 2004).

This theory is critiqued by behavioural finance theorists for its assumptions and failure to consider the role of human behaviour in maximizing returns. According to Brueggeman and Fisher (2011), macroeconomic variables generally influence the business environment within the economy. An environment of volatile economic variables including inflationary pressures and volatile exchange rates, infer that returns to businesses and financial firms in particular shall fluctuate. Unstable returns therefore dominate performances of financial firm like environment fluctuates hence affecting their growth. Policy makers should thus be keen on macro-economic variables as they can have an effect on growth. This study contributes to the current studyas it recognizes macro-economic factors as variables that can influence growth. The theory is relevant as it relates variables such as interest rates, exchange rates, unemployment and inflation with growth of firms or sectors.

2.2.2 Arbitrage Pricing Theory

The APT model was advanced by Ross (1976). Various economic variables, according to the theory, have an impact on the returns of a particular instrument via their impact of discount rate and future dividend (Subedi&Shrestha, 2015). APT correlates with market portfolio concept, as per APT persons exhibit varying portfolio of investments depending on the specific systematic risks they encounter. Because it utilizes several variables to demonstrate shared and systemic risk, the APT is a multi-factor model, and most empirical research claims that it produces better results than the capital asset pricing model (Waqar&Mustabsar, 2015).

The idea developed theoretical frameworks that combine return with certain factors that may influence income volatility sources (Shrestha&Subedi, 2015). APT utilizes macroeconomics indicators to ascertain the values of assets. The theory believes that different macroeconomic variables may really influence asset prices other than beta risks systems (Waqar&Mustabsar, 2015).

Certain macroeconomics parameters impacting asset prices of financial instruments such as: government internal borrowing, inflationary rate, balance of payments, investor confidence level, prevailing levels of unemployment, changes in expected returns on securities and interest rate yield curve shifts (Amarasignhe, 2015). Based on linear connection among stock price and macroeconomic variables, macroeconomics factor may be assumed to have an impact on securities value. The asset's or security's monetary worth may thus be called the entire anticipated return and any unanticipated return on the assets (Cuthbertson, 2004). This study relates macroeconomic factors to returns of firms and therefore it is relevant to the current study. The study hypothesizes a negative effect of interest rate, inflation, exchange rate and unemployment rate on growth.

2.2.3 International Fisher Effect Theory

International Fisher Effect theory (IFE) was proposed by Fisher (1930). The theory applies the market interest rate in explaining why there is change in interest rates over time. The IFE contends that interest rates changes balance out the exchange rates changes. The theory further contends that because of likelihood of arbitrage opportunities in financial markets that happen in terms of capital flows, the interest rates throughout countries are the same. Real interest rate equality suggests that inflation rates are higher in countries that experience interest rates that are high and as

a result the country's real value of currency reduces over time (Gopinath&Rogoff, 2014).

The interest rate theory of exchange rate expectations expounds on the association amongst foreign exchange rates and relative interest rates. If the IFE is to be considered, countries whose currencies are appreciating would have interest rates that are low enough and countries whose currencies are depreciating would have interest rates that are high enough to balance the anticipated gains and losses in currencies (Keynes, 2016).

IFE theory is critiqued to the fact that in the short term, the theory is an unreliable variable of estimating the changes in currency prices due to the existence of underlying and confounding factors that influence the rates of exchange. The IFE, proposes that foreign currencies that have comparatively high interest rates will incline to depreciates since the anticipated inflation rates is replicated in the high nominal interest rates (Gopinath&Rogoff, 2014). This theory is relevant to the current study in that interest rates fluctuations encourage or discourage levels of investments and therefore growth in the agricultural sector.

2.3 Determinants of Growth

The variables that influence production level may be both internal and external to the business. Internal variables vary from one company to the next and influence growth in various ways. Such variables arise as a result of management's choices, which are taken in conjunction with the board of directors. Interest rates, exchange rate volatility, inflation, economic growth, unemployment, and other external factors all affect growth. Internally, these variables include governance, company size, market

power, capital, managerial efficiency, liquidity, financial leverage and so on (Athanasoglou et al., 2005).

2.3.1 Exchange Rates

Exchange rates and their impact on economic growth is considerable. Variations in currency's exchange rate have an impact on import prices, which include CPI and production costs. Its inconsistencies are transmitted to local pricing via a network of imported consumer goods prices. Exchange rate fluctuations have a direct impact on the economy on local pricing. Increases in demand for local goods is observed when factors that influence prices causes prices of imported goods and services to increase thereby reducing completion (Magweva&Marime, 2016).

Shift equilibrium causes an increase in pressure on local prices and nominal wages with an increase in demand. Additional increases in pressure will be transferred to local prices resulting from increases in wages. Depreciation in the exchange is a minor guarantee to the domestic industry since domestic costs of production rises at a slower depreciation rate in comparison to comparable import prices, which rises by complete depreciation. This scenario of depreciation in the currency creates a favorable condition production among local industry (Nwankwo, 2006).

2.3.2 Interest Rates

Interest rates greatly affect pricing of goods and services both regionally and abroad. The amount of money available in the economy can greatly affect the levels of interest. For instance, when there is plenty of money in the economy, the interest rates are more likely to reduce and this will affect how a firm performs in the market. This will subsequently boost the market which will become more attractive for foreigners

in the country. Vice versa will happen if the money supply in the economy reduces (Barksenius&Rundell, 2012)

Interest rates determine progress of the economy. According to Barnor (2014), an unanticipated shift in interest rates has an effect on investment choices, thus investors prefer to alter their savings arrangements, moving from capital markets to fixed-income assets. Khan and Sattar (2014) claim interest rates has a favorable or negative impact on performance, depending on its fluctuation. Savings are discouraged by a reduction in deposit interest rates and an increase in expenditure. The performance of investments suffers as the depositor's interest rate rises.

2.3.3 Inflation

Rates of inflation can affect the economy of a country substantially. For instance, during times of price movements and increments, prices of property will increase. Therefore, when inflation in an economy rises, the general cost of goods is likely to increase. This will subsequently affect how firms perform financially. Therefore, many investors who engage in sale of goods and services in the market usually include an allowance for inflation(Biller, 2007).

Higher rates of inflation will translate to prices being higher for consumers slowing down business and thus reduce firms' earnings. Prices that are high also trigger a regime that has higher interest rate (Hendry, 2016). According to Fama (1970), inflation is likely to be negatively associated with real economic activity, and as a result likely to be positively related to the market performance. Thus, growth ought to be associated negatively given anticipated price levels and interest rate at the short-term representing the IFE.

2.3.4 Unemployment

Suppose that the stock and labor markets are both in a steady state. Let's say there's a negative shock to labor demand, resulting in lower earnings and salaries and more unemployment, everything else being equal. Increased unemployment means lower disposable income for those impacted, and therefore lower demand for stocks. Stocks with high durability have a set short-term supply, thus stock values will fall (Osoro&Ogeto, 2014).

Theory and empirical research both state prosperity of a nation is closely related to economic stature, including such variables as unemployment, GDP, inflation, remittances, capital supply, the interest rate and exchange rates. Share price fluctuations are affected by changes in economic fundamentals and their impact on future forecasts (Rehman, Sidek, &Fauziah, 2009).

2.3.5Corporate Governance Structure

Jensen and Meckling (1976) states that managers only keep their self- interests in mind and the maximization of shareholder value is conditional to having efficient governance structures that will punish wrongful acts. Additionally, the stewardship theory holds that governance problems do not always originate from executives; rather, these challenges stem from the choices of regulators and investors who are working toward their own goals of achieving self-fulfillment (Donaldson & Davis, 1991).

Companies that implemented sound corporate governance structures had more access to capital and better profits, as was discovered by Shleifer and Vishny (1997).Good corporate governance encourages investors to put their money into businesses like

this.Competitiveness in a dynamic environment requires companies to be creative and to adjust strong corporate governance policies and frameworks (OECD, 2004).

2.4 Empirical Review

International and local research have been performed supporting link among macroeconomic variables and growth, however the findings are mixed.

2.4.1 Global Studies

Pinjaman and Aralas (2018) sought to investigate how volatility of stock return is impacted by certain macroeconomics variable. Selected variables comprised of inflation rates, GDP, exchange rates, interest rate, financial crisis, money supply as well as economic liberalization. The dynamic stock results, instability assessment perceived that stock returns shakiness is consistent in behaviour where the previous instability will control the current stock returns. The study was conducted using a cross-sectional time series model. It was discovered that there was a strong link between the exchange rate, interest rate, GDP, inflation, financial crisis, economic liberalization, and stock return volatility.

Baba and Nasieku (2019) using explanatory research design examined how Nigerian banks financial performance is influenced by macroeconomic factors. The study utilized on secondary data gathered from banks annual reports, World Bank, Nigerian bureau of statistics and research centers. 23 licensed banks in Nigeria participated in this study. The study applied return on equity (ROE) as performance measurement. The empirical outcome indicated unemployment rate, exchange rates, and interest rates are inversely and substantial associated with the performance of banks whereas inflation has an insignificant relationship. An increment in exchange rate positively

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influences the performance of banks while an increment in the interest rates worsens performance.

Kotha and Sahu (2019) analyzed both the short and long run association amongst select macroeconomics factors and performance of Indian Stock Market. Selected macroeconomic factors included T-bill rates, exchange rates, wholesale prices indices and money supply. Using data from 2001 to 2015, the study applied error correction and co-integration model (ECM) for data analyses. The study discovered existence of long run relation amongst BSE Sensex and the chosen macroeconomics indicator.

Chimkono (2020) did an investigation aimed on determining how macro and microeconomics variables impact commercial banks performance of Malawi accredited by the Malawi central bank. Secondary data was gathered from the audited financial reports and covered a fifteen-year period between 2000 and 2014. Publications prepared by the World Bank and reserved bank of Malawi were also used as sources of data. It was brought to light by the findings that the independent variables (lending interest rate, cost efficiency, and asset quality) significantly impact the performance of commercial banks. Moderating variables exhibited substantial impact on the independent variables. Further, it was discovered that the credit risks have a negative influence of performance of banks.

In Sri Lanka, using secondary data collected between 1990 and 2012, Badullahewage (2020) investigated how macroeconomic variables impacted the performance of stock market. Macroeconomic variables comprised of inflation, GDP, money supply, interest and exchange rate. A strong relation was found between performance stock market and macroeconomics indicators. Rate of exchange and inflation had comparatively higher effects on performance.

2.4.2 Local Studies

Ng'ang'a (2016) using descriptive research approach undertook a study to examine association amongst macroeconomic determinants and performance of insurance industry in Kenya. The performance was regressed against the macroeconomic indicators; average interest rates as computed by Central Bank rate, real exchange rates, GDP growth rate, inflation rate was calculated by CPI and unemployment rate. It employed secondary data collected quarter yearly. The study was done in a ten-year period from 2006 to 2015. The data was analyzed through multiple, correlation and descriptive analyses. Findings reveal that exchange rates, interest rates, and unemployment rates are not significant predictors of insurance industry's performance.

Mwaniki (2017) using descriptive research design sought to examine how average performance of 35 DT-SACCO registered by SASRA up to 2017 in Nairobi is affected by macroeconomic indicators. The study aimed on establishing the impact of interest, inflation and money supply on average performance. Quarterly data was collected for 20 years (1997 – 2016). Analysis was conducted using the vector error correction time series models. The outcome indicated that only money supply had substantial influence on returns on assets of deposit taking SACCOs.

Using inferential and descriptive statistics, Kamamia (2020) did an investigation how investment banks performance is affected by certain macroeconomics indicators. A descriptive survey design was adopted. The time frame 2008-2017 was period of the study and secondary data was acquired on a quarterly basis. Both inferential and descriptive statistics were applied in analyzing the data. The outcome demonstrated that independently, interest rate, inflation rates and exchange rate are substantial

determiners of investment banks performance in Kenya while economic growth is not a significant determiner.

Mwangi (2020) wanted to know how exchange rate movement affected stock market volatility at NSE. 10 years monthly secondary data from 2007 to 2017 was collected. Multi linear regression model and descriptive research approach was applied to analyze associations amongst variables. The findings exhibited that individually, interest rate was insignificant stock market volatility determinants while inflation and exchange rates significantly are stock market returns determinants at the NSE.

Nderitu (2020) aims to determine to what degree macro-economic factors influence Kenya's banking sector performance. The period from 2009 to 2018 included inferential and descriptive statistic to examine the data gathered. SPSS software version 22 was applied in analyzing data and the outcomes were displayed in tables and graphs. The findings show that interest rate and economic expansion have a favorable effect on business banking performance, whereas exchange rates and inflation has serious undesirable impact on success in the banking system.

2.5 Conceptual Framework

The model below depicts the anticipated relationship between the research variables. The independent variables for the study were exchange rate measured as the rate of Kes to Usd on a given quarter, interest rate given by average lending rate, inflation given by inflation rate and unemployment given by unemployment rate. The dependent variable was growth of the tea sub-sector as measured by the change in quarterly revenue.

Independent variables   **Dependent variable**
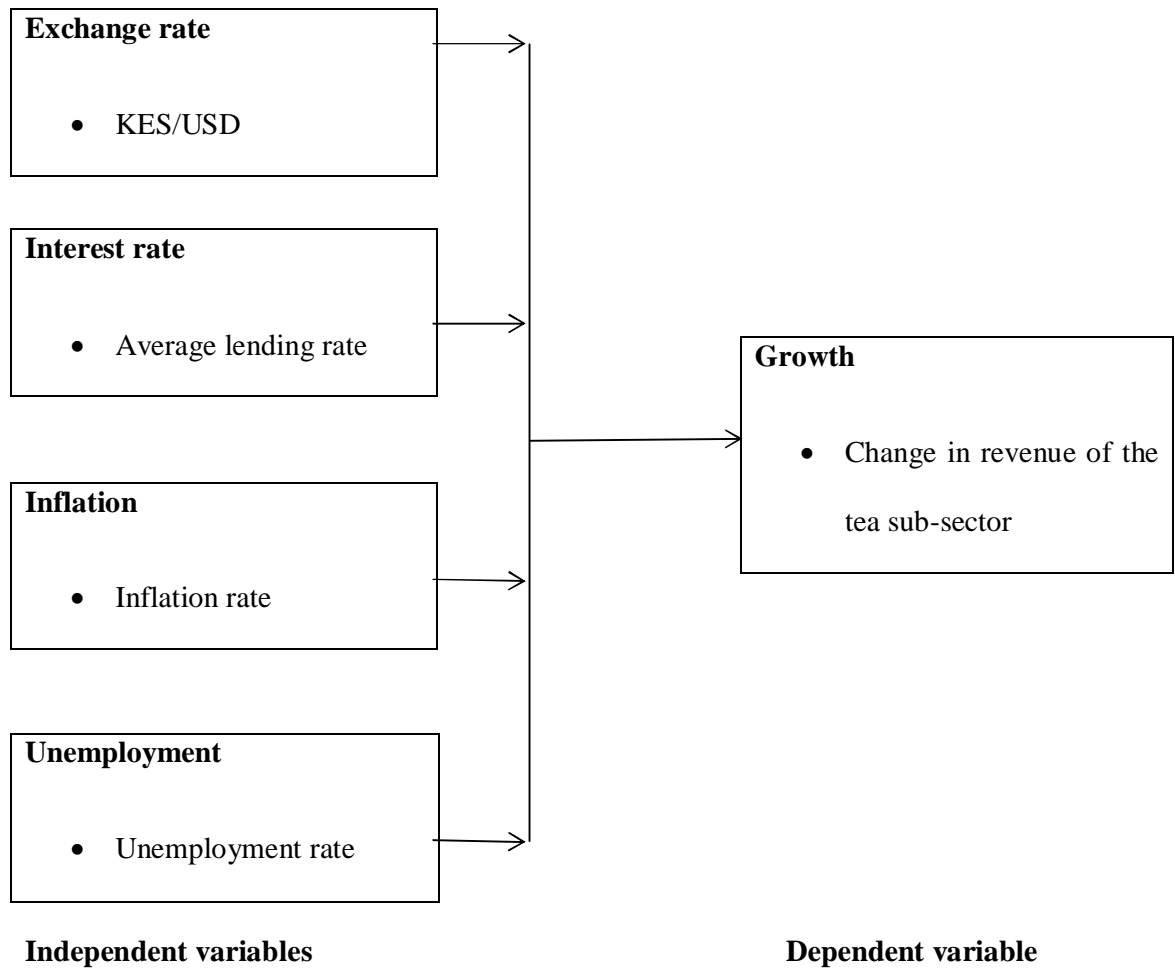
Figure 2.1: The Conceptual Model

Source: Researcher (2021)

2.6 Summary of the Literature Review and Research Gaps

There are a few theoretical frameworks which have expounded on the theoretically anticipated relationship amongst macro-economic variables and growth. Theories covered in this review were; APT, modern portfolio theory, and the IFE theory. The Key growth determinants have also been looked into in this chapter. More so, a few empirical studies done not only locally but also globally on macro-economic factors and growth have been deeply examined. The findings of these investigations were debated.

Methodological, contextual and conceptual limitations are apparent from the evaluation of empirical research. Conceptually, the findings from extant empirical studies are inconsistent and this might be explained by the different operationalization of variables. Methodologically, previous studies have used different methodologies ranging from time series studies to panel analysis and this can explain the differences in findings. Contextually, commercial banks have been the focus of the majority of research on these study factors and other sectors while the current study attention was drawn on tea sub-sector that have not received much attention.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter designates the approaches utilized in accomplishing the research objective which is to determine how selected macro-economic factors affect growth of the tea sub-sector. In particular, the study highlights; data analyses, diagnostic test, research design and data collection.

3.2 Research Design

A research design denotes the master plan for collecting, measuring and analyzing data (Sekeran & Bougie, 2015). Descriptive design was adopted in this study. This design was appropriate since the nature of the phenomena is of key interest to the researcher (Khan, 2008). It was also sufficient in defining the interrelationships of the phenomena. According to Cooper and Schindler, (2008), design also validly and accurately represented the variables thereby giving sufficient answers to the study questions.

3.3 Data Collection

Data from the Kenyan Central Bank and KNBS was used in this study, which was secondary in nature on a quarterly basis spanning 10 years (2011-2020). KNBS provided information on the dependent variable, the growth of Kenya's tea sub-sector and for each quarter, the revenue of the sub-sector was collected. Data acquired from CBK was used to compute the country's interest rates which were the quarterly average bank lending rate and the exchange rate which was Kes/Usd. KNBS provided inflation statistics on the quarterly inflation rate, and unemployment data on the quarterly unemployment rate.

3.4 Diagnostic Tests

Diagnostic tests were run to confirm that there are no violations of the classical linear regression model principles before moving on to equation estimation. When the assumptions of a classical regression model are violated, parameter estimations are skewed as well as inefficient.

3.4.1 Multicollinearity Test

Multicollinearity was determined in the research using a correlation matrix, with an ideal 0.8 multicollinearity threshold (Cooper & Schindler, 2013). When multicollinearity is not taken into consideration, infinite standard errors as well as indeterminate regression coefficients occur, resulting in enormous standard errors.This affects the accuracy with which the null hypothesis will be rejected or fail rejection. Tolerance levels as well as variance inflation factors (VIF) were also employed. Any multicollinear variables weretransformed to reduce the extent of multicollinearity.

3.4.2 Autocorrelation

Wooldridge test for serial correlationwas utilized in the research to find out the autocorrelation existence. Khan (2008) posits that overlooking serial correlation outcomes to inefficient parameter estimates as well as biased standard errors. The null hypothesis for this test was that there is no serial autocorrelation. Data that was discovered to have cross-sectional dependency was arrested by lagging the dependent variable.

3.4.3 Heteroskedasticity

If heteroskedasticity exist, it ought to be checked and adequately accounted for in the CLRM. The error term has a constant variance, according to the CLRM. If you run a

regression analysis before checking for heteroskedasticity, the parameter estimates will be unbiased and the standard errors will be invalid. In this research, the panel heteroskedasticity level was measured using the Likelihood Ratio test, which was developed by Cooper and Schindler (2013). The research utilized robust standard errors in the model where data fails the test.

3.4.4 Normality Test

Normality tests for the presumption that the response variables' residual are normally distributed around the mean. Kolmogorov-Smirnov or Shapiro-wilk testswere used in determining it. In case the data failed the test, the researcher utilized natural logarithms on the collected data.

3.4.5 Stationarity Test

Stationarity means that the characteristics (variance, means) of the data remain constant overtime. Non-stationary in time series data leads to spurious regression. The study tested for panel unit root using the Levin-Liu-Chu test. Robust standard errors were used where data failed the test.

3.5 Data Analysis

In analysis of data, version 24 of SPSS software was used. Tables presented the findings in a quantitative manner. For every variable, descriptive statistic were employed in the calculation of central trend measures as well as dispersion such as mean as well as standard deviation. Inferential statistics relied on correlation as well as regression. The strength of the association among variables in the study was determined via correlation and a regression determined cause-effect characteristics among variables. Multiple regression linearly determine relation among study variables.

3.5.1 Analytical Model

The regression model below was used:

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

Where: Y = Growth of the tea sub-sector given by the change in revenue on a quarterly basis.

α = Constant value in absence of predicator variables

$\beta_1 \ldots \beta_4$ = are the regression coefficients

X_1 = Exchange rate given by natural logarithm of KES/USD on a quarterly basis

X_2 = Interest rate computed by the average bank lending rate on a quarterly basis

X_3 = Inflation rate given by inflation rate for every quarter

X_4 = Unemployment as measured by quarterly unemployment rate

ε = error term

3.5.2 Tests of Significance

Parametric tests determined the general model and individual variable's significance. The F-test determined the overall model's significance and this was achieved by means of ANOVA while a t-test will determine coefficient significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

The current study's findings and results are summarized in this chapter.The goal was to establish how selected macro-variables influence growth of the tea sub-sector in Kenya.These parts contain descriptive statistic, diagnostic test, analysis of correlations, regression and discussion of results.

4.2 Descriptive Analysis

The descriptive statistics for the variables analyzed are listed in the table below. Quarterly information on the factors under investigation was collected and analyzed using SPSS software during a ten-year period (2011 to 2020).

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Growth	40	.000	.123	.09628	.033283
Exchange rates	40	1.9	2.0	1.947	.0506
Interest rate	40	5.8330	18.0000	9.693650	2.8334653
Inflation	40	4.033	16.833	8.07400	3.606442
Unemployment rate	40	.092	.123	.10823	.008166
Valid N (listwise)	40				

Source: Research Findings (2021)

4.3 Diagnostic Tests

Prior to running the regression model, diagnostics tests were performed. Multicollinearity, normality, autocorrelation, and heteroscedasticity test were all performed in this instance.

4.3.1 Multicollinearity Test

Multicollinearity develops in a multiple regression model when two or more predictor variables have a substantial relationship.It is undesirable for the independent variables

to have large correlations. A collection of parameters is said to be completely multi-collinear for some of the parameters in case there is an exact linear connection.

Table 4.2: Multicollinearity Test

Variable	Collinearity Statistics	
	Tolerance	VIF
Exchange rates	0.376	2.660
Interest rates	0.360	2.778
Inflation	0.392	2.551
Unemployment rate	0.372	2.688

Source: Research Findings (2021)

VIF value was utilized when VIF values less than 10 are not multi-linear.There should be no strong connection between variables for multiple regressions to apply.From the results, all the VIF variables are < 10 as shown in table 4.2 suggesting that the independent variables have no significant statistical multi-linearity.

4.3.2 Normality Test

To see if the data was normal, researchers used the Kolmogorov-Smirnov and Shapiro-Wilk tests.The alternative and null hypotheses are listed below.

$H0$: the secondary data was not normal.

$H1$: the secondary data is normal

If the p-value is greater than 0.05, the investigator will reject the null hypothesis, and vice versa.Table 4.3 summarizes the results of the test.

Table 4.3: Normality Test

Growth	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Exchange rates	.180	40	.264	.894	40	.790
Interest rates	.176	40	.264	.892	40	.784
Inflation	.178	40	.264	.893	40	.787
Unemployment rate	.181	40	.264	.896	40	.792
a. Lilliefors Significance Correction						

Source: Research Findings (2021)

The researcher relied only on the alternative hypothesis because the data had a p-value larger than 0.05 and was uniformly distributed. Data was subjected to statistical test and analysis like analyses of variance, regression and Pearson's Correlation analyses.

4.3.3 Autocorrelation Test

A serial correlation test has evaluated the connection of error terms in different time periods. In order to acquire appropriate model parameters, the Durbin Watson serial correlation test was employed to analyze autocorrelation in the linear panel, a significant problem in panel data analysis that must be considered. The findings below are.

Table 4.4: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.725[a]	.526	.472	.024187	2.441
a. Predictors: (Constant), Unemployment rate, Interest rate, Inflation, Exchange rates					
b. Dependent Variable: Growth					

Source: Research Findings (2021)

According to the null hypothesis, there is no first-order serial/auto correlation. The 2.441 Durbin Watson statistical is between 1.5 and 2.5 and indicates that there is no serial connection.

4.3.4 Heteroskedasticity Test

As indicated in Table 4.5, the researcher used the Likelihood Ratio (LR) to investigate the heteroskedasticity. The alternative hypothesis was that the error was homoscedastic. The probability ratio test with a 0.0000 p-value yielded a chi-square value of 36.52. Chi-square estimates were considerable at 1 percent, indicating that the data were homoscedastic.

Table 4.5: Heteroskedasticity Test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of Growth

chi2(1)    =   36.52
Prob > chi2 =  0.0000
```
Source: Research Findings (2021)

4.4 Correlation Analysis

The Pearson correlation was utilized to examine the correlations between the growth of the teasub-sector and the study's characteristics (exchange rates, inflation, interest rate and unemployment rate).According to the findings, there was a moderatenegative and significant statistical connection between (r = -.468, p = .002) between exchange rates and tea sector growth. Unemployment rate also has a considerable and inverse relationship to the growth of the tea sub-sector (r = -.710, p = .000). Even though there was a positive connection between interest rate and inflation with the tea sub-sector growth, the link was not significant, as demonstrated by a probability value of 0.713 and 0.078 accordingly, which are greater than a 0.05 threshold.

Table 4.6: Correlation Analysis

		Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
Growth	Pearson Correlation	1				
	Sig. (2-tailed)					
Exchange rates	Pearson Correlation	-.468[**]	1			
	Sig. (2-tailed)	.002				
Interest rate	Pearson Correlation	.060	.179	1		
	Sig. (2-tailed)	.713	.270			
Inflation	Pearson Correlation	.282	-.269	-.304	1	
	Sig. (2-tailed)	.078	.093	.056		
Unemployment rate	Pearson Correlation	-.710[**]	.568[**]	.060	-.436[**]	1
	Sig. (2-tailed)	.000	.000	.713	.005	

**. Correlation is significant at the 0.01 level (2-tailed).
b. Listwise N=40

Source: Research Findings (2021)

4.5 Regression Analysis

Exchange rates, interest rates, inflation, and the unemployment rate were all used as predictor factors for the tea sector's growth. The testing was performed at a 5% level. Table 4.7 displays the model summary statistics.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.725[a]	.526	.472	.024187	2.441

a. Predictors: (Constant), Unemployment rate, Interest rate, Inflation, Exchange rates
b. Dependent Variable: Growth

Source: Research Findings (2021)

The R squared indicator indicates how the explanatory variables may describe variations in the response variable.As indicated in Table 4.8, the R square was 0.526, indicating that changes in exchange rates, interest rate, inflation, and the unemployment rate account for 52.6 percent of the tea sector's growth.Other factors not included in this research account for 47.4 percent of the variance in teasub-sector growth in Kenya.The correlation coefficient (R) of 0.725 showed a significant connection amongst predictor factors and tea sector growth.

Table 4.8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	.023	4	.006	9.712	.000[b]
1	Residual	.020	35	.001		
	Total	.043	39			
a. Dependent Variable: Growth						
b. Predictors: (Constant), Unemployment rate, Interest rate, Inflation, Exchange rates						

Source: Research Findings (2021)

The value of P obtained by ANOVA is 0.000, which is less than p=0.05. This demonstrates that the model's importance described the impact of exchange rates, interest rates, inflation, and unemployment on Kenya's teasub-sector growth.

The relevance of various variables was determined using the model coefficients.The statistics of t and values of p were used to accomplish this.This study is significant since it allowed the researcher to determine which independent variables were chosen (exchange rates,interest rates, inflation andunemployment rate) significantly influences growth of the tea sector in Kenya. The importance of the association between the two variables was shown by the sig. column's p-value. At a 95 percent confidence level, a p-value of less than 0.05 was judged to be statistically significant, which is the most conservative estimate.Table 4.9 summarizes the findings.

Table 4.9: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.250	.181		3.380	.000
	Exchange rates	-.111	.125	-.169	-2.894	.003
	Interest rate	-.001	.001	-.074	-.583	.564
	Inflation	.000	.001	-.023	-.166	.869
	Unemployment rate	-.484	.024	-.455	-4.229	.000
a. Dependent Variable: Growth						

Source: Research Findings (2021)

Table 4.9 shows that only exchange rate and unemployment rate, with a p value less than 0.05, were a significant predictor of teasub-sector growth in Kenya. Other independent factors (interest rates, and inflation) were not significant predictors of teasub-sector growth in Kenya, as evidenced by low t values and p values greater than 0.05.

The following regression was estimated:

$Y = 0.250 - 0.111X_1 - 0.484X_2$

Where,

Y = Growth of the teasub-sector

X_1= Exchange rate

X_2= Unemployment rate

Using the constant = 0.250, we can see that if certain independent variables (exchange rates, interest rates inflations, and unemployment rates) were rated zero, the teaindustry would increase by 0.250.Increasing exchange rate by one unit would decrease growth by 0.111 units while increasing the unemployment rate by one unit

would cause the tea sub-sector growth to decline by 0.485.The other variables considered had no statistically significant influence.

4.6Discussion of Research Findings

The goal of this study was to see how the predictor variables affected the growth of Kenya's tea sector. The independent variables wereexchange rates, interest rates, inflation and unemployment rate. The study aimed to explain the teasub-sector's growth as a dependent variable.The quarterly change in revenue was used to measure growth. Correlation and regression analysis were used to examine the relationships between the independent and dependent variables.

The Pearson model revealed a moderate and significant link between exchange rates and teasub-sector growth. Interest rates and inflation showed a positive but not significant association with the teasub-sector's growth, according to the data. In the Kenyan tea sub-sector, the unemployment rate has a substantial, negative, and statistically significant link with growth.

The independent variables considered account for 52.6 percent of variances in teasub-sector growth in Kenya, according to the model summary.In this study, the chosen predictor variables were found to have explanatory power that was fit at a 95 percent confidence level, as shown by their F-value of 9.712 and p value of 0.000, which is less than the significance threshold of 5 percent.Thus, the overall model used in this research proved to be a viable prediction model for understanding the development of the Kenyan tea industry.

This research is in agreementwith Baba and Nasieku (2019) who using explanatory research design examined how Nigerian banks financial performance is influenced by macroeconomic factors. The study utilized on secondary data gathered from banks

annual reports, World Bank, Nigerian bureau of statistics and research centers. 23 licensed banks in Nigeria participated in this study. The study applied return on equity (ROE) as performance measurement. The empirical outcome indicated unemployment rate, exchange rates, and interest rates are inversely and substantial associated with the performance of banks whereas inflation has an insignificant relationship. An increment in exchange rate positively influences the performance of banks while an increment in the interest rates worsens performance.

This study is on contrast with a study conducted by Ng'ang'a (2016) who using descriptive research approach undertook a study to examine association amongst macroeconomic determinants and performance of insurance industry in Kenya. The performance was regressed against the macroeconomic indicators; average interest rates as computed by Central Bank rate, real exchange rates, GDP growth rate, inflation rate was calculated by CPI and unemployment rate. It employed secondary data collected quarter yearly. The study was done in a ten-year period from 2006 to 2015. The data was analyzed through multiple, correlation and descriptive analyses. Findings reveal that exchange rates, interest rates, and unemployment rates are not significant predictors of insurance industry's performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The primary purpose of the research was to determine how macro-economic variables influence the growth of Kenya's tea sub-sector. The findings from the preceding chapter are summarized in this section, as well as the research's conclusions and limitations.It also suggests policies which may be used by policymakers.The chapter also makes recommendations for future research.

5.2 Summary of Findings

The research evaluated the contribution of selected macro-economic variables to the growth of the teas industry.Exchange rates, interest rates, inflation, and unemployment were all included in the study as predictor variables.The research utilized descriptive design for analysis and data collection.Secondary data have been acquired from CBK and KNBS and processed using version 24 of the SPSS program.The research utilized data over a period of 10 years.

The findings revealed a positive and moderate link between exchange rates and tea sub-sector growth in Kenya.Furthermore, the correlation findings indicate that interest rate and inflation are positively but statistical insignificantly linked to tea sub-sector growth.However, the unemployment rate was negatively and statistically significantly linked to Kenya's tea sub-sector growth.

The R-square coefficient was 0.526, which means that the predictors chosen may explain 52.6% of growth changes in the Kenya teasub-sector, whereas 47.4% of growth changes in the teasub-sector relate to other factors not addressed by this study.

The research revealed that independent factors were strongly correlated with teasub-sector ($R = 0.725$).ANOVA emphasizes that F statistics with $p = 0.000$ are significant at 5 percent level.This demonstrates that the model was capable of capturing the impact of independent variables on the growth of the Kenyan tea sub-sector. The regression results suggest that if all of the independent variables were rated zero (exchange rates, interest rates, inflation, and unemployment rate), growth would be 0.250. Increasing exchange rate by one unit would decrease growth by 0.111 units while increasing the unemployment rate by one unit would cause the tea sub-sector growth to decline by 0.485. The other variables considered had no statistically significant influence.

5.3 Conclusion

The results of the research indicate that Kenya's growth in the tea sub-sector is adversely affected by exchange rates and unemployment rate.The research finds that the higher exchange rates and unemployment rate leads to a significant decrease in growth in the tea sub-sector.The research also finds that while interest rate and inflation have an adverse impact on tea sub-sector growth, the impact is not statistically meaningful.

This research finds that the factors selected for investigation – exchange rates, interest rate, inflation and the unemployment rate – influence tea sub-sector growth by explaining 52.6% of the growth variations.The finding that the independent factors account for 52.6% of changes in the sub-sector's growth means that the non-model variables explain only 47.4% of variations in the sub-sector's growth.It is sufficient to infer that the factors highlighted substantially influence the growth as demonstrated in the ANOVA summary by p values less than 0.05.

The findings of this study are in agreement with Nderitu (2020) who aims to determine to what degree macro-economic factors influence Kenya's banking sector performance. The period from 2009 to 2018 included inferential and descriptive statistic to examine the data gathered. SPSS software version 22 was applied in analyzing data and the outcomes were displayed in tables and graphs. The findings show that interest rate and economic expansion have a favorable effect on business banking performance, whereas exchange rates and inflation has serious undesirable impact on success in the banking system.

5.4 Recommendations

The results of this research have shown that the unemployment rate has had a negative and substantial impact on the development of the teasub-sector in Kenya.The study recommends that steps are needed to guarantee that variables that impact existing unemployment levels are properly handled in order to ensure that the current unemployment rate does not negatively affect the teasub-sector and the economy in general.If the nation can control the current unemployment rate, the tea sub-sector would improve and eventually the development of the economy as a whole.

The results have shown that exchange rate has a negative and substantial impact on Kenya's tea sub-sector growth.This means that the teasub-sector will expand if the exchange rates appreciate. The research proposes that policy makers to adopt measures aimed at stabilizing the exchange rate, since this would lead to development in the teasub-sector and possibly also other areas of the economy.

The research showed that inflations and interest rate negatively impact Kenya's tea sub-sector growth.The research suggests that commodity prices should be regulated on the market since price growth leads to inflation, which may have a negative effect

on the growth of the tea sub-sector.The research suggests that interest rates be controlled since they influence the growth of the tea sub-sector.

5.5 Limitations of the Study

The timeframe chosen was 10 years from 2011-2020 in this research. There is no evidence that over a longer period comparable findings will stay the same. Furthermore, it cannot be evaluated if the same results will hold after 2020. More time is more reliable since it includes instances of significant economic shifts such as recessions and booming.

The greatest constraint for this research was data quality. The results of this study cannot be reliably inferred to be a true reflection of the situation at hand. The accuracy of the data used in the research has been assumed. In addition, there has been a lot of incoherence in measuring the data owing to the existing circumstances. In contrast to primary data, the research used secondary data. Some of the drivers of growth in the teasub-sector have been taken into account and not all due to the restriction of data availability.

Multiple linear regression models were utilized to finish the data analysis. The investigators would be unable to generalize the results exactly due to the constraints involved with using the model, such as erroneous and misleading results resulting from a change in variable value. When data is added to a regression model, it can no longer be run using the previous model.

5.6 Suggestions for Further Research

The purpose of this research was to see how selected macro-economic variables affected the growth of the tea sub-sector in Kenya.A study focusing on primary data

or a mix of primary as well as secondary data is suggested in order to identify qualitative elements which may be overlooked in this investigation.

The study did not take into account all of the independent elements that drive the growth of the tea sub-sector.The study suggests that more research and investigation be carried out in this area and that additional factors be included in the study and analyses.Factors such as the money supply,cost of raw materials, corruption, cost of labour, poverty level and other factors.Displaying each of these factors' impact on the development of the tea sector will allow policymakers to choose what instruments to employ for controlling sub-sector growth.

Due to constraints in data availability, the research concentrated on the last 10 years.Additional research should utilize a broader range of data to validate additional data. It was also restricted, since only the teasub-sector was concerned. Further research should also be carried out in other areas.Finally, the researcher used a multiple regression model to confirm or deny the findings, and future researchers should use different ways to confirm or deny the findings.

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APPENDICES

Appendix I: Research Data

Year	Quarter	Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
2011	1	0.112	1.901	6.917	16.833	0.092
	2	0.107	1.895	6.750	15.920	0.094
	3	0.119	1.882	6.000	13.393	0.097
	4	0.123	1.876	6.000	10.300	0.098
2012	1	0.111	1.884	5.833	7.850	0.098
	2	0.114	1.897	6.083	5.867	0.099
	3	0.119	1.908	6.500	4.707	0.099
	4	0.122	1.906	15.167	4.033	0.100
2013	1	0.106	1.915	18.000	4.157	0.100
	2	0.107	1.935	18.000	6.013	0.103
	3	0.113	1.969	15.333	9.020	0.104
	4	0.117	1.973	11.667	12.777	0.104
2014	1	0.110	1.925	9.500	15.827	0.104
	2	0.107	1.925	8.833	16.290	0.105
	3	0.111	1.926	8.500	14.297	0.106
	4	0.114	1.932	8.500	10.697	0.106
2015	1	0.109	1.938	8.500	7.257	0.106
	2	0.108	1.927	8.500	5.043	0.106
	3	0.107	1.941	8.500	4.563	0.107
	4	0.105	1.934	8.500	5.387	0.107
2016	1	0.106	1.936	8.500	6.203	0.107

Year	Quarter	Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
	2	0.106	1.941	9.000	6.827	0.107
	3	0.106	1.946	11.500	7.237	0.108
	4	0.104	1.954	11.500	6.977	0.109
2017	1	0.103	1.962	11.500	6.667	0.110
	2	0.104	1.982	10.833	6.657	0.111
	3	0.104	2.013	10.500	6.390	0.111
	4	0.099	2.010	10.500	6.437	0.112
2018	1	0.099	2.008	10.000	6.840	0.113
	2	0.100	2.004	10.000	6.590	0.114
	3	0.100	2.006	10.000	6.470	0.114
	4	0.094	2.007	10.000	6.403	0.116
2019	1	0.097	2.015	9.500	6.483	0.117
	2	0.098	2.014	9.000	7.723	0.118
	3	0.098	2.015	9.000	8.323	0.119
	4	0.092	2.014	9.000	8.153	0.119
2020	1	0.055	2.008	9.0000	7.360	0.121
	2	0.053	2.003	9.0000	5.683	0.122
	3	0.052	2.003	9.0000	4.703	0.123
	4	0.055	2.008	8.8300	4.603	0.123