EFFECT OF SELECTED MACROECONOMIC DETERMINANTS ON AGRICULTURAL EXPORT PERFORMANCE IN KENYA

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and it has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled, ***"Effect of Macroeconomic Determinants on Agricultural Export Performance in Kenya."***

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DEDICATION

I dedicate this thesis to my family. I am particularly grateful to my beloved mother, Jackline Nafula, my wife Lennice, and my children Hazel and Ethan whose words of encouragement and prayers have sustained me this far.

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ABSTRACT

Agricultural exports are key drivers of the Kenyan Economy. They contribute significantly to foreign exchange earnings, job creation, and economic growth. Kenya's Vision 2030 highlighted agriculture as a crucial economic pillar that will spur its achievement. However, there has been reduced profitability and an increased uncertainty of producing for export leading to poor performance of Kenya's agricultural exports. Even though there are a lot of studies on Kenya's agricultural industry, very few of these studies specifically address the country's agricultural exports. This study looked at the effect of capital formation, inflation, and currency exchange rates on the performance of agricultural exports. The general objective examined the effect of macroeconomic determinants on the performance of agricultural exports in Kenya. The study's distinctive goals entailed: determining the effect of capital formation on the performance of agricultural exports in Kenya, establishing the effect of inflation on the performance of agricultural exports in Kenya, and investigating the effect of the currency exchange rate on the performance of agricultural exports in Kenya. This research was anchored on traditional trade theory. It used a causal research design to examine the relationship between variables, using annual secondary time series data from the World Bank. Data analysis was done using EVIEWS software version 10 for descriptive statistics, correlational, and multiple regression analysis. The results of a Correlation analysis revealed positive correlations between the agricultural export performance and capital formation (0.6631), and the Currency exchange rate (0.7853), but a negative relation for the case of inflation (-0.2959). ADF test revealed integrated levels at I(0) and I(1), and the F-Bounds tests showed the absence of a long-term relationship among variables. The outcome of a multiple regression analysis revealed that capital formation and currency exchange rate had significant positive effects on agricultural export performance while, inflation had a negative significant effect, with coefficients of 0.4848, 0.3983, and -0.2817, in that order at a 5% significance level. The data was normally distributed, the independent variables were not correlated, and the regression residuals were homoscedastic and not serially autocorrelated according to the post-estimation diagnostic tests. Drawing from the empirical findings, the study recommends implementing robust inflation management policies to stabilize prices and lessen the adverse effects of inflation on agricultural exports. Additionally, the government should introduce policies to ensure a competitive exchange rate. The study further suggests that additional research be conducted to assess the impact of macroeconomic factors, including Gross Domestic Product, Foreign Direct Investments, and Unemployment, on the performance of Kenya's agricultural exports.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB: African Development Bank

AEV: Agricultural Export Value

AGOA African Growth Opportunity Act

CBK: Central Bank of Kenya

EAC: East African Community

ELG: Export-Led Growth

FAO: Food and Agricultural Organization

GDP: Gross Domestic Product

GoK: Government of Kenya

HCA: Human Capital Accumulation

IMF: International Monetary Fund

KNBS: Kenya National Bureau of Statistics

LM: Lagrange Multiplier

PRSP: Poverty Reduction Strategy Paper

SAP: Structural Adjustment Program

SDG: Sustainable Development Goals

UNCTAD: United Nations Conference on Trade and Development

UNECA: United Nations Economic Commission for Africa

VIF: Variance Inflation Factor

WTO: World Trade Organization

OPERATIONAL DEFINITION OF KEY TERMS

Capital formation	Refers to the net capital buildup for a certain nation throughout an accounting period.
Inflation	It is defined as the overall rise in the prices of products which leads to a decline in the purchasing power of a currency within an economy.
Currency exchange rate	It refers to an expression of one nation's currency value in another currency. It shows how much of a Kenyan Shilling currency is needed to get a unit a US Dollar.
Agricultural export performance	The comparative achievement or failure of a business or a country's attempt to sell agricultural goods and services produced.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Export of agricultural products important for economic expansion in developed and emerging nations by providing employment, foreign exchange earnings and poverty alleviation (Ravir Kumar, Naidu & Shafiwu, 2024). Over the past few decades, a noteworthy transformation in agricultural exports occurred, with a shift from bulk crops to horticultural and processed food products (Martin, 2018). This shift in the global agricultural market structure unlocked numerous fresh prospects for exporters, generated employment opportunities, and bolstered export revenues for trading nations (Miocevic & Karanovic, 2012).

According to data from the Food and Agriculture Organization (2022), the value of global agricultural exports in 2021 was USD 1745 billion. Brazil, New Zealand, and Spain were the top three net food exporters in 2021, accounting for 50% of exports, with a total value of USD 76.9 billion, with 50% of exports being soya beans. Schweizer and Yildirim (2022) note that Brazil has become an agricultural superpower and the largest competitor to the US, becoming the biggest exporter of soybeans and poultry products globally. Agri-food exports from the European Union reached €229.8 billion in 2022, which is a 31% increase as compared to the previous year (Silander, 2019)

In the African context, Agricultural exports totaled USD 185 billion in 2022, up 25% from the previous year. The proportion of bulk goods in agricultural exports in Sub-Saharan Africa has decreased from 60% to 42%, while processed goods have increased to 35%, with the horticultural sector accounting for 22% of exports (Fukasie and Martin, 2018). Agricultural exports to the European Union (EU); the biggest market for Africa's agricultural exports, as they are subject to much lower tariffs due to preferential access than exports to other markets. Other African nations are the second-biggest market for processed agricultural exports from Africa, although the tariffs on these shipments are more than 60% higher than those on exports to the global market (Martin, 2018).

Kenya's economy is classified as a small open economy with international trade in goods and services amounting to 37.3% of its Gross Domestic Product (World Trade Organization, 2017). Kenya’s exports were 0.03% of the global total exports and 0.09% of the imports in 2017. Agriculture is one of the major drivers of the economy of Kenya, making up 37.7% of GDP in 2017, up from 29.1% in 2012 but later it declined to 20%in 2022 (Central Bank of Kenya 2023). The agriculture sector also accounts for 40% of overall employment and 70% of rural employment. Agriculture remained the largest contributor to Kenya's exports, accounting for 60.4% of total exports in 2017. One of the strategies for accomplishing the Big Four Agenda, which gave food security first priority, was agriculture. Kenya's Vision 2030 acknowledges the agricultural sector as a major contributor to economic prosperity and aims to reduce poverty to 25 percent, boost food security by 30 percent, and achieve an average sustainable growth rate of 10 percent by 2030.Tea, coffee, cut flowers, and vegetables are the primary exports from Kenya. Kenya is the leading exporter of cut flowers and black tea globally. Tea is the top export

commodity, making up 24.8% of the country's total exports. Cut flowers and foliage contribute 9.4%, while coffee accounts for 3.9%.

Capital Formation and Agricultural Exports

The process of expanding a nation's stock of real capital is known as capital formation, leading to increased economic activities that foster the economic well-being of the country (Davoine & Molnar, 2020). The main types of capital formation in agriculture are physical capital and human capital. Physical capital involves investing in agricultural-related infrastructure like irrigation schemes, storage facilities, transport networks, modern machinery, and equipment that enhance production (Chatterjee, 2018). Human capital entails promoting research and development in the use of advanced agricultural production techniques (Zaika & Gridin, 2020).

Lemishko (2022) notes that the level of capital formation is an indicator of balanced and proportional agricultural sector development. Capital formation is key in the production of export-oriented agricultural goods (Sreereshma & Dillep, 2023). Pathania (2013) points out that increasing capital formation is essential to increasing India's agricultural output and exports. Ma (2013) found that both public and private capital formation played a fundamental role in alleviating agricultural productivity in China.

Inflation and Agricultural Exports

The general rise in product prices combined with a decline in the purchasing power of a currency in an economy is known as inflation as noted by (Nnoli, Enilolobo, Hassan, & Bello, 2023). Akalpler, (2013) opines that inflation affects the trade capacity of an economy. There are two forms of inflation where an economy can either experience,

demand pull inflation or cost push inflation. Demand pull inflation happens when the demand for commodities exceeds the supply, driving up prices. Cost push inflation occurs when production costs rise and prices of goods and services rise consequently. A rise in production costs, according to Nnoli et al. (2023), reduces aggregate supply since such costs rise.

Inflation reduces the export level of agricultural products in any economy since the products become more expensive compared to products from other nations. This is supported by Okpe (2021) who found that inflation negatively affected agricultural exports in Nigeria. Furthermore, a high inflation rate incentivizes farmers to sell their produce domestically where they can fetch higher prices leading to a decrease in supply available for export.

Exchange Rate and Agricultural Exports

The value of a nation's currency expressed in another currency is known as the exchange rate. It displays the amount of a certain currency that is sufficient to purchase one unit of another. The competitiveness and profitability of agricultural exports are impacted by exchange rates. (Ogunjobi, Oladipo, Eseyin, Opaola, & Aransiola, 2022).

When a country's exchange rate is high, it means that its currency is more valuable, and as a result, the agricultural produce becomes more expensive for foreign buyers (Ojede, 2015). This decrease in affordability reduces the demand for agricultural exports (Ogunjobi et al, 2022). Conversely, when the exchange rate is low, it means that the country's currency is less valuable, making agricultural products more affordable for foreign buyers. This increase in affordability leads to an increase in demand for agricultural exports (Akinniran,

& Olatunji, 2018).

1.2 Statement of the Problem

Agricultural exports foster Kenya's economy in terms of foreign exchange earnings, employment opportunities, and overall economic growth (World Trade Organization, 2017; Aragie, Balie, Morales & Pauw, 2023). Nevertheless, because of volatility brought about by macroeconomic variables such as exchange rate, capital formation, and inflation (Boansi, Lokonon, Appah, 2014: Samoei and Kipchoge, 2020), the performance of agricultural exports has been dismal over the years in Kenya (Kipkorir, 2020). For instance, agricultural exports in the year 2022 were valued at Kes 353 billion, down from Kes 511 billion in 2021 (World Trade Organization, 2023).

In any given nation, agricultural exports can be promoted or hindered by factors such as the degree of capital formation, inflation, and the unusual volatility of currency exchange rates. Agricultural exports are encouraged by increased capital formation that leads to new investments in infrastructure and agricultural technologies improving productivity of agriculture and hence the higher export supply (Owuzu and Ewubare, 2020). Nonetheless, insufficient capital formation limits the export of agriculture exports because there is not enough to invest in new agricultural exports (Shireeshma and Dillep, 2023). The level of inflation can either promote or constrain agricultural exports. Higher prices for agricultural commodities due to inflation increase revenue. At the same time, however, inflation can lead to more expensive inputs, a fall in purchasing power, and changes in borrowing rates (Okpe, 2021). Variability in exchange rate affects the competitiveness and profitability of agricultural products on the foreign market (Ogunjobi et al. 2022). As a nation's currency

becomes stronger, the exports of that particular country become more expensive to foreign markets. On the other hand, a weak currency can help make exports more attractive.

Even though there are a lot of studies on Kenya's agricultural industry, very few of these studies specifically address the country's agricultural exports comprehensively. For example, Kipkorir (2020) concentrated on trade liberalization, (Kiprono 2019) concentrated on coffee exports, while Irandu (2019) focused on horticultural exports. In light of this, the study was necessary to address the above gaps by examining how capital formation, inflation, and exchange rate impact Kenya's agricultural exports.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The study's general objective was to examine the effect of selected macroeconomic determinants on the performance of agricultural exports in Kenya.

1.3.2 The study specifically sought;

i. To determine the effect of capital formation on the performance of agricultural exports in Kenya.
ii. To establish the effect of inflation on the performance of agricultural exports in Kenya.
iii. To examine the effect of the currency exchange rate on the performance of agricultural exports in Kenya.

1.4 Hypothesis of the Study

This study was guided by the following hypothesis;

HO_1: Capital formation has no statistically significant effect on agricultural export performance in Kenya

HO_2: Inflation has no statistically significant effect on agricultural export performance in Kenya

HO_3: The currency exchange rate has no statistically significant effect on agricultural export performance in Kenya.

1.5 Significance of the Study

This study provides evidence- based insights to guide the formation of agricultural trade policies by policymakers. The results of this study will contribute to the attainment of national development goals. This is critical since agricultural exports are a major factor in the nation's economic expansion and are necessary to meet the objectives outlined in Vision 2030. The research also helps address challenges such as increased uncertainty in the sector. Finally, the study forms a basis upon which future research in the field of agricultural exports will be anchored.

1.6 Scope of the study

This study majorly was to find out how capital formation, inflation, and currency exchange rates affect Kenya's agricultural export performance. Kenya was the geographical area covered as agricultural exports is a cornerstone of Kenya's economy, due its substantial contribution to GDP. The content scope comprised of capital formation, inflation, and currency exchange rates as the independent variables on Kenya's agricultural export. The theoretical scope encompassed traditional trade theory, purchasing power parity theory and the factor proportion theory.

The 40-year time frame covered the years 1982–2022, as this period of the study was expansive enough to provide precise results by enabling the examination evolution of agricultural export. The study employed annual time series data.

1.7 The Limitations of the Study

The researcher collected data from the World Bank database, which is a reputable global source of official data in ensuring data validity. The data was only available in annual format thus the study sought to overcome this limitation by using the annual data that was available. In order to make any statistical inference, there is a limited number of observations required, thus in meeting this pre-requisite the study adopted a 41 year time scope.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introductory.

The examination of Kenya's agricultural export performance as influenced by the listed macroeconomic drivers is presented in this section. The study's conceptual framework, empirical literature review, theoretical literature review, and conceptual literature review are all presented in this chapter. Examining the writings of other scholars and researchers who tackled the subject of agriculture export performance, and the macroeconomic factors piqued the researcher's curiosity.

2.2 Theoretical Review

The study was anchored on the traditional trade theory, while supported by purchasing power parity theory, and the factor proportion theory.

2.2.1 The Traditional Trade Theory

The traditional trade theory, proposed by David Ricardo in 1817, based on a comparative advantage and perfect competition anchored this study. The theory postulates that nations should concentrate on creating commodities and services for which they are relatively efficient or have lower opportunity costs when compared to other nations. With this strategy, nations lacking an absolute edge can focus on producing items or industries in which they are relatively less inefficient. Ricardo developed this hypothesis in opposition to trade barriers and tariffs.

Julio (2005) used the comparative advantage theory to study developing nations and came to the conclusion that specialization is the best approach to international commerce. This

indicates that, given its demonstrated significance for economic growth, comparative advantage theory remains relevant and should not be disregarded regarding international trade. Kenya can concentrate on producing particular agricultural items for which it enjoys a comparative advantage due to improved infrastructure and technology if it makes effective capital formation investments. The competitiveness of a nation's exports is mostly determined by the exchange rate of currencies. A nation's agricultural exports may become more inexpensive for overseas consumers thanks to favorable exchange rates, which could lead to an increase in demand (Thuy and Thuy 2019). Kenya can increase its comparative advantage in exportingagricultural products if its currency depreciates or is undervalued since these goods will become more affordable for consumers outside (Kiprono 2019).

The comparative advantage theory is not without flaws, though. It frequently makes static assumptions that might not hold true in practice. This study examined the effects of these factors on Kenya's agricultural exports over a certain time period using empirical data while taking dynamic shifts in the macroeconomic environment into account. Additionally, the concept of comparative advantage presupposes that capital and labor are immobile across national borders. In actuality, factors may be somewhat mobile, and their mobility may have an impact on the comparative advantage. This study looked at how capital formation currency rates, and inflation affect Kenya’s agricultural exports.

2.2.2 Purchasing power parity theorem

Professor Gustav Cassel of Sweden initially put forth the purchasing power parity (PPP) theory in 1918. Its foundation is the concept of one price, which stipulates that, under the assumption that there are no transaction costs, comparable items should be valued equally in all marketplaces. The PPP hypothesis determines a currency's purchasing power relative to

another by accounting for the exchange rate between two currencies. This theory states that the difference in the purchasing power of two currencies determines the exchange rate between them. Exchange rates fluctuate to reflect the relative buying power of two currencies in response to variations in inflation rates (Nnoli, Enilolobo, Hassan, and Bello 2023).

The underlying premise of this relationship is that, with no trade barriers, fluctuations in the exchange rate correspond to variations in the relative pricing rates ofnations. Prices of comparable goods cannot vary between two nations while trade barriers are present because arbitrators would exploit such circumstances until price discrepancies are abolished. As a result, the rule of one value is established, according towhich the economy as a whole adopts the truth of one commodity (Madura 2007). The notion that changes in the inflation rate are the cause of exchange rate adjustments stemsfrom the expectation that the price level in both nations should be correlated with the exchange rate.

It is concluded that there's is no purchasing parity between the two currencies if the theory is incorrect. According to Madura (2007), the difference between the inflation rates in the home and international markets multiplied by the direct quota equals the percentage change. While this notion is attributed to Wheatley and Ricardo, Gustav Cassel is recognized for having developed it in a more methodical manner. PPP comes intwo flavors: the Relative version and the Absolute version. But the most simple and practical version is the Absolute PPP, which shows how market forces, driven by negotiation, should adjust the exchange rate to balance the prices of the national baskets of commodities of the two countries.

2.2.3 Factor Proportion Theory

The Heckscher-Ohlin theory, or factor proportion theory, was developed to enhance the idea

of comparative advantage. Heckscher and Ohlin invented it in 1933. According to this economic theory, nations should export the goods and services they can easily andabundantly create. According to the hypothesis, technical progress of nations that trade with one another is assumed to be equal. As a result, the same number of inputs should provide the same number of outputs. The thesis highlights how exporting abundantresources can help nations gain from international trade (Ahmad 2018). The theory's main premises are that there are no imperfect markets, actors receive compensation commensurate with the value of their marginal products, consumer preferences are uniform and the same in both nations, factors are fully mobile between sectors within a nation, and both sectors consistently experience returns to scale. For example, the Factor Proportion Theory would advise Kenya, a nation with significant agricultural resources, toconcentrate on exporting agricultural goods that it can effectively and abundantly produce with its available resources, including land, labor, and capital. Accor ding to this theory, which is predicated on the idea that factors are supplied inelastically, Kenya standsto gain from global commerce by highlighting the export of agricultural products in whichit has a competitive advantage. Within the framework of Heckscher-Ohlin theory, capital is one of the production factors.Kenya could potentially enhance its export performance by effectively allocating the available funds towards the expansion and enhancement of its agricultural industry (Ozuzu and Ewubare., 2020). This could entail investments in cutting-edge farming methods, the construction of new infrastructure, and technology, all of which can boost theagricultural sector's production and efficiency and, as a result, its export potential (Okunola, 2017).

2.3.0 Conceptual Review

2.3.1 Capital Formation

The net capital buildup for a certain nation throughout an accounting period is known as capital formation, (Tuovila2023). It can also be defined as the process of increasing the stock of real capital within a country, leading to increased economic activities that foster the country's financial well-being (Davoine & Molnar, 2020). Capital formation of an economy is directly proportional to the rate at which that economy can grow its aggregateincome. Therefore, this means that more resources will be reinvested in agricultural export production. Mohsen, ehua & Che sab (2016) measured capital formation as gross fixed capital formation of agriculture. Moki in 2017, measured human capital formation in termsof years of schooling. Gross capital formation as a proportion of Gross Domestic Product was used to calculate capital formation in this study.

2.3.2 Inflation

According to (Nnoli, Enilolobo, Hassan, & Bello, 2023) inflation is the general rise in product prices and a fall in the purchasing power of a currency within an economy.

Akalpler, (2013) opines that inflation affects the trade capacity of an economy. Inflation is classified either as cost push or demand pull. When there is a greater demand than there is supply of goods and services, prices rise as a result of demand-pull inflation. Cost push inflation is the phenomenon in which prices of goods and services increase in response to increases in production costs. Nnoli et al, 2023 reckoned that an increase in the production cost declines aggregate supply since production costs become more expensive. Inflation reduces the export level of agricultural products in any economy since the products become

more expensive compared to products from other nations. This issupported by Okpe (2021) who found that inflation negatively affected agricultural exportsin Nigeria. Furthermore, a high inflation rate incentivizes farmers to sell their produce domestically where they can fetch higher prices leading to a decrease in supply available for export.

High inflation causes less output to be traded and trade is more feasible at lower rates of inflation (Lagos and Rocheteau, 2005). A nation's overall economic stability and competitiveness in international markets can be impacted by inflation. The success of agricultural exports is eventually impacted by the ability of nations with low and stable rates of inflation to draw in foreign investment and uphold stable trade ties. Utilizing the Consumer Price Index, inflation was calculated by the researcher in this study.

2.3.3. Currency Exchange rate

The exchange rate is the value of one country's currency stated in another. It shows how much of one currency must be spent in order to buy one unit of another. The competitiveness and financial viability of agricultural exports are impacted by exchange rates. (Ogunjobi, Oladipo, Eseyin, Opaola, & Aransiola, 2022). The Handbook of Safeguarding Global Financial Stability (2013) The quantity of local currency needed to buy one unit of foreign currency is known as the exchange rate. When a country's exchange rate is high, it means that its currency is more valuable, and as a result, the agricultural produce becomes more expensive for foreign buyers (Ojede, 2015). This decrease in affordability reduces the demand for agricultural exports (Ogunjobi et al, 2022). Conversely, when the exchange rate is low, it means that the country's currency is less valuable, making agricultural products more affordable for foreign buyers. Exports of agricultural products are in greater demand as a result of this improvement in affordability. (Akinniran, & Olatunji, 2018).

The price of a nation's agricultural commodities on the international market is significantly influenced by exchange rates (Kiprono, Thuy, and Thuy 2019). Malhotra and Kumari (2016) measured the exchange rate utilizing the real effective exchange rate, whereas Epaphra (2016) evaluated the exchange rate using the currency exchange rate's volatility. The real effective exchange rate was used in this study to measure the variable.

2.3.4 Agricultural Export Performance

The comparative achievement or failure of a business's or country's endeavors to sell agricultural products and services produced domestically overseas is known as agricultural export performance. (WTO,2022). A company's ability to export is critical to its long-term survival and growth (Deng, and Sinkovics, 2018). The performance of agricultural exports was calculated as apercentage of overall exports. The total amount of agricultural exports was used by Ozuzuand Ewubare (2020) to gauge agricultural export performance. Okunola (2017) examinedthe sector's productivity in relation to agriculture's GDP contribution. The agricultural export performance was reported by Nnoli, Enilolobo, Hassan, and Bello (2023) in terms of agricultural export volume. The performance of agricultural exports was assessed in thisstudy as a percentage of total exports.

2.4 Empirical Literature Review

2.4.1 Capital formation and agricultural export performance

Ozuzu and Ewubare (2020) conducted a study on the effect of export income on capital formation in Nigeria from 1980 to 2018. Several export revenue components were

examined in the study, including revenue from oil exports, revenue from agriculture exports, revenue from exports of solid minerals, and revenue from exports of services. The study's methods for measuring capital formation included gross capital formation, foreign direct investment, and

accumulation of foreign reserves. The long-term relationship between the explanatory factors and gross capital production was demonstrated by the outcome of the Bound Test Cointegration.

The study concluded that capital formation benefits both short- and long-term from earnings from solid mineral and agricultural exports. While the previous study looked at the impact of export income on capital formation in Nigeria, this study aimed to understand the relationship between capital creation and agricultural export performance in Kenya.

Ahmad (2018) conducted research on the effects of foreign direct investment, the real effective exchange rate, and the total labour force on Pakistan's exports. Time series data collected between 1990 and 2016 were used in the study. He used the Augmented Engle-Granger Test to ascertain the quantity of co-integrating relationships. The Johansen Co-integration Test was also utilized. The study's conclusions demonstrated that Pakistan's exports were positively and sustainably impacted by human capital. The aforementioned study only examined a single facet of Pakistani exports and capital generation in general. However, the overall impact of capital formation on Kenya's agricultural export performance was the main point of focus in this study.

Okunola (2017) carried out research to find out how capital investment affected Nigeria's agricultural sector's production. The study used time series data that was gathered between

1978 and 2014. The Wald Coefficient Test, Vector Error Correlation Model, and Co-integration analysis were used in the investigation. The results showed that capital investment and agricultural productivity in Nigeria had a positive long-term association. The aforementioned study did not take agricultural exports into account as it examined the effects of capital investment on agricultural productivity in Nigeria. But in addition to addressing the spatial disparity, this study concentrated on agricultural exports.

Mohsen and Che Sab, (2016) investigated the factors influencing Syria's agricultural productivity using annual time series data spanning from 1980 to 2010. Using the Johansen cointegration test, they determined that capital formation was one of the factors. The study's gross fixed capital formation of Syria's agricultural sector was used to measure capital formation, and the findings showed that it significantly and favorably affected agricultural output. Unlike the previous research, which looked at agricultural output in Syria as a whole, this study bridges the geographical gap and narrows its scope to agricultural exports in Kenya.

Kazmi and Ali, (2017) examined the impact of human capital on agricultural export performance in Pakistan and highlighted the crucial role of an educated workforce in enhancing agricultural productivity and export performance.

2.4.2 Inflation and agricultural export performance

Nnoli, Enilolobo, Hassan, and Bello (2023) examined the influence of exchange rates and inflation on agricultural exports in Nigeria from 1986 to 2019 using annual time series data. The Granger causality test, the ADF, as well as Pillips Perron (PP) unit root tests, along with the ARDL technique, were employed in the study to attain its objectives. The

research's conclusions revealed that there was a unidirectional causal relationship between the exchange rate (EXR) and the inflation rate (INF), and between the inflation rate (INF) and agricultural export value (AEV).

The research's outcomes demonstrated a strong and favorable association between agricultural export value and inflation. This study focused on how inflation affects agriculture export performance in Kenya to bridge the geographical gap.

Okpe and Ikpesu (2021) examined the effect of inflation on Nigeria's food exports and imports by analyzing time series secondary data collected annually from the years 1981 to 2017. utilizing the VECM's impulse response function. The results of the study demonstrated that inflation had a beneficial effect on food imports. The results of the study showed that inflation hurt exports. This study looked at how inflation affected Kenya's agricultural export performance, whereas the prior study looked at how it affected food imports and exports in Nigeria.

In their 2018 study, Sahoo & Sethi examined the relationships between India's export, import, inflation, and foreign direct investment (FDI) from 1975 to 2017. The study utilized annual time series data. They employed the Johansen co-integration test to ascertain the long-term relationship between the variables. They also employed variance decomposition analysis (VDA) and vector auto regression (VAR) to ascertain the impulse response function (IRF) and the dynamic relationship. The results of the VDA and IRF showed that, compared to other variables like imports and FDI, exports had a favorable or higher influence on inflation in India. Exports and inflation have a unidirectional causal relationship, not the other way around, according to the pair-wise Granger causality model.

This research, however, concentrated on the effect of inflation on agricultural export outcomes, while the previous study simply examined the relationship between exports and inflation.

In 2017, Kiganda, Obange, and Adhiambo carried out research on Kenya's exports and inflation. This analysis was done using a correlation research approach based on monthly time series data. The relationship between Kenya's total exports and inflation was investigated using an impulse response, Granger causality test, cointegration test, error correction mechanism, and variance decomposition analysis. The research found a positive and statistically significant long-term relationship between total exports and inflation based on impulse analysis as well as variance decomposition.

The impact of inflation on exports generally was the only aspect of the study that was examined in isolation. This study, however, looked at how inflation affected Kenya's agricultural export performance in relation to other variables like capital formation and exchange rate. about

Nyenyia, Amlegab, and Scholastic (2017) studied the link between inflation as well as economic expansion in five East African Community countries from 1990 to 2014 using a panel time series technique. In the research, a robust Least Square estimate with fixed effects was employed. A correlation-based study approach was employed. The results of the study demonstrated that inflation has a major and detrimental impact on economic growth. The results of the co-integration analysis likewise demonstrated a sustained relationship between inflation and economic expansion in the EAC. While the prior study looked at the relationship between inflation and economic expansion in EAC countries, this study focused on how inflation influenced Kenya's agricultural export performance

2.4.3 Exchange rate and agricultural export performance

Kiprono (2019), looked at Kenya's coffee export performance between 1980 and 2018. He took into account several factors while applying the Error Correction Model (ECM), including the global real GDP over time, trade openness, capital creation, FDI inflows, institutional quality in compliance with the law, and exporting capacity. The results of his analysis demonstrated that coffee exports were considerably and favorably impacted by FDI inflows, institutional quality, as well as the real effective exchange rate. Coffee exports benefited through Kenyan currency's depreciation as well. It is crucial to remember that the study did not look at the agricultural exports as a whole; rather, it solelylooked at the coffee export performance. Therefore, this study needed to concentrate on how Kenya's agricultural export performance is impacted by exchange rates.

Thuy and Thuy (2019) looked into how real exchange rate volatility affected Vietnam's exports using the bound testing method. The research examined quarterly data from 2000 to 2014, a period of fourteen years. The findings demonstrated that devaluation and fluctuating exchange rates have a detrimental short-term impact on exports. However, a J-curve showed that, in the long run, depreciation increased export volume. The research's goal was to ascertain how real exchange rate volatility affects Vietnam's export sector as a whole. Conversely, this study looked at the effect of currency rates on Kenya's agricultural export performance.

Epaphra (2016) used Granger causality and Johansen's cointegration to examine the variables influencing Tanzania's export performance between 1966 and 2015. The steady long-run connection between the export factors was also empirically estimated using error correction modeling. The results showed a favorable correlation between Tanzanian exports and exchange rates, real per capita GDP, and trade liberalization. Granger causality

also showed a pattern of association between exports and economic development.

A study on the variables influencing exports in certain Asian economies—such as those inEast, Southeast, and South Asia between 1980 and 2012 was carried out in 2016 by Malhotra and Kumari. The Ordinary Least Square (OLS) method was used to evaluate the impact of export performance while accounting for traditional supply and demand, the real effective exchange rate, global demand, capacity or production level, and relative prices. The study also took into account how trade and foreign direct investment affected export performance.

The researchers discovered that an increase in exports was caused by the currency rate's volatility. The study examined the level of association between exchange rate volatility and exports in general rather than the relationship between agricultural export performance and exchange rate volatility. However, this study looked at how Kenya's agricultural export performance was affected by exchange rates.

2.4.4 Summary and Overview of Literature Review

Table 2.1 Summary Table of Empirical Literature Review

Author/Year	Topic	Model	Findings	Critique/Research gaps
Ozuzu and Ewubare (2020)	The impact of export earnings on capital formation in Nigeria	The Bound Test Cointegration	Agricultural exports had a positive effect on capital formation	Does not show how capital formation affects agricultural export performance
Ahmad, (2018)	The Impact of Foreign Direct Investment, Real Effective Exchange Rate and Total Labor Force on the Export of Pakistan	Augmented Engle-Granger Test & Johansen Co-integration Test	Human capital had a positive and long-run impact on exports in Pakistan	Only looked at one aspect of capital formation and exports in general
Okunola, (2017)	The effect of capital investment on the productivity of the agricultural sphere in Nigeria	Co-integration analysis, Vector Error Correlation Model, and Wald Coefficient Test	There was a positive long-run relationship between capital investment and the agricultural productivity sphere in Nigeria.	Does not look at agricultural exports but productivity of the agriculture as a whole.
Mohsen and Che Sab (2016)	The determinants of agricultural output in Syria.	Johansen Cointegration Test	Capital formation had a positive and significant effect on agricultural output	The study only reveals how capital formation affects agricultural output and not the agricultural exports.
Nnoli, Enilolobo, Hassan, and Bello (2023)	The impact of inflation and exchange rate on agricultural exports in Nigeria	Augmented Dickey-Fuller (ADF) and Pillips Perron (PP) unit root test, Granger causality test, and Autoregressive	Inflation had a positive and significant relationship with Agricultural export value	Does not look at agricultural exports in Kenya.

		Distributed Lag (ARDL)		
Okpe& Ikpesu (2021)	The effect of inflation on food imports and exports in Nigeria	Impulse response function of the VECM	Inflation affected exports negatively	The study does not show how inflation affects agricultural exports in Kenya.
Sahoo & Sethi (2018)	The relationship between inflation, export, import and foreign direct investment (FDI) in India	Johansen co-integration test & the pair-wise granger causality	Exports had positive or greater influence on inflation in India	The study only looked at the relationship between inflation and exports but not how inflation affects agricultural export performance.
Kiganda, Obange, & Adhiambo (2017)	The relationship between exports and inflation in Kenya	**C**ointegration test, Error correction Mechanism, Granger Causality test, Impulse Response, and Variance Decomposition Analysis	Inflation had a positive significant long-run relationship with the total exports	The study does not show how inflation affects agricultural export performance.
Nyenyia, Amlegab & Scholasticac (2017)	The correlation between inflation and economic growth in five East African Community countries	Robust Least Square estimation technique with fixed effects.	Inflation had a negative and significant effect on economic growth	The study looked at how inflation affected economic growth and not agricultural exports
Kiprono (2019)	The export performance of coffee in Kenya	Error Correction Model (ECM)	The real effective exchange rate had a significant and positive impact on coffee exports.	Only looks at coffee a single agricultural product as opposed the entire agricultural export sector.
	The consequences of	Bound Testing Approach	In the short term, there was	The study looked at exports in general

Thuy and Thuy (2019)	the instability of the real exchange rate on exports in Vietnam		an unfavorable impact of exchange rate instability and devaluation on exports but in the long term, devaluation had a beneficial impact on export volume	as opposed to agricultural exports. The findings were contradictory.
Epaphra (2016)	The factors distressing export performance in Tanzania	Johansen's cointegration, Granger causality, and the Error Correction Modeling	The exchange rate was positively related to exports of Tanzania	The study looked at exports of Tanzania and not the agricultural exports in Kenya,
Malhotra and Kumari, (2016)	The factors that determine exports in designated Asian economies	Ordinary Least Square (OLS) method	Volatility in the exchange rate increased the export volume	This study looked at exchange rate volatility as a determinant of exports and not how exchange rate volatility affected agricultural export performance.

Source: (Research data, 2024)

2.5 Conceptual Framework

The relationships between the variables under the study are illustrated through the conceptual framework. The relationship between the explained variable (agricultural export performance) and the explanatory variables (capital creation, inflation, and currency exchange rate) is the idea behind this association.

Independent variables: they include all the variables that provide the explanation for the dependent variable. Inflation, currency exchange rate, and capital formation were the three independent variables that were examined. These variables have an impact on an independent variable, either positively or adversely.

Dependent variable: It is a variable that the researcher is worried about. The researcher looked at how the independent variables affected agricultural export performance, the study's dependent variable.

CONCEPTUAL FRAMEWORK

INDEPENDENT VARIABLES **DEPENDENT VARIABLE**

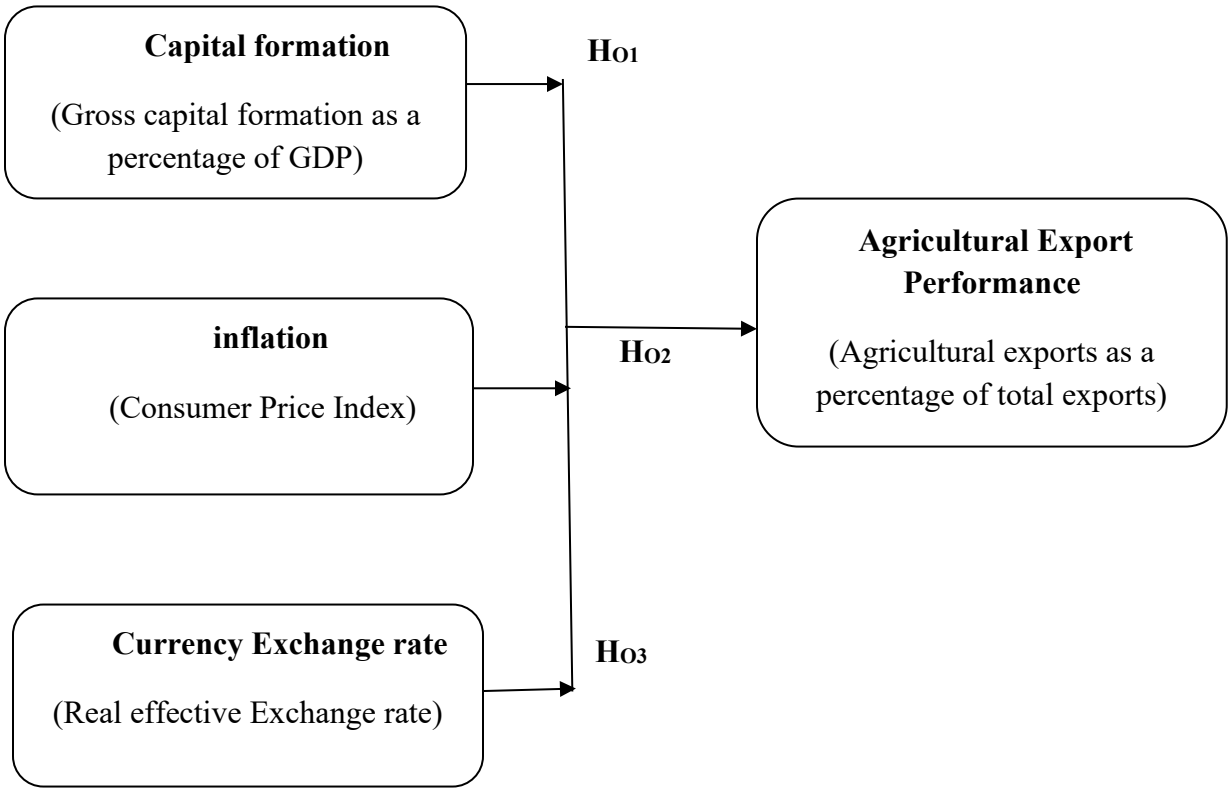

Figure 2.1: Conceptual Framework
Source: (Researcher, 2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This section entails research design, study area, data types and sources, analysis of the data, specification of the model and diagnostic tests.

3.2. Research Design

A research design is important because it determines how data is collected and analyzed to achieve research objectives. Kothari (2021) notes that the research design describes the aims and objectives of the study as well as the protocols and techniques that will be followed to gather and process data. A research design directs the entire research process and guarantees that the study is carried out in a methodical and exacting manner. In this study, a Causal research design was adopted in examining the effect of capital formation, inflation, and currency exchange rate on agricultural export performance in Kenya. This is because a causal research design allows the study of variables over time without manipulation.

3.3. Study Area

The entire Kenyan agricultural export industry was covered by this study, which was conducted there. With an area of 582646 km^2, Kenya is the 47th largest country in the world geographically. It is lies within the latitudes 5°N and 5°S and longitudes 34° W and 42°E. The Kenyan economy, like that of other East African nations, is centered on the export of agricultural products, particularly coffee, tea, and horticultural commodities (Kinya, 2015). With 47.6 million citizens as of the 2019 census, Kenya is one of the largest

economies in the African continent in terms of output and market size. Its economy, which accounts for almost 40% of the region's GDP, is the most advanced in the EAC (UNCTAD, 2021). Its Indian Ocean coastline spans 536 kilometers. The major hubs of Kenyan commerce are Nairobi and Mombasa. The Port of Mombasa is critical both on the domestic economy of Kenya and its exports.

The primary economic activity for the majority of Kenyans is agriculture (KNBS, 2018). Kenya's economy grows as a result of agricultural exports since they provide foreign exchange earnings, close balance of payments imbalances, and create jobs (Siaw, Jiang, Pickson, and Dunya, 2018). The agricultural sector was recognized by Vision 2030 as one of the main engines of the nation's economy, helping it to reach its goals of 25% poverty reduction, 10% annual economic growth rate, and 30% increased food security by 2030.

It was crucial to comprehend how capital formation, inflation, and currency exchange rates affect the performance of agricultural exports because of a paucity of empirical evidence on how these macroeconomic variables influence the performance of agriculture sector in the country (Samoei and Kipchoge, 2020). This is due to the vital significance that Kenya's agricultural export industry plays in the country's economy. The findings in this study can be used to create macroeconomic settings and policies that encourage and enhance Kenya's agricultural exports.

3.4 The Data, Data Types, and Data Collection Methods

For a 40-year period (1982–2022), the analysis used annual secondary time series data on capital formation, inflation, currency exchange rates, and agricultural export performance. The availability of data for every study variable had a sole role in the study period selection. This information was obtained from the World Bank database's economic reports, statistical summaries, and economic indicators.

3.5. Data Analysis and Presentation of Results

Data analysis, which included both inferential analysis and descriptive, was performed using EVIEWS software version 10. The researcher converted the data into natural logs prior to data analysis. The purpose of the procedure was to remove skewness and restore normalcy to the initial data, (Bruin2006). Additionally, it enhanced the dependent and independent variables' linearity. The descriptive statistics included the, average value, standard deviation, the lowest value, the highest value, skewness, and kurtosis values. The study employed inferential statistics to evaluate its hypotheses, and a correlational analysis was conducted to ascertain the degree and direction of association between the explanatory variables (capital formation, inflation, and currency exchange rate) and the explained variable (agricultural export performance).To further understand how the macroeconomic factors (capital creation, inflation, and currency exchange rate) impacted the dependent variable (agricultural export performance), a multivariate regression analysis was done. The results were presented in tables.

3.5.1 The Description of Variables and how they were Measured

The table 3.1 below gives details on research parameters, including their description, measurement methodology, and expected signs.

Table 3.1 The Description of Variables and how they were Measured

Variable	Description	Measurement	Predicted prior sign
Agricultural export Performance	Variation in the real output of the agricultural export	Percentage of total exports	Dependent variable
Capital Formation	Total capital formation	Gross Capital formation as a proportion of GDP	+/-
Inflation	Inflation Rate	inflation Rate as per the Consumer Price Index	+/-
Currency exchange rate	Proportion of changing a country's Currency into another	Real Effective exchange rate	+/-

Source: (Research data, 2024)

3.5.2 Econometric Model Specifications

Multivariate linear regression analysis was performed to test for the proposed association between the performance of agricultural exports and the regressors (capital formation, inflation, and currency exchange rate).

The model below was adopted:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \mu$$

Where; Y_t= The agricultural export performance expressed as a proportion of total exports is the explained variable.

β_0=constant.

β_1.....β_3 the slope that shows how much agricultural export performance varies with each unit change in the explanation variable.

X_1= capital formation

X_2= inflation

X_3= currency exchange rate

t= time index

μ=error term

The variation in $\boldsymbol{Y_t}$ (agricultural export performance over time) explained by variations in capital formation $(\boldsymbol{X_1})$, inflation $(\boldsymbol{X_2})$, and currency exchange rate $(\boldsymbol{X_3})$overtime was displayed using the coefficient of determination **(R^2).**

3.6 Pre- Estimation Diagnostic tests

The diagnostic tests carried out by the researcher included a bounds cointegration test, unit root test, inferential statistics, descriptive statistics, and optimum lag length determination.

3.6.2 The Descriptive statistics and inferential statistics

3.6.2.1 The Descriptive statistics

Descriptive statistics encompass measures used to illustrate the distribution of variables (Kothari, 2021). They let researchers to depict the distribution of variables using particular statistics (Ali, 2020).

3.6.2. 2 The Inferential statistics

With a given degree of confidence, inferential statistics are essential for extrapolating results from a sample to the larger population. They are important for estimating population parameters and assessing study hypotheses (Kothari, 2021).

3.6.3 The Unit Root Test

The data stationarity was checked through Unit root testing at different levels. A given data set is considered stationary when its average value and variance remain constant over

time (Gujarat, 2022). The ADF test was utilized to check for stationarity in the raw time series data. Accordingly, a probability value less than 0.05 indicates the lack of a unit root. In the presence of a unit root, it is corrected by differencing the data.

3.6.4 Determination of Optimum Lag Length

The ideal lag duration of the unconstrained (VAR) order must be ascertained by the researcher before model estimation. It was decided to use the approach with the least rank value (Oduor, 2021). The optimal lag length was ascertained using the sequential modified LR test statistic, final prediction error, Akaike information criteria, Schwarz information criterion, and Hannan-Quinn information criterion. Akaike Information Criterion was utilized by the researcher to ascertain the optimal lag duration.

3.6.5 Bounds Cointegration test

The Bounds Cointegration test refers to a statistical technique for figuring out whether two or more non-stationary time series variables are cointegrated. Cointegration is where two or more variables move together over a long term while diverging in the short run. To ascertain whether there were multiple integration associations between the explanatory and the explained variables. Regardless of the order of the orders, the Bounds test can be applied to a series of orders (0) or (1).

3.7 Post-Estimation Diagnostic Tests

Following regression analysis, the following checks were done to verify the OLS assumptions. They comprised of the test for normality, multicollinearity, autocorrelation and heteroscedasticity.

3.7.1 Normality Test

Use the normalcy test to ascertain whether data is distributed appropriately (Kamau, 2021). The normality was confirmed by the Jarque-Berra test. According to Aljandali and Tatahi, (2018), this test is based on the null hypothesis of the normal distribution.

3.7.2 Multicollinearity Test

When the explanatory variables are strongly linearly correlated, multi-collinearity is present. Multiple collinearities lead to confusion in the effects of predictor variables, which complicates statistical inference. The Variance Inflation Factor (VIF) was utilized to ascertain the presence of multi-collinearity. According to Gogtay & Thatlle, (2017), a VIF value less than 10 signifies the absence of multi-collinearity.

3.7.3 Test for Autocorrelation

According to Gujarat, (2022), autocorrelation occurs when there is a strong correlation between the regression's residuals. Autocorrelation leads to inaccurate standard errors, skewed parameter estimations, and flawed statistical conclusions. Breusch-Godfrey LM test was employed to test for autocorrelation of the regression model. The probability value greater than 0.05 signifies the absence of autocorrelation.

3.7.4 Heteroscedasticity

According to Gujarat (2022), heteroscedasticity is when the variance of errors in a regression model is not constant across the observations. The study used the Breusch-Pagan-Godfrey Test to test the null hypothesis, which states that there is no heteroscedasticity in the errors of a regression model. If the p-value for this test is less than 0.05, the null hypothesis of homoscedasticity is rejected, indicating that heteroscedasticity is present in the data.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter encompasses the results on descriptive and inferential statistics, correlational analysis, pre and post diagnostic tests, as well as regression and their discussion.

4.2 Descriptive statistics

The raw data was subjected to descriptive statistics, that entailed skewness, kurtosis, mean, standard deviation, minimum and maximum values, and the Jarque-Berra tests. The mean, which displays the average value of the distribution, is a crucial indicator of central tendency. Furthermore, the standard deviation displays the extent to which the data deviates from the mean. Ascertaining whether the source distribution of the sample data is normal is made possible using skewness, kurtosis, and Jarque-Berra tests.

Table 4.1 displays 41 observations for each of the four variables, which were converted to their natural logarithms.

The performance of agricultural exports, denoted by (LNAGX), was the dependent variable. Capital formation, denoted by (LNCPF), was the first independent variable. Inflation, represented as (LNINF), was the second independent variable. The currency exchange rate, represented by the symbol (LNCER), was the third independent variable.

Table 4.1 Descriptive Statistics

	LNAGX	LNCPF	LNINF	LNCER
Mean	2.204397	2.985838	2.203748	3.97475
Median	2.306055	2.978158	2.238342	4.27806
Maximum	2.762399	3.236678	3.828182	4.76954
Minimum	1.706264	2.708305	0.441043	2.39080
Std. Dev.	0.328753	0.145836	0.691235	0.70625
Skewness	-0.114972	-0.152542	-0.201196	-0.96695
Kurtosis	1.572174	2.328911	3.538990	2.46287
Jarque-Bera	3.573085	0.928371	0.772901	6.88197
Probability	0.167538	0.628647	0.679464	0.05203
Sum	90.38027	122.4194	90.35366	162.964
Sum Sq. Dev.	4.323143	0.850723	19.11221	19.9518
Observations	41	41	41	41

Source: (Authors, 2024)

According to the data displayed in Table 4.1, the average amount of agricultural export performance as a percentage of total exports was 2.204%, with a standard deviation of 0.3288. GDP-based capital formation ranged from the lowest 2.7083% to the highest of 3.2367%, with a mean of 2.9858%. According to the Consumer Price Index, there was a minimum of 0.4410 and a maximum of 3.8282 for inflation, with an average of 2.2037. The real effective exchange rate of the Kenyan shilling relative to the US dollar was used to measure the currency exchange rate, and it ranged from 2.3908 to 4.7695, with an average of 3.9748.

The Jarque-Berra check, kurtosis, and skewness of the distribution all show whether or not it is normal. The skewness of a distribution indicates how asymmetric it is. The set of data is regarded as normally distributed if its Jarque-Berra probability is more than 0.05, its skewness value is less than two, and its kurtosis value is less than six (Maniagi, 2018).

When there is a positive skewness value for a data set, it implies that the mean exceeds the median value, and when it is negative, it means the middle number is greater than the average value (Odour, 2021).

The agricultural export performance in Table 4.1 was considerably negatively skewed. It had a skewness score of -0.1149, kurtosis of 1.5722 and a Jarque-Berra probability of 3. 5731.The results of this study demonstrated a normal distribution in agricultural export performance. The capital formation displayed a normal distribution with a kurtosis of 2.328911, a skewness of -0.152542, and a Jarque-Berra probability of 0.9284. inflation had a kurtosis of 3.538990 and a Jarque-Berra P-value of 0.7729, and it had negatively skewed (-0.201196) normal distribution. The currency exchange rate demonstrated a normal distribution with a kurtosis of 2.462872, a Jarque-Berra p-value of 6.8820, and a negative skewness of -0.966950.

4.3 Correlational Analysis

One statistical technique for determining how closely variables are related to one another is correlational analysis (Gujarat, 2022). Determining the strength of the link and whether it is positive or negative between the variables is the main goal of this analysis. Pairwise correlational analysis, which is performed at the variable level, was utilized in the study to examine the degree of correlation and the strength of association between variables under investigation. The outcomes of pairwise correlational analysis are shown in the Table 4.2

Table 4.2 Correlation Analysis

	LNAGX	LNCPF	LNINF	LNCER

LNAGX	1.0000			
LNCPF	0.663055 [2803046] (0.0154)	1.0000		
LNINF	-0.295860 [-2.934235] (0.0103)	0.031021 [0.193817] (0.8473)	1.0000	
LNCER	0.785311 [7.921599] (0.0000)	-0403402 [2.753202] (0.0089)	-0.284356 [-1.852269] (0.0716)	1.0000

Source: (Research data, 2024)

From the table 4.2 above, the findings displayed demonstrate that the explanatory variables were not linearly correlated. Specifically, the coefficients of associations between capital formation (LNCPF) and agricultural export performance (LNAGX) showed a moderate significant positive correlation (R=0.6631(p=0.0154), the positive coefficient implied that an increment in capital formation promotes agricultural export performance. On the contrary Inflation (LNINF) indicated a negative significant correlation (R=-0.295860 (p=0.0103), this implied that an increase in inflation contracted agricultural export performance. Furthermore, the currency exchange rate (LNCER) had a positive significant correlation (R=0.785311 (p=0.0000) with agricultural export performance, insinuating that an increase in currency exchange rate boosted agricultural export performance.

4.4 Augmented Dickey-Fuller Test for Unit Root

The variance and mean value of many time series data sets fluctuate over time due to non-stationarity (Gujarat, 2022). Because many statistical models and approaches rely on data stationarity, it is imperative to check for unit root before doing any tests to ensure proper statistical analysis. ADF testing is a widely used technique to verify unit root. To handle possible serial correlation within the disturbance period, this test makes use of lag values. Aljandali and Tatahi (2018) state that the test's null hypothesis presupposes the presence of a unit root. In order for the null hypothesis to be accepted the T-statistic must be greater than the 5% and 1% critical values regardless of the sign and the p-value must be more than 0.05. The ADF test results at various levels are displayed in the table below.

Table 4.3 ADF Results at Levels

Variables	**ADF T-statistic**	**Prob.**	**Critical Values**			**Conclusion**
			1%	5%	10%	
LNAGX	-3.4850	0.0547	-4.2050	-3.5266	-3.1946	Unit root
LNCPF	-2.6087	0.2787	-4.2050	-3.5266	-3.1946	Unit root
LNINF	-5.0050	0.0012	-4.2050	-3.5266	-3.1946	No Unit root
LNCER	-1.6522	0.7537	-4.2050	-3.5266	-3.1946	Unit root

Source: (Research data,2024)

With a p-value 0.0547>0.05 and an ADF T- statistic of (-3.485025) which is less than the essential values of 1% (-4.2050), 5% (-3.5266), and 10% (-3.1946), respectively, Table 4.3 demonstrates that (LNAGX) was not stationary at level. According to the ADFT-statistic (-2.6087), capital formation (LNCPF) was not steady at the level (p-value, 0.2787) and was below the crucial values, 1% (-4.2050), 5% (-3.5266), and 10% (-3.1946), respectively. The unit root (p-value 0.0012<0.05) allowed inflation (LNINF) to remain stationary at level, and the ADFT-statistic (-5.0050) exceeded the threshold levels of 1% (-4.2050), 5% (-3.5266), and 10% (-3.1946), respectively. At the level (p-value 0.7537>0.05), the currency exchange rate (LNCER) was non-stationary; the critical values of the ADFT-statistic (-1.6522) were less than 1% (-4.2050), 5% (-3.5266), and 10% (-3.1946), respectively. The first difference test revealed that the currency exchange rate, capital creation, and agricultural export performance (LNAGX), all had stationary p-values of (0.0000), (0.0001), and (0.0002), in that order, as displayed in Table 4.4 below.

Table 4.4 ADF Results at 1st Difference

Variables	ADF T-statistic	Prob	Critical Values			Conclusion
			1%	5%	10%	
DLNAGX	-8.6042	0.0000	-4.2119	-3.5298	-3.1964	Stationary
DLNCPF	-5.9954	0.0001	-4.2191	-3.5331	-3.1983	Stationary
DLNCER	-5.6147	0.0002	-4.2119	-3.5298	-3.1964	Stationary

Source: (Research data,2024)

4.5 Optimum Lag Length Determination

According to Thoma (2008), a lag is the period of time that an independent variable affects a dependent variable. The following table displays the findings of lag duration determination based on several parameters. To determine the lag order, Akaike Information Criterion (AIC) was utilized in this study.

Table 4.5 Determination of Optimal Lag Length

Lag	logL	LR	FPE	AIC	SC	HQ
0	-37.59336	NA	0.000111	2.248289	2.422443	2.309687
1	56.95386	163.5411*	1.61e-06*	-1.99751*	-1.12674*	-1.69052*
2	67.45751	15.89742	2.23e-06	-1.700406	-0.133026	-1.147831
3	79.08384	15.08280	3.08e-06	-1.463991	0.800002	-0.665828
4	91.46579	13.38590	4.45e-06	-1.268421	1.692185	-0.224669

Source: (Research data, 2024)

*Indicates lag order selected by the criterion

As the AIC had the smallest value in this rank and an asterisk on lag1, Table 4.5 showed that lag1 was the most appropriate for the model.

4.6 Bounds Cointegration Test

Using the Bounds test is one method to ascertain whether a co-integrating equation is present between the variables. According to the Bounds co-integration test criteria, the null hypothesis is rejected if the F-statistic is greater than the 5% threshold values of the upper

limit I (1) and lower bound I (0). Given that there is co-integration and a strong, long-term connection between the series, this finding implies that the series are related and capable of undergoing a linear combination. It also means that if a certain series is impacted by brief disruptions, it will eventually converge. As a result, it is advised to use the Vector Error Correction Model (VECM) and the Auto regressive Distributed Lag (ARDL) model to estimate both short- and long-term models.

In contrast, the null hypothesis is not rejected, indicating the lack of co-integration, if the F-statistic is less than the respective 5% critical values of I (0) and I (1). Since this suggests that the series only contains short-run relationships, the researcher should only estimate short-run models in this situation. Regression analysis or a vector auto regressive (VAR) model might be used by the researcher. For example, the F-statistic (3.3338) in Table 4.6 was less than the I(0) and I(1) critical values at 5%, which are 4.01 and 5.07, respectively. As a result, the study did not rule out the null hypothesis at the 5% level of significance, proving that the series had a short-term association.

Table 4. 6 F-Bounds Test

F-Bounds Test		Null Hypothesis: No level relationship		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
			Asymptotic: n = 1000	
F-statistic	3.333820	10%	3.47	4.45
k	3	5%	4.01	5.07
		2.5 %	4.52	5.62
		1%	5.17	6.36
Actual Sample Size	40		Finite Sample: n = 40	
		10%	3.76	4.795
		5%	4.51	5.643
		1%	6.238	7.74
			Finite Sample: n = 35	
		10%	3.8	4.888
		5%	4.568	5.795
		1%	6.38	7.73

Source: (Research data, 2024)

4.7 Multivariate Regression Analysis

The Bounds cointegration test indicated that there was no along-term association among the variables under investigation, hence regression analysis was utilized to determine a possible short-term relationship regarding how the explanatory variables affected the performance of Kenya's agricultural exports. The results of the regression analysis are shown in Table 4.7.

Table 4.7 Results of the Multiple Regression Analysis for the Effect of Capital Formation, Inflation, and Currency Exchange Rate on the Performance of Agricultural Export in Kenya.

Explained Variable: DLNAGX
Method: Least Squares
Sample: 1982- 2022
Included observations: 41

Variable	Coefficient	Std. Error	t-statistic	Prob
DLNCPF	0.487800	0.236795	2.060009	0.0465
LNINF	-0.281707	0.108733	-2.590808	0.0182
DLNCER	0.398346	0.050977	7.814212	0.0000
C	0.334201	0.085129	3.925797	0.0015

R- squared	0.661289	Mean dependent var	2.204397
Adjusted R- squared	0.633826	S.D. dependent var	0.328753
S.E. of regression	0.198936	Akaike info criterion	-0.299198
Sum squared resid	1.464297	Schwarz criterion	-0.132020
Log likelihood	10.13355	Hannan- Quinn criteria.	-0.238321
F- statistic	24.07920	Durbin- Watson stat	1.843424
Prob (F-statistic)	0.000000		

Source: (Research data,2024)

Table 4.7, which exhibits an R^2 of 0.661289 as the measure of goodness of fit and a p-value for the F-statistic of 0.0015<05, demonstrates that at 5% level of significance the regression model was fit and statistically significant. Additionally, the R^2 value of 0.661289 implies 66.129% of the variance in the explained variable was predicted by the variance in the regressor. This suggested that 33.871% of the volatility in Kenya's agricultural export performance might be explained by other macroeconomic factors that were not examined by this study. According to Maniagi (2018), there is no auto correlation in the model because the Durbin-Watson statistic value was 1.8434, which falls within the important values of 1.5 and 2.5. As can be seen from Table 4.7 above, LNINF had a moderate effect

on DLNAGX, whereas DLNCPF and DLNCER had a statistically significant impact.The fitted regression model was derived as:

$DLNAGX_t = 0.334201 + 0.487800DLNCPF_t - 0.281707LNINF_t + 0.398346DLNCER_t$

Where, DLNAGX= natural logarithm of agricultural export performance

DLNCPF= natural logarithm capital formation as a percentage of Gross Domestic Product

LNINF= natural logarithm Inflation measured by the consumer price index

DLNCER= natural logarithm of currency exchange rate (measured in terms of effective real exchange rate in the study)

t = Annual time series.

4.8 Results and Discussions as Per the Study Objectives

This research's main goal was to determine how Kenya's agricultural exports' performance was impacted by capital formation (DLNCPF), inflation (LNINF), and currency exchange rate (DLNCER).

4.8.1 Effect of Capital Formation on Agricultural Export Performance

The study's first objective was to determine the effect of capital formation on the performance of agricultural exports. Results in table 4.7 indicated that capital formation had a positive significant impact on agricultural export performance with a coefficient of 0.4878 (p-value 0.0465<0.05). According to this coefficient, all other factors held constant, a 1% increase in capital formation a 48.48% rise in Kenya's agricultural export

performance. Consequently, the null hypothesis stating that capital formation had no statistically significant effect on agricultural export performance was rejected at 5 per cent significance level. This suggested that Kenya's agricultural export performance was significantly influenced by capital formation. Furthermore, it was found that this variable's coefficient (β1) was.

According to this finding, government capital goods investments in the agricultural sector, suitable farmer extension and training programs, and the creation of an atmosphere that encourages foreign direct investment in Kenya all contribute to increased agricultural export performance. Thus, Ahmad's (2018) findings that human capital has a long-term, favorable impact on exports concur with the findings of this study. The results are consistent with those of Okunola (2017), who discovered a long-term, positive link between capital investment and agricultural productivity in Nigeria. The results also align with those of Mohsen and Che Sab (2017), who discovered a substantial positive impact of capital formation on Syria's agricultural output

4.8.2 Effect of Inflation on Agricultural Export Performance

The study's second objective was to establish the effect of inflation on the performance of agricultural exports. Results in Table 4.7 indicated that inflation (LNINF) had a substantial effect on the performance of agricultural exports; this was indicated by the p-value of 0.0182<0.05. The second null hypothesis (HO2), which stated that inflation had no statistically significant effect on agricultural export performance, was thus rejected at the 5% level of significance. The negative coefficient associated with inflation indicates that agricultural exports are negatively impacted by its performance; inflation had a coefficient

value (β2) -0.281707, indicating that, under the assumption that all other factors remain constant, a 1% increase in inflation lowers agricultural export performance by 28.1707%. The study's findings summed up as follows: pressure from inflation on agricultural inputs drives up production costs, leading to increased cost of domestic goods. This lowers the competitiveness of domestic goods on the global market and, eventually, the performance of agricultural exports. This finding aligns with the findings of Okpe & Ikpesu (2021), who examined how inflation affected food exports and imports in Nigeria and found that inflation had a favorable impact on imports but a negative impact on food exports. This study's findings are departing from that of Nnoli, Enilolobo, Hassan, and Bello (2023), who found that inflation had a significant and positive correlation with the value of agricultural exports in their analysis of how agricultural exports in Nigeria were impacted by inflation and exchange rates. It also contradicts the findings of Kiganda, Obange, and Adhiambo (2017), who found a positive and substantial long-run association between inflation and total exports in their study on the relationship between exports and inflation in Kenya.

4.8.3 Effect of Currency Exchange Rate on Agricultural Export Performance

According to Table 4.7 above currency exchange rate with p-value of 0.0000<0.05, indicates that the Currency Exchange Rate (DLNCER) significantly affects agricultural export performance. At a 5% significance level, the third null hypothesis (HO3), which claimed that, currency exchange rate had no statistically tangible effect on the performance of agricultural exports, was thus rejected. The coefficient's positive sign indicates that

agricultural export performance is stimulated by the currency exchange rate. Additionally, the currency exchange rate's coefficient (β3) of 0.398346 indicates that, while keeping all other factors constant, a one percent increase in currency exchange rate leads to a 39.8346 percentage rise in agricultural export performance. This research suggests that favorable real currency exchange rates improve the performance of agricultural exports

The research outcome is in concurrence with the findings of other studies, such as that of Kiprono (2018), who found that the real effective exchange rate had a significant and positive impact on coffee exports in Kenya. Epaphra (2016), who found that the exchange rate was positively related to Tanzanian exports. Additionally, the results of this study align with the findings of Malhotra and Kumari (2016), who found that exchange rate volatility increased the export volume in Asian economies.

4.9 Post Estimation Diagnostic Tests

In regression analysis, post-estimation diagnostic tests are crucial as they confirm the model's underlying assumptions and evaluating its dependability. The ensuing tests were undertaken.

4.9.1 The Test for Normality

To ascertain whether the regression residuals were normally distributed, the Jarque-Bera test was employed. The null hypothesis (p-value>0.05) suggests that residuals follow a normal distribution. On the other hand, the alternative hypothesis, with a p-value of less than 0.05, indicates that the regression residuals do not adhere to a normal distribution. The results of the Jarque-Bera test for normalcy are presented in Figure 4.1.

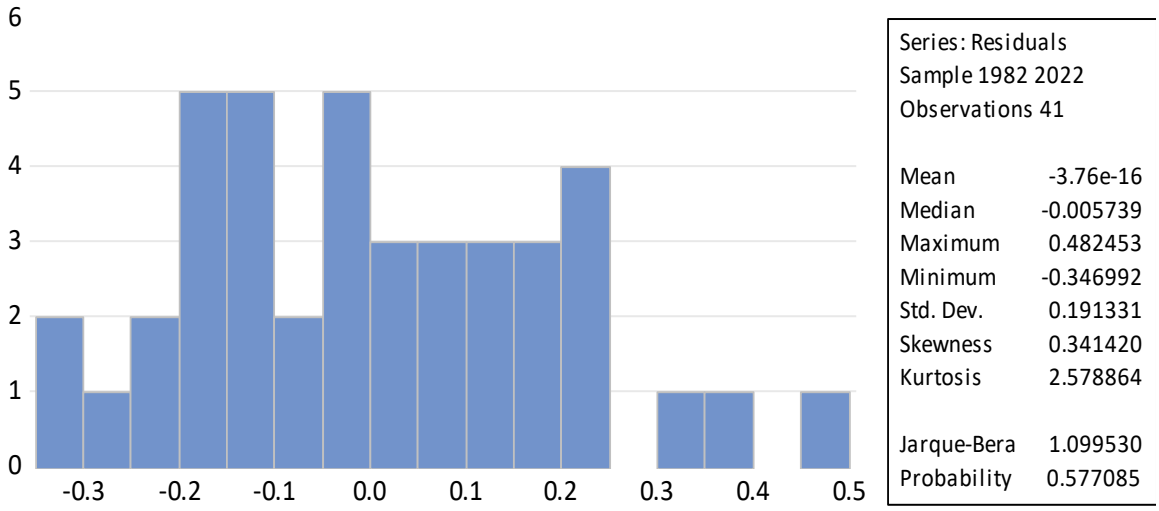

Figure 4.1 Jarque-Berra Test for Normality
Source: (Research data, 2024)

According to Aljandali and Tatahi, (2018), The results of Figure 4.1 showed that the regression residuals had a normal distribution because it had a p =0.577085>0.05

4.9.2 Test for Multicollinearity

Employing the Variance Inflation Factors (VIF) approach, the possible multi-collinearity between the explanatory variables was evaluated. Regression coefficient estimates that are not dependable may result from multi-collinearity. A criterion was established for the VIF

test, stating that VIF must have values that are less than 10 to show the absence of multi-collinearity in the regression model (Gogtay & Thatlle, 2017). Table 4.8 below shows the outcomes of the VIF.

Table 4.8 Showing the Variance Inflation Factor Multicollinearity Test Results

Variable	Coefficient Variance	Uncentred VIF	Centred VIF
DLNCPF	0.056072	519.0919	1.205332
LNINF	0.002274	12.53689	1.097964
DLNCER	0.002599	43.84323	1.310105
CONSTANT	0.697769	722.8828	N/A

Source: (Research data, 2024)

The data were interpreted using the centered VIF values. The Variance inflation factor figures of DLNCPF, LNINF, and DLNCER are 1.205332, 1.097964, and 1.310105, in that order, as Table 4.8 demonstrates. Since the previously indicated VIF values were less than 10, multicollinearity was assumed to be absent in the regression model.

4.9.3 Breusch-Pagan- Godfrey Heteroscedasticity Test

To check if the regression's residues showed heteroscedasticity, this study employed the Breusch-Pagan-Godfrey test. The absence of heteroscedasticity, or the null hypothesis, in this test, requires a p-value> 0.05. On the other hand, a p-value<.05 shows that the variance of the residuals is not equal over time in the regression model. The outcomes of the Breusch-Pagan-Godfrey Heteroscedasticity Test are shown in the Table 4.9 below.

Table 4.9 Breusch-Pagan- Godfrey Heteroscedasticity Test

Heteroscedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	1.707010	Prob. F(3,37)	0.1824
Obs *R-squared	4.984738	Prob. Chi-Square(3)	0.1729
Scaled explained SS	3.204739	Prob. Chi-Square(3)	0.3611

Source: (Research data, 2024)

Based on the information in Table 4.9, the probability Chi-Square(4) of the Obs*R-squared value was 0.1729>0.05. As a result, the regression model was not heteroscedastic, and at the 5% level of significance, the researcher did not reject the null hypothesis.

4.9.4 Breusch -Godfrey Autocorrelation LM Test

The regression model for auto correlation was examined in this work using the Breusch-Godfrey LM test. When the present values of the error term are influenced by the lag values of the error, auto correlation takes place. The null hypothesis of the Breusch-Godfrey LM test is that the regression model has no autocorrelation. The symbol for the null hypothesis is H0: p-value>0.05. The alternative hypothesis, denoted as H1: p-value<0.05, is the existence of auto correlation. Table 4.10 shows the auto correlation result of the Breusch-Godfrey LM Test.

Table 4.10 Breusch- Godfrey Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 4 lags			
F-statistic	8.971941	Prob.F(2,35)	0.7151
Obs*R-squared	13.89583	Prob. Chi-Square(2)	0.6063

Source: (Research data, 2024)

The results of the Breusch-Godfrey test in Table 4.10 reveal that the p-value for the Chi-square test was 0.6063>0.05, suggesting that the null hypothesis—that the model had no auto correlation—was accepted by the researcher

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

5.1 Introduction

The section offers a thorough summary of the results of this study, draws inferences about how the selected macroeconomic factors affect agricultural export performance, suggests policies, and points out areas that require more investigation.

5.2 The Findings in Summary

This research looked into how Kenya's agricultural export performance was affected by capital formation, inflation, and currency exchange rates. The study employed annual time series data that was sourced from the World Bank for a period of forty years from 1982 to 2022, adopting a causal research design. The dependent variable, the performance of agricultural exports, was measured as a proportion of total exports; the explanatory variable, capital formation, was measured as a proportion of Gros Domestic Product; the Consumer Price Index was relied upon in measuring inflation; The Real Effective Exchange Rate is the measure exchange rate that was employed.

When the data were analyzed using descriptive statistics, each variable's mean was found to be positive. Additionally, a normal distribution with probabilities larger than 0.05 was shown using the Jarque-Bera test. Correlation research revealed significant positive relationships between capital formation, currency exchange rate, and agricultural export performance. However, there was a negative correlation found between the performance of agricultural exports and inflation. Stationarity was checked using the ADF test.

The findings showed that while inflation was stationary at the level, agriculture export performance, capital formation, and exchange rate were stationary at the first difference. There was no long-run equilibrium among the variables according to the results of the F-Bounds test. To be able to investigate the statistical relevance of macroeconomic drivers in explaining agricultural export performance, a multiple regression analysis was carried out. The post-estimation diagnostics were carried out to check for the assumptions of OLS and model applicability for policy implications.

5.2.1 Capital Formation and its Effect on Agricultural Export Performance

The first goal was to ascertain how capital formation affected Kenya's agricultural export industry's performance. The country's GDP was used as a proxy for capital formation. The correlation analysis's outcomes indicated that capital formation and agricultural export performance had a somewhat positive relationship. Actually, at $p = 0.0154$, the correlation coefficient was 0.663055. Regression results also demonstrated a strong positive relationship between capital formation and Kenya's agricultural export performance. Regression coefficient ($\beta 1$) of 0.487800 with a corresponding $p = 0.0465$.

5.2.2 Inflation and its Effect on Agricultural Export Performance

Determining the impact of inflation on Kenya's agricultural export performance was the study's second goal. The Consumer Price Index was used to illustrate inflation. The study results showed a relatively weak negative association between inflation and Kenya's agricultural export performance where the correlation coefficient was -0.295860 and ($p=0.0103$). Regression results provided more evidence pointing to the finding that inflation has a detrimental effect on Kenya's agricultural export performance. Regression coefficient ($\beta 2$) = -0.281707 ($p=0.0182$) was found.

5.2.3 The effect of Exchange Rate on Agricultural Export Performance

The third particular goal examined how Kenya's agricultural export performance was impacted by changes in currency exchange rates. Regression analysis also revealed a statistically significant positive impact of the exchange rate of currency on the agricultural export performance in Kenya. Currency exchange rate was measured in terms of Real effective exchange rate, and it demonstrated a strong positive and significant correlation with the Kenya's agricultural exports performance. (correlation coefficient: 0.785311, p=0.0000). At p = 0.0000, the regression coefficient (β3) was 0.398346.

5.3 Conclusion

The findings led to the following deductions, which were formulated as per the particular goals of the study.

5.3.1. The Effect of Capital Formation on Agricultural Exports Performance

This study's first objective, which sought to ascertain how capital creation affected Kenya's agricultural export performance, yielded results that led to the conclusion that capital formation significantly improves agricultural export performance in Kenya. Thus, it was concluded that there is a positive significant relationship between capital formation and Kenya's agricultural export performance, therefore the first null hypothesis (HO1), was rejected. In other words, more capital formation is linked to higher agricultural export performance, and vice versa.

5.3.2 Effect of Inflation on Agricultural Export Performance in Kenya

There was a noteworthy inverse relationship between Kenya's agricultural export performance and inflation. Consequently, the second null hypothesis (HO2), stating that inflation had no statistically significant effect on the performance of Kenya's agricultural exports was rejected. This implied that agricultural export performance declines as inflation rises and vice versa.

5.3.3 The Effect of Currency Exchange Rate on the Performance of Agricultural Export in Kenya

There is a substantial positive correlation between the currency exchange rate and the performance of Kenya's agricultural exports according to this study's empirical analysis. The third null hypothesis (H03), which postulated that Kenya's agricultural export performance and the exchange rate have no statistically meaningful relationship, was therefore rejected. According to the findings, agricultural exports perform better on the global market when there is a positive exchange rate.

5.4 Recommendations

The empirical results of this study infer the following policy suggestions.

5.4.1 Capital Formation and How It Affects Performance of Agricultural Export

The results of this study showed that capital development significantly improved Kenya's agriculture export industry's performance. The study recommends that capital formation in agriculture should be used to enhance the value addition of agricultural products to enhance their value and competitiveness in the global market thus increasing their export potential.

5.4.2 Inflation and its Effect on Agricultural Export Performance

Results indicated that agriculture export performance is severely lowered by inflation. It is advised that in order to stabilize prices and lessen the detrimental effects of inflation on agricultural exports, the government should put in place efficient measures for managing inflation. To prevent inflationary pressures from undermining the competitiveness of agricultural exports and from eroding farmers' incomes as a result of growing expenses, this may involve open market operations and interest rate adjustments.

5.4.3 Exchange Rate and How it Affects Agricultural Export Performance

This study showed that the exchange rate significantly enhanced the performance of Kenya's agricultural exports. The study recommends the government should implement steps to support exchange rate stability or actively manage the exchange rate through monetary policy to maintain a competitive exchange rate. Through the maintenance of the Kenyan shilling's competitiveness against key trading currencies like the USD, GBP, and the EURO, the government can boost agricultural export earnings, encourage agricultural export sector growth, and ultimately bolster overall economic development.

5.4.4 Areas for Further Research

This research concentrated on how capital formation, inflation, and currency exchange rates affect Kenya's agricultural export performance. Thus, the study recommends that more research be done to assess other determinants of Kenya's agricultural export performance using cross sectional data.

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APPENDICES

Appendix I: Data Analyzed

YEAR	CPF	CPF2	INF	CER	AGX
1982	-22.7208	21.86021	20.66671	10.92232	6.734773
1983	-9.94744	20.92507	11.39778	13.31152	6.321373
1984	0.71702	19.81103	10.2841	14.41387	5.794077
1985	28.02779	25.32482	13.00657	16.43212	6.297668
1986	-18.3595	21.76804	2.534276	16.22574	5.681825
1987	22.24142	24.28943	8.637673	16.45449	7.940473
1988	1.764421	25.44904	12.26496	17.7471	6.546197
1989	10.13318	24.86208	13.78932	20.57247	5.987658
1990	-6.9949	24.16409	17.78181	22.91477	5.587723
1991	-7.84506	20.97051	20.0845	27.50787	5.590265
1992	-18.2237	16.92084	27.33236	32.21683	5.508344
1993	14.96908	17.61044	45.97888	58.00133	5.980748
1994	9.087387	19.29324	28.81439	56.05058	7.931295
1995	8.404142	21.81976	1.554328	51.42983	7.372568
1996	9.983114	15.00382	8.864087	57.11487	7.088465
1997	8.547343	15.14099	11.36185	58.73184	6.804234
1998	20.78325	16.69272	6.722437	60.3667	6.527775
1999	-8.13428	15.52141	5.742001	70.32622	7.76492
2000	11.11414	17.41409	9.980025	76.17554	8.597016
2001	12.12144	18.79034	5.738598	78.5632	12.87477
2002	-20.3742	15.13822	1.961308	78.74914	10.6975
2003	10.00557	16.48215	9.815691	75.93557	10.79045
2004	7.627532	16.9625	11.62404	79.17388	15.8378
2005	13.24049	17.64968	10.31278	75.55411	9.992267
2006	31.47395	18.63359	14.45373	72.10084	11.98248
2007	8.158528	20.45698	9.75888	67.31764	11.91983
2008	14.13622	19.61271	26.23982	69.17532	13.88122
2009	11.09292	19.01917	9.234126	77.35201	13.09634
2010	15.14196	21.264	3.961389	79.23315	10.69477
2011	3.196347	21.88581	14.02249	88.81077	10.03476
2012	13.09735	22.19336	9.377767	84.5296	10.98623
2013	6.494523	22.40497	5.717494	86.12288	11.98097
2014	17.11976	24.95072	6.878155	87.92216	10.34891
2015	-4.08011	22.1034	6.582174	98.17845	10.3502
2016	-3.90006	19.34844	6.297158	101.5044	11.73799
2017	11.98726	20.66349	8.005723	103.41	13.7811
2018	-2.33956	19.37599	4.68982	101.3016	13.30781
2019	5.251278	19.34183	5.23586	101.9913	12.48778

2020	2.225435	19.65159	5.404815	106.4508	11.82111
2021	13.39217	20.39124	6.110909	109.6377	14.75987
2022	-2.98563	19.1602	7.656875	117.866	11.85493

Source: World Bank

Appendix II: Approval letter

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

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Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

18th April 2024

Silas Wesonga Mukhebi
ECO/G/01-70162/2021,
P.O. Box 190-50100,
KAKAMEGA.

Dear, Mr. Mukhebi,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters proposal entitled '***Effect of Macro-Economic Determinants on Agricultural Export Performance in Kenya'*** and appointed the following as supervisors:

1. Dr. Umulkher Ali - SOBE, MMUST
2. Dr Edwin Simiyu - SOBE, MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Business and Economics Graduate Studies Committee and Chairperson, Economics Department. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY DIRECTORATE OF POSTGRADUATE STUDIES P.O. BOX 190-50100, KAKAMEGA (K)
Date:..... Sign:.....

Prof. Stephen O. Odebero, PhD, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix III: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **145017**

Date of Issue: **08/May/2024**

RESEARCH LICENSE

This is to Certify that Mr.. SILAS WESONGA MUKHEBI of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kakamega onthe topic: EFFECT OF MACROECONOMIC DETERMINANTS ON AGRICULTURAL EXPORT PERFOMANCE IN KENYA for the period ending : 08/May/2025.

License No: **NACOSTI/P/24/35262**

145017

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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