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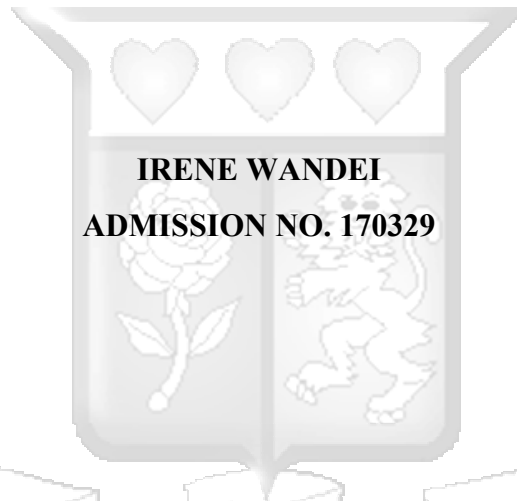
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**EFFECT OF THE AFRICAN CONTINENTAL FREE TRADE AREA ON FOOD
PRODUCTION IN THE EAST AFRICAN COMMUNITY**



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ADMISSION NO. 170329**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF**

**MASTER OF SCIENCE IN DEVELOPMENT FINANCE AT STRATHMORE
UNIVERSITY**

STRATHMORE BUSINESS SCHOOL

STRATHMORE UNIVERSITY

NAIROBI, KENYA

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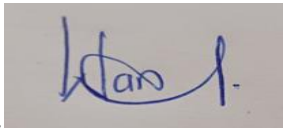
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ABSTRACT

Food production remains a pressing challenge in the East African Community (EAC), where recurring climate shocks, production volatility, and cross-border trade inefficiencies continue to constrain food system stability. The African Continental Free Trade Area (AfCFTA) presents a major policy opportunity to address these constraints by promoting tariff liberalization, reducing non-tariff barriers, improving market access, and deepening intra-African trade integration. This study examined the effect of AfCFTA-related trade reforms on food production in the EAC, focusing on four key dimensions: tariff reduction, non-tariff barrier reform, export market access, and intra-African trade intensity. Anchored on New Trade Theory and supported by food production theory, the study adopted a positivist research philosophy and a longitudinal correlational research design. Secondary panel data covering a census of the seven EAC countries from 2016 to 2025 was analyzed to assess how these AfCFTA variables influence food production, measured using the Food Production Index. Data analysis involved descriptive statistics, correlation analysis, and panel regression modelling to quantify the relationship between AfCFTA-driven trade reforms and food production outcomes. Using panel data from seven EAC countries over the period 2016–2025, the study applied a random effects regression model. The results indicated that the model was statistically significant, with approximately 35.35% of variations in food production explained by the selected variables. The findings revealed that tariff reduction, non-tariff barrier reduction, and market access had statistically significant effects on food production, while intra-African trade intensity had no statistically significant effect. The study concludes that AfCFTA trade reforms play a significant role in influencing food production in the EAC, particularly through improved trade facilitation and expanded market access. However, the impact of regional trade intensity remains limited, suggesting that trade integration alone is insufficient to drive food production without addressing underlying structural constraints. The study recommends strengthening the implementation of AfCFTA provisions related to tariff reduction, non-tariff barrier efficiency, and market access, while emphasizing the need for improved coordination, infrastructure development, and institutional capacity to enhance the effectiveness of regional trade integration on food production.

Keywords: Tariff Reduction, Non-Tariff Barriers, Market Access, Inter-African Trade Intensity, Food Production, AfCFTA.

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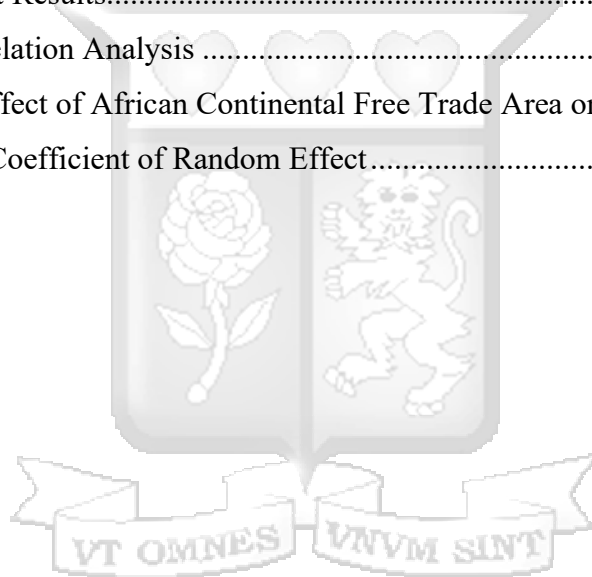
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ABBREVIATIONS AND ACRONYMS

AfCFTA	African Continental Free Trade Area
EAC	East Africa Community
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
NACOSTI	National Commission for Science, Technology and Innovation
NTT	New Trade Theory
UNCTAD	United Nations Conference on Trade and Development
SPS	Sanitary and Phytosanitary Standards
VIF	Variance Inflation Factor
WHO	World Health Organization



DEDICATION

This work is dedicated to my family, whose unwavering support, encouragement, and belief in my academic journey have been a constant source of strength. I also extend this dedication to all researchers and policymakers committed to advancing regional integration and food production in Africa. Their efforts continue to inspire meaningful change across the continent.



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OPERATIONAL DEFINITION OF TERMS

African Continental Free Trade

Area A continent-wide trade agreement aimed at promoting tariff reduction, removal of trade barriers, and enhanced intra-African trade to stimulate economic growth and regional integration (UNCTAD, 2023).

East African Community

Refers to a regional intergovernmental organization comprising Kenya, Uganda, Tanzania, Rwanda, Burundi, South Sudan, and the Democratic Republic of Congo, established to promote economic integration and coordinated development (EAC Secretariat, 2023).

Food Production Index

denotes index measuring the relative level of aggregate agricultural production compared to a base period, used in this study as a proxy for food production performance (FAO, 2024).

Inter-African Trade Intensity

Refers to measure of the proportion of a country's trade conducted within Africa relative to its total global trade, reflecting the depth of regional trade integration (Bouët et al., 2022).

Market Access

refers to extent to which countries can access external markets for their exports, often measured through export diversification and reduced trade restrictions (Yesbolova et al., 2024).

Tariff Reduction

Denotes lowering or elimination of customs duties on imports to facilitate trade and reduce transaction costs under trade agreements (Häberli, 2025)

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Food production remains a global concern, with 735 million people facing chronic hunger in 2023 (FAO, 2024). International trade strongly influences food availability and prices, and studies show that disruptions and high dependence on imports weaken food system stability (Solarin & Gil-Alana, 2025). Recent global studies emphasize the centrality of trade integration in enhancing food system resilience, noting that deeper regional integration can improve food supply stability and reduce vulnerability to shocks in regions such as South Asia and the Eurasian Economic Union (Gopinath, Varma & Steinbach, 2024; Yesbolova et al., 2024), yet Africa accounts for only 2.8 percent of global trade and intra-African trade remains low at 15 percent (UNCTAD, 2024). Trade barriers raise food prices by up to 30 percent in low-income regions (World Bank, 2023), while recent global shocks led to a 24 percent rise in food prices (FAO, 2024). Scholars argue that harmonised trade policies are essential for strengthening global food production (Ramli et al., 2025).

Globally, agricultural protests in Europe and India highlighted growing tensions surrounding trade liberalization, cheap imports, and government policy reforms affecting domestic farmers. Lovec (2026) documented how the 2023–2024 agricultural protests across Europe challenged the direction of the Common Agricultural Policy, with farmers opposing import competition and regulatory pressures that threatened farm incomes. Similarly, Jana (2026) explained that agrarian mobilization in India emerged in response to market-oriented reforms perceived to expose smallholder farmers to unfair price competition and weakened state protection. In Central and Eastern Europe, Suska (2025) noted that structural adjustments and exposure to global markets have intensified pressures on domestic producers, sparking resistance to trade policies viewed as undermining local agricultural sustainability. These developments demonstrated that while trade liberalization can enhance market efficiency, poorly managed integration and policy misalignment may trigger social unrest and threaten food system stability, underscoring the need to carefully assess how agreements such as AfCFTA influence food production outcomes

Across Africa, food production challenges remain widespread despite the continent's agricultural potential. Recent studies highlight that AfCFTA could strengthen continental food systems by improving agricultural trade, enhancing food availability, and supporting more efficient regional value chains (Janssens et al., 2022; Simola et al., 2021). However, the extent of these benefits varies, particularly for small-scale farmers and vulnerable groups who often face structural constraints that limit their participation in expanded markets. Tiba (2023) notes that while AfCFTA promotes the right to food production, these groups remain at risk of exclusion without targeted support. At the same time, continental analyses show that AfCFTA can help reduce price volatility and enhance food system stability if trade barriers are effectively removed and agricultural development is strengthened (MacLeod, 2025; Pasara, 2025). This highlights a continental need to understand how AfCFTA's reforms translate into actual food production gains on the ground.

Within the EAC, food production remains tightly linked to regional trade dynamics, yet the region continues to face persistent structural challenges that hinder seamless food movement. Studies show that while AfCFTA offers opportunities to expand agricultural trade and improve welfare, EAC countries still struggle with barriers that limit the full realisation of these benefits. Maniriho et al. (2025) note that although exports and welfare gains are expected under AfCFTA, their materialisation depends on effectively reducing tariffs and non-tariff constraints. However, regulatory inconsistencies, border inefficiencies, and weak sanitary and phytosanitary systems continue to disrupt food flows across member states, restricting access to wider markets. Akullo (2023) further observed that gaps in food safety harmonisation undermine trade efficiency and reduce the competitiveness of regional agricultural products. While continental analyses suggest that AfCFTA could stabilise food supply chains and enhance regional food system resilience (MacLeod, 2025), the EAC context reflects persistent implementation bottlenecks. This underscores the need for empirical investigation into how AfCFTA's trade reforms tariff reduction, non-tariff barrier removal, market access, and trade intensity are influencing food production outcomes within the EAC. By focusing on the EAC region, the study provides a contextualised contribution to ongoing discourse on trade integration, agricultural development, and food production in Africa.

Concerns that tariff reduction and non-tariff barrier reforms may undermine local production through exposure to cheap imports are well documented in trade and food production debates. Häberli (2025) acknowledges that freer trade under climate stress can improve food availability but cautions that without complementary domestic safeguards, vulnerable producers may face intensified competition that weakens production incentives. Empirical evidence from cross-border maize trade in East Africa by Maziku (2025) shows that non-tariff barriers significantly shape trade volumes, implying that their removal can rapidly increase import flows, potentially affecting domestic producers. Palmer (2024) further argues that while reducing non-tariff barriers enhances market efficiency, the distributional consequences across producers and consumers must be carefully considered. This perspective is important for the present study, which does not assume that AfCFTA trade reforms automatically improve food production, but instead empirically examines whether tariff reduction, non-tariff barrier reforms, market access, and inter-African trade intensity strengthen or weaken food production outcomes in the EAC.

1.1.1 Food Production

Food production refers to the condition in which all people have consistent physical, social, and economic access to sufficient, safe, and nutritious food necessary for an active and healthy life (FAO 2025). Shebanina et al. (2024) note that food production encompasses availability, accessibility, utilisation, and stability, all of which remain under pressure globally due to climate change, economic shocks, and rising production costs. According to Varzakas and Smaoui (2024), achieving sustainable food production requires resilient food systems capable of withstanding disruptions while ensuring continuous supply and nutritional adequacy. Recent UNICEF (2024) assessments emphasise that millions continue to face severe food insecurity, highlighting the growing gap between food needs and the capacity of existing systems to meet them. In this research, food production is conceptualised as an outcome reflecting how trade and policy conditions support stable food availability, affordability, and access within the EAC.

Globally, food production has become a central concern in sustainable development discourse as climate, economic, and geopolitical pressures intensify across food systems. Shebanina et al. (2024) note that persistent global challenges including rising production costs, disrupted supply

chains, and widening inequality continue to hinder progress toward achieving food production targets under the Sustainable Development Goals. The World Health Organization (2024) reports that hundreds of millions of people remain undernourished, with financing gaps and systemic vulnerabilities limiting the effectiveness of global interventions aimed at ending hunger and malnutrition. According to Toromade et al. (2024), climate change further compounds these challenges by reducing crop productivity, degrading land and water resources, and increasing the frequency of extreme weather events, all of which heighten global food insecurity. These pressures underscored the need for stronger, more resilient food systems capable of ensuring stable and equitable access to nutritious food amid growing environmental and socio-economic disruptions.

Food production in the EAC remains unstable, with FAO (2024) reporting that over 57 million people in Eastern Africa faced acute food insecurity in 2023 due to droughts, high food prices, and reduced agricultural output. Intra-EAC food trade remains low at under 20 percent, limiting the region's ability to move staples efficiently across borders (UNCTAD, 2024), while high tariffs and non-tariff barriers continue to raise food prices by up to 30 percent in low-income countries (World Bank, 2023). Although AfCFTA is expected to ease these constraints, Tiba (2023) notes that small-scale farmers and vulnerable groups still face limited access to emerging markets. Studies show that AfCFTA could enhance exports and welfare in parts of the EAC if trade barriers are effectively reduced (Maniriho, Barayandema & Kayisire, 2025), and that improved regional food flows could strengthen overall food system stability (MacLeod, 2025). However, weak food safety harmonisation and regulatory inconsistencies continue to hinder seamless trade within the region (Akullo, 2023), underscoring the need for coordinated reforms to improve food production outcomes.

In this study, food production was operationalized using the Food Production Index (FPI) as the primary quantitative indicator. The food production index, published by FAO, measures annual changes in the volume of agricultural output and provides a reliable proxy for national food availability and supply performance (FAO, 2024). Although food production comprises multiple dimensions, focusing on FPI enables the study to capture how AfCFTA-related trade reforms influence domestic production capacity, which is essential for stable food systems. Evidence shows that global food production trends are increasingly shaped by systemic pressures such as

climate change, rising input costs, and supply chain disruptions, all of which directly affect national production outcomes (Shebanina et al., 2024). Varzakas and Smaoui (2024) further note that sustainable food systems depend on strengthening local production to ensure consistent access to nutritious food. Similarly, Toromade et al. (2024) emphasize that production capacity remains a critical determinant of food production resilience, particularly in regions vulnerable to climate and market shocks. Using the Food Production Index therefore provided a standardized and internationally recognized measure for assessing food production performance across EAC member states.

1.1.2 African Continental Free Trade Area Dimensions

The AfCFTA is conceptualised as a transformative continental integration framework aimed at expanding inter- African trade, strengthening regional value chains, and enhancing food system resilience (Maniriho et al., 2025). According to Janssens et al. (2022), AfCFTA is designed to promote sustainable agricultural development by reducing tariff and non-tariff trade barriers, harmonising regulations, and improving market access for agricultural products across the continent. In the context of food production, MacLeod (2025) notes that AfCFTA is expected to stabilise food supplies by facilitating smoother cross-border flows of staples and reducing price volatility through broader market integration. Simola et al. (2021) further assert that AfCFTA generates opportunities for agri-food sector expansion by increasing competitiveness, lowering transaction costs, and encouraging investment in regional supply chains. From a rights-based perspective, Tiba (2023) argues that AfCFTA holds the potential to enhance the right to food production for small-scale farmers and vulnerable groups, although the realisation of these gains depends on inclusive implementation and supportive national policies.

Despite its potential, empirical assessments reveal mixed progress in translating AfCFTA commitments into tangible food production outcomes. Pasara (2025) highlighted that while AfCFTA can contribute to food sustainability in Southern Africa, persistent structural challenges such as weak logistics, inconsistent standards, and limited production capacity continue to constrain its impact. In East Africa, Maniriho et al. (2025) demonstrated that AfCFTA can enhance exports and welfare in selected EAC countries but emphasise that benefits are contingent upon

effective tariff liberalisation and meaningful reduction of non-tariff barriers. Akullo (2023) similarly observes that inadequate harmonisation of food safety and regulatory frameworks remains a critical bottleneck, limiting the ability of EAC states to fully utilise AfCFTA's provisions. These insights suggested that while AfCFTA provides a robust policy foundation for strengthening agricultural trade and food production, its success ultimately depends on coordinated regional implementation, regulatory alignment, and targeted support to vulnerable actors within the food system.

Tariff reduction under the AfCFTA plays a central role in lowering the cost of cross-border trade and enhancing the movement of food commodities across African markets. According to Simola et al. (2021), reducing agricultural tariffs facilitates smoother regional trade flows, increases market efficiency, and improves the affordability of staple foods, thereby supporting broader food production objectives. In the context of this study, tariff reduction is operationalised through the applied average tariff rate on agricultural imports, which reflects the extent to which AfCFTA liberalisation commitments are implemented. This indicator captures how reductions in tariff barriers enhance food availability and lower price pressures in member states, aligning with the broader potential of AfCFTA to stabilise regional food systems (MacLeod, 2025).

Reduction of non-tariff barriers (NTBs) is a critical pillar of AfCFTA implementation, aimed at addressing delays, regulatory inconsistencies, and administrative bottlenecks that hinder the efficient movement of food commodities across borders. As highlighted by Akullo (2023), persistent challenges such as weak food safety harmonisation, slow clearance procedures, and inconsistent standards continue to restrict agricultural trade flows within regional blocs, limiting the availability of essential food items. In this research, NTB reduction is operationalised through average border clearance time, reflecting the speed and efficiency of cross-border food movement. This indicator demonstrates how improved trade facilitation under AfCFTA can reduce transaction costs, minimise post-harvest losses, and enhance regional food system stability, reinforcing broader expectations that streamlined NTBs can strengthen food production outcomes (Maniriho et al., 2025).

Enhanced market access under AfCFTA aims to expand the geographic reach of agricultural products and integrate countries into broader regional value chains, thereby improving food system performance. Janssens et al. (2022) note that wider market access stimulates agricultural competitiveness by opening new demand opportunities and encouraging investment in production and distribution networks. For this study, market access is operationalised using the export market diversification index, which reflects the extent to which countries engage with a broader range of trading partners. This indicator illustrates how diversified market participation can reduce dependency on a narrow set of export destinations, enhance resilience to external shocks, and strengthen the overall stability of regional food supplies (Tiba, 2023).

Inter-African trade intensity represents the depth of regional integration and the extent to which African countries rely on one another for agricultural and food-related trade. MacLeod (2025) argues that stronger intra-regional trade linkages play a vital role in buffering food systems against global market volatility by facilitating the movement of staples from surplus to deficit areas. In this study, intra-African trade intensity is measured using the UNCTAD trade intensity index, which captures the strength of trade ties between EAC member states and other African countries. This measure reflects how growing intra-African trade can enhance food availability, stabilise prices, and build more resilient regional supply chains, consistent with evidence that deeper integration improves food system sustainability (Pasara, 2025).

The selection of these four AfCFTA dimensions tariff reduction, non-tariff barrier removal, expanded market access, and intra-African trade intensity was justified by their comprehensive representation of the core trade mechanisms that shape regional food system performance. Together, they reflect the essential components of trade liberalisation, regulatory efficiency, market expansion, and regional integration that influence food availability, affordability, and supply stability across member states (Simola et al., 2021). These dimensions also aligned with continental development frameworks such as the African Union's Agenda 2063 and the AfCFTA Implementation Strategy, both of which emphasise improved trade facilitation, diversified markets, and stronger intra-African linkages as key levers for enhancing food production and economic resilience (Janssens et al., 2022). By examining these four components, the research

offers a holistic understanding of how AfCFTA's trade provisions collectively contribute to strengthening food production within the East African Community.

1.1.3 East African Community

The East African Community remained one of Africa's most dynamic regional blocs, with agriculture contributing significantly to economic growth and livelihoods. However, recurring food deficits, climate-related shocks, supply chain disruptions, and low levels of intra-regional food trade continued to constrain food production, highlighting the importance of regional trade frameworks such as AfCFTA in enhancing agricultural productivity and market access (FAO, 2024; UNCTAD, 2024; Simola et al., 2021). Agriculture remained a critical sector within the East African Community, contributing approximately 27% of regional GDP and employing over 70% of the workforce. Despite the agricultural sector recording an average annual growth rate of 4.1% between 2000 and 2020, food production remained constrained due to low agricultural productivity, limited irrigation coverage, inadequate investment in agricultural research and development, post-harvest losses of 20–30%, recurrent climate shocks, and low levels of intra-regional agricultural trade. These persistent challenges continued to undermine sustainable food production and highlighted the importance of regional trade frameworks such as AfCFTA in enhancing market access, agricultural productivity, and food production within the EAC.

Despite its vast agricultural potential, the EAC continues to experience persistent structural constraints that weaken food production performance relative to other regions. According to FAO (2024), recurrent droughts and erratic rainfall patterns across East Africa contributed to significant crop losses in 2023, particularly affecting maize, sorghum, and beans. While the global Food Production Index averages above 110 (2014–2016 = 100) and regions such as Southeast Asia consistently record index levels above 120 due to productivity gains and irrigation expansion, several EAC countries fluctuate around or below 105, reflecting slower growth and greater climate sensitivity. Sub-Saharan Africa's overall production growth has also lagged behind Latin America and East Asia, where technological adoption and integrated markets have strengthened output stability. The World Bank (2023) further notes that trade-related costs and border inefficiencies raise food prices by up to 30 percent in low-income parts of East Africa, compounding production

weaknesses. Poor transport infrastructure, inconsistent standards, and prolonged border clearance procedures intensify supply disruptions, while small-scale farmers remain particularly vulnerable due to limited adaptive capacity and exposure to market volatility (Tiba, 2023).

Trade and institutional constraints further intensify food insecurity within the EAC. Maniriho et al. (2025) demonstrate that although AfCFTA presents opportunities to enhance exports and welfare in selected EAC countries, actual gains depend heavily on meaningful reductions in tariffs and non-tariff barriers. However, food safety and regulatory inconsistencies continue to limit cross-border trade efficiency across the bloc. Akullo (2023) highlights that the absence of harmonised sanitary and phytosanitary standards restricts the smooth movement of agricultural commodities, particularly perishables, leading to high post-harvest losses and market distortions. Additionally, MacLeod (2025) argues that without coordinated implementation, the region risks missing out on AfCFTA's potential to stabilise food supplies and expand regional value chains.

The selection of the EAC as the research focus was justified by its combination of significant agricultural potential and persistent vulnerability to market and climatic shocks. Continental analyses by Simola et al. (2021) and Janssens et al. (2022) show that East Africa stands to benefit substantially from AfCFTA-driven integration, particularly through improved agricultural productivity and expanded regional food flows. Pasara (2025) contend that the region's food systems remain constrained by weak policy coordination, limited investment in agricultural development, and slow adoption of regional trade reforms. Investigating the effect of AfCFTA on food production within this context therefore addressed a critical knowledge gap and offers empirical insights into how trade reforms can enhance availability, access, and stability of food supplies across the EAC. This regional focus strengthened the relevance of the study by illustrating how continental trade frameworks interact with local production realities to influence food production outcomes.

1.2 Statement of the Problem

Food insecurity remains a major challenge across the EAC, where recurrent droughts, rising food prices, and limited agricultural productivity continue to undermine regional food systems. FAO (2024) reported that more than 57 million people across Eastern Africa faced acute food insecurity

in 2023, reflecting worsening production deficits and heightened vulnerability among rural households. Although trade plays a critical role in stabilising food supplies, intra-EAC food trade remains below 20 percent, limiting the region's capacity to move staples efficiently from surplus to deficit areas (UNCTAD, 2024; Maniriho et al., 2025). High tariffs, non-tariff barriers, and border inefficiencies continue to raise food prices by up to 30 percent in low-income areas, reducing accessibility for millions (World Bank, 2023). Despite the establishment of the AfCFTA, the region still struggles to translate continental trade reforms into meaningful improvements in food availability and affordability.

Within the EAC, the expected benefits of AfCFTA for food production remain constrained by structural and institutional gaps. Tiba (2023) notes that small-scale farmers and vulnerable groups remain excluded from emerging markets because of weak institutional support, fragmented value chains, and limited access to formal trade systems. Although Maniriho et al. (2025) found that AfCFTA could enhance exports and welfare in selected EAC countries, these gains are dependent on effective reduction of tariff and non-tariff barriers areas where progress has been uneven. MacLeod (2025) further argues that AfCFTA's potential to stabilise food systems through improved regional food flows is often undermined by inconsistent implementation across member states. At the operational level, food safety and regulatory differences continue to pose obstacles, with Akullo (2023) highlighting that weak harmonisation of standards hampers the seamless movement of agricultural goods across EAC borders. These persistent challenges that slow down the realisation of AfCFTA's promises for regional food production.

Existing research on AfCFTA has predominantly concentrated on continent-wide projections, macro-level simulations, or general trade outcomes, leaving limited empirical evidence on how the agreement influences food production within specific regional blocs such as the EAC (Tiba, 2023). Studies by Simola et al. (2021) and Janssens et al. (2022) assess broad agri-food implications of AfCFTA but do not isolate regional variations or examine production-based indicators like the Food Production Index, which are critical for understanding local food availability. Similarly, while Pasara (2025) explores food production sustainability in Southern Africa, the findings do not address the unique structural constraints facing East Africa. As a result, there is limited clarity on whether AfCFTA's core mechanisms tariff reduction, non-tariff barrier

reform, expanded market access, and increased intra-African trade intensity have translated into measurable improvements in food production or supply stability across EAC member states. This reveals a clear conceptual and empirical gap: despite the region's high dependence on agriculture and persistent food insecurity, little is known about the actual impact of AfCFTA on EAC food systems. Therefore, the central problem underlying this study was the absence of region-specific evidence on how AfCFTA's trade provisions affect food production in the EAC, which constrains policy formulation and undermines efforts to build a more resilient and integrated regional food system.

1.3 Study Objectives

1.3.1 General Objective

The general objective of this study was to examine the effect of African Continental Free Trade Area on food production in the East African Community.

1.3.2 Specific Objectives

- i. To analyze the effect of tariff reduction on food production in the East African Community.
- ii. To determine the effect of non-tariff barrier on food production in the East African Community.
- iii. To assess the effect of market access on food production in the East African Community.
- iv. To evaluate the effect of inter-African trade intensity on food production in the East African Community.

1.4 Research Questions

H₀₁ There is no significant effect of tariff reduction on food production in the East African Community

H₀₂ There is no significant effect of non-tariff barrier reduction on food production in the East African

H₀₃ There is no significant effect of market access on food production in the East African

H₀₄ There is no significant effect of inter-African trade intensity on food production in the East African Community

1.5 Scope of the Study

This study focused on the effect of the AfCFTA on food production within the EAC. Conceptually, the study examines four core dimensions of AfCFTA implementation tariff reduction, non-tariff barrier reduction, AfCFTA-related market access, and intra-African trade intensity and how they influence food production, measured through the Food Production Index. Methodologically, the study adopted a positivist research philosophy and employs a longitudinal correlational research design based exclusively on secondary data. Analysis relied on annual trade and food production indicators sourced from FAOSTAT, the World Bank, UNCTAD, EAC Secretariat statistical abstracts, and AfCFTA implementation reports. Contextually, the study adopted a census approach of all EAC member states, including Kenya, Uganda, Tanzania, Rwanda, Burundi, South Sudan, and the Democratic Republic of Congo, recognizing that these countries share common regional trade frameworks yet differ in AfCFTA implementation progress and food production capacity. The temporal scope spanned the period 2016 to 2025, divided into pre-AfCFTA (2016–2020) and post-AfCFTA (2021–2025) phases to assess changes associated with the agreement's operationalization. The study adopted a regional perspective and therefore included all EAC member states irrespective of differences in the timing and pace of AfCFTA implementation. This approach was intended to capture the overall effect of regional trade integration on food production within the EAC. The data collection time frame corresponds to the year 2025, during which secondary datasets was compiled and analyzed to reflect the most recent trends in regional trade and food production outcomes.

1.6 Significance of the Study

This study would generate essential insights for policymakers, regional trade institutions, and scholars by addressing the gap in understanding how AfCFTA's key trade provisions affect food production in the East African Community.

1.6.1 Policymakers

For policymakers at the African Union, AfCFTA Secretariat, EAC Secretariat, and national ministries responsible for trade and agriculture, the research would offer empirical evidence to guide the design and implementation of trade and food production interventions. The findings would support the development of regionally harmonized trade policies, improved border management systems, and targeted agricultural programmes that enhance food availability and supply stability. By evaluating pre- and post-AfCFTA outcomes, the study would also help governments refine national AfCFTA strategies and align them with food production priorities across the region.

1.6.2 Regional Stakeholders and Practitioners

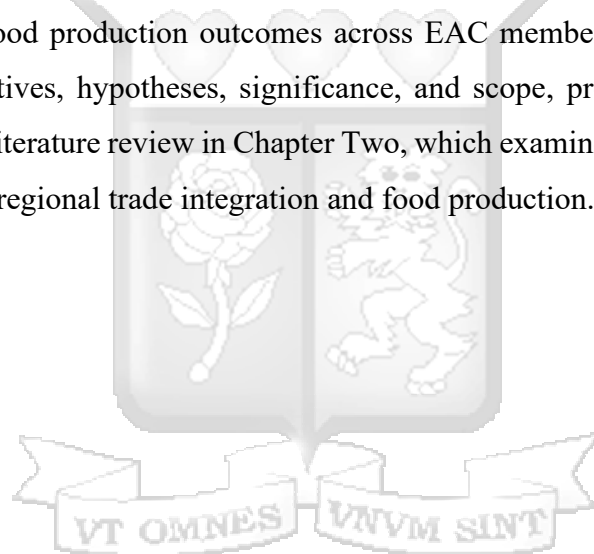
For regional agricultural organizations, farmer groups, and trade facilitation agencies, the study would provide practical insights on how AfCFTA-related reforms shape market access, production incentives, and cross-border food flows. Understanding the effects of tariff changes, reduced clearance times, and expanded regional markets would help these stakeholders identify opportunities for improving competitiveness, strengthening value chains, and reducing food price volatility. The study's findings can also guide investment decisions, capacity-building initiatives, and advocacy efforts aimed at improving the functioning of regional food markets.

1.6.3 Scholars

For scholars and researchers, the research would fill a conceptual and empirical gap in the literature on trade integration and food production in East Africa. It would extend understanding of how specific AfCFTA mechanisms influence food production outcomes, offering a framework for analysing the relationship between regional trade reforms and food system performance. The study would also contribute to academic discourse on regional integration, agricultural development, and food production modelling by providing a data-driven foundation for future research across Africa's regional economic communities.

1.7 Chapter Summary

This chapter has presented the foundation of the study by introducing the AfCFTA and its potential influence on food production within the East African Community. The background highlighted how persistent food insecurity, recurrent climatic shocks, and restricted regional food trade have intensified the need for deeper trade integration to stabilize food systems. It defined and contextualized the key study variables tariff reduction, non-tariff barrier reduction, market access, intra-African trade intensity, and food production as measured by the Food Production Index. The overview of the EAC underscored the region's agricultural importance and its vulnerability to trade inefficiencies that limit food availability and affordability. The statement of the problem established the research gap arising from limited empirical evidence on how AfCFTA's specific trade provisions affect food production outcomes across EAC member states. The chapter also outlined the study objectives, hypotheses, significance, and scope, providing a comprehensive basis for the subsequent literature review in Chapter Two, which examined theoretical foundations and empirical studies on regional trade integration and food production.



CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides the scholarly foundation for the study by reviewing theories and empirical evidence on the effect of AfCFTA on food production in the EAC. It begins with the theoretical framework, outlining New Trade Theory as the anchoring lens and the FAO Food Systems Approach as the supporting perspective. This is followed by a thematic review of empirical studies based on the study's key variables: tariff reduction, non-tariff barrier reduction, market access, and intra-African trade intensity. Each section highlights existing evidence and identifies gaps that justify the current study. The chapter concludes with a synthesis of knowledge gaps, the presentation of the conceptual framework, and the operationalization of the research variables.

2.2 Theoretical Framework

This section outlines the theoretical foundations supporting the study by examining the key theories that explain how regional trade reforms may influence food production outcomes in the East African Community. It introduces the anchoring theory and the supporting theory, summarizing the postulation and constructs, critique and relevance to AfCFTA's trade provisions. The purpose of this section is to show how these theories shape the understanding of the study variables tariff reduction, non-tariff barrier reduction, market access, intra-African trade intensity, and food production and to establish a conceptual basis for interpreting how trade integration under AfCFTA can affect food production and availability across the region.

2.2.1 New Trade Theory

New Trade Theory (NTT), developed by Krugman (1970), argues that international trade is driven not only by comparative advantage but also by economies of scale, market size, and product differentiation. The theory posits that when countries integrate through reduced tariffs and lower trade barriers, producers benefit from larger markets, lower production costs, greater specialization, and improved productivity. Zhong (2024) noted that NTT has become increasingly relevant in the globalization era because expanded market access enhances production efficiency and competitiveness, while Wang and Wang (2025) observed that regional trade agreements

promote innovation, efficient resource allocation, and productivity growth through market integration. These propositions make NTT an appropriate framework for explaining how AfCFTA trade reforms influence food production within the East African Community.

The theory provided a useful lens for understanding how tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity enhanced food production through increased agricultural trade and market integration. Jerzy et al. (2022) noted that NTT explained how trade liberalization improved resource allocation and productive efficiency, while Chandra (2021) emphasized that larger markets and increased specialization strengthened productive capacity under regional integration arrangements. However, the theory was criticized for assuming that countries possessed adequate infrastructure, efficient institutions, and competitive production systems capable of exploiting larger markets. Zirgulis and Hashimoto (2023) argued that NTT often overlooked political and institutional constraints that limited trade gains, while Asche (2021) observed that weak infrastructure, regulatory inconsistencies, and high transaction costs frequently constrained the realization of expected benefits, particularly in developing regions such as Africa.

NTT was relevant to this study because it directly explained the independent variables of tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity. Reduced tariffs and non-tariff barriers were expected to lower trade costs and facilitate the movement of agricultural inputs and outputs, while improved market access and increased regional trade intensity were expected to expand markets for agricultural products, encourage specialization, and improve agricultural productivity. These mechanisms aligned with AfCFTA objectives of promoting regional trade integration and with EAC initiatives aimed at facilitating the free movement of goods through harmonized trade procedures. Consequently, the theory provided a strong foundation for explaining how deeper regional integration under AfCFTA influenced food production and improved the Food Production Index across EAC member states.

2.2.2 Food Production Theory

Food Production Theory, formalized by the FAO (1996), asserted that food production outcomes were influenced by the availability of agricultural resources, efficiency of production systems, functioning markets, and stability of food supply chains. The theory emphasized that sustainable

improvements in food production depended on enhanced agricultural productivity, efficient distribution systems, and access to markets that facilitated the movement of agricultural commodities. Plotnikov et al. (2021) observed that the theory provided a useful framework for understanding the factors influencing agricultural output, while Ataei et al. (2021) noted that integrated markets and efficient trade systems played an important role in strengthening food production performance. These propositions made the theory appropriate for examining how AfCFTA trade reforms influenced food production within the East African Community.

The theory provided a useful lens for understanding how trade-related factors influenced food production through improvements in agricultural efficiency and market integration. Reduced tariffs and non-tariff barriers were expected to facilitate the movement of agricultural inputs and outputs, while improved market access and increased inter-African trade intensity were expected to strengthen production incentives, enhance market opportunities, and improve agricultural productivity. Rabbi et al. (2021) argued that efficient food systems and market integration were critical for improving agricultural performance, while Maletta (2024) noted that production outcomes were strongly influenced by the structure and efficiency of food systems. However, the theory was criticized for placing greater emphasis on production and market factors while paying limited attention to institutional weaknesses, governance challenges, climate variability, and infrastructure constraints that often affect agricultural performance in developing regions. Asaju and Kwakano (2025) further argued that political instability and conflict could undermine production systems regardless of improvements in market conditions, while Ibekwe (2024) observed that weak institutions and social inequalities frequently constrained expected production outcomes.

The theory was relevant to this study because it provided a framework for explaining how tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity influenced food production within the East African Community. Reduced trade barriers were expected to lower transaction costs and improve the flow of agricultural commodities and production inputs, while expanded market access and stronger regional trade integration were expected to increase production incentives and agricultural productivity. The theory directly supported the study's dependent variable, food production, which was measured using the Food Production Index.

Consequently, the theory supported the expectation that effective implementation of AfCFTA trade reforms enhanced agricultural output and improved food production performance across EAC member states.

2.3 Empirical Review

This section presents empirical studies related to the key variables of the study, organized according to the specific objectives. It reviews global, regional, and EAC-based research on tariff reduction, non-tariff barrier reform, market access, and intra-African trade intensity, and how these factors influence food production outcomes. The review synthesises the findings, methodologies, and contexts of previous studies, highlighting consistencies and points of divergence across different settings. It also identifies the conceptual, contextual, and methodological gaps in existing literature, thereby demonstrating the need for the present study and guiding the empirical focus on AfCFTA's impact on food production in the East African Community.

2.3.1 Tariff Reduction and Food Production

Global empirical studies suggest that reducing tariffs can strengthen food production by improving market access and stabilizing food supply chains, though the scale of these benefits varies across regions. Häberli (2025) observes that lower trade barriers facilitate smoother food flows and enhance resilience to climate-related shocks. Likewise, Gren et al. (2024) report that easing trade restrictions helped Sweden cushion the impact of agricultural supply disruptions by maintaining steady import volumes and preventing sharp price spikes. Rabbi et al. (2021) also highlight that more open trade systems support sustainable food production by increasing the availability and affordability of key commodities. However, most of this evidence is derived from global or high-income contexts and does not specifically assess tariff reforms within African regional blocs. These limitations point to a contextual gap, as little is known about how AfCFTA-driven tariff reduction affects food production outcomes in the East African Community.

Regional research across Africa shows that tariff liberalization has the potential to strengthen food production by improving commodity flows and reducing trade costs, although outcomes vary by region and implementation context. Pasara (2025) found that tariff reductions within Southern

Africa contributed to improved food availability but noted that these gains were uneven due to infrastructural and coordination constraints. Janssens et al. (2022) reported that continental tariff liberalization could stimulate agricultural production and enhance supply stability, especially when coupled with targeted investments in value chains. Similarly, Simola et al. (2021) highlighted that lower agricultural tariffs in Africa can reduce import dependence and increase intra-African food trade, supporting greater regional food system resilience. Despite these findings, empirical assessments at sub-regional levels remain limited, creating a gap in understanding how tariff reforms influence food production outcomes in specific blocs such as the EAC.

Within the EAC, existing studies suggest that tariff reduction could play a pivotal role in addressing food shortages by enabling more efficient movement of staple foods across borders. Tiba (2023) observed that high tariffs continue to limit regional food flows, especially for small-scale farmers seeking access to larger markets. MacLeod (2025) noted that lowering agricultural tariffs across the EAC could stabilize food supplies by improving the movement of cereals and other staples from surplus to deficit countries. However, the implementation of tariff reforms under AfCFTA has progressed at different speeds across member states, and few studies have examined their effect on food production indicators such as the Food Production Index. This indicates a contextual gap, as the EAC lacks empirical evidence linking tariff reduction to tangible food production outcomes.

Additional studies evaluating integration under AfCFTA reveal that tariff reduction may improve economic welfare and strengthen trade flows, indirectly influencing food system performance. Manirihoet al. (2025) found that tariff reforms boosted export performance and welfare in selected EAC countries, suggesting potential spill-over effects for agricultural markets. Akullo (2023) similarly noted that reducing trade barriers facilitated safer and more consistent cross-border food movement, although regulatory misalignments still created bottlenecks. Yet, these studies did not assess the direct relationship between tariff reduction and food production metrics, leaving unresolved questions about how tariff liberalization affects production and supply stability across the region.

Global and regional findings remain mixed regarding the impact of tariff reduction on food production, partly due to differences in national capacities, policy coherence, and data limitations. Häberli (2025) indicated that tariff cuts can enhance resilience to climate-induced food disruptions by improving import flexibility, while Gren et al. (2024) found that easing trade barriers helped Sweden maintain stable food supplies during supply shocks. Conversely, some studies suggest that tariff liberalization alone is insufficient without complementary investments in production, transport infrastructure, and market regulation. Such inconsistencies highlight methodological limitations, as many studies rely heavily on simulations or cross-sectional data rather than long-term empirical analysis.

Given these gaps, the present study aims to provide a focused, data-driven assessment of how tariff reduction under AfCFTA affects food production within the EAC by analysing actual pre- and post-AfCFTA trends. Unlike prior research relying on projections or broad welfare indicators, this study uses panel data to examine how changes in agricultural tariff rates relate to shifts in the Food Production Index across member states. By doing so, it fills conceptual, contextual, and methodological gaps and offers evidence that can inform regional policy on trade integration and food system stability.

2.3.2 Non-Tariff Barrier Reduction and Food Production

Global empirical evidence consistently demonstrates that reducing non-tariff barriers plays a crucial role in strengthening food production by improving the movement, affordability, and availability of food across borders. Gopinath et al. (2024) found that in South Asia, streamlining customs procedures and harmonizing trade standards significantly reduced delays in food imports, thereby stabilizing domestic food prices during climate-induced supply shortages. Ramli et al. (2025) similarly emphasized that lowering procedural bottlenecks enhances the efficiency of food supply chains by reducing logistics costs and improving the timeliness of food deliveries, particularly for perishable commodities. However, global research tends to concentrate on large regional blocs or national food systems, with limited attention to how NTB reforms influence food production indicators such as the food production index at sub-regional levels. In addition, many global studies rely on conceptual models rather than empirical country-panel data, creating methodological gaps concerning real-world trade and food system responses to NTB reforms.

Across Africa, empirical findings show that NTBs such as lengthy border inspections, inconsistent sanitary and phytosanitary (SPS) standards, and restrictive administrative procedures substantially constrain the movement of agricultural commodities, undermining food production outcomes. Naseri et al. (2025) demonstrated that restrictive border practices in Afghanistan hindered the inflow of essential food commodities, illustrating how NTB inefficiencies amplify food shortages in fragile environments. In West Africa, Asaju and Kwakano (2025) argued that NTB-related disruptions including delays at checkpoints and poor coordination of cross-border processes exacerbate food insecurity during periods of conflict and climatic stress. Despite these insights, regional studies rarely quantify the impact of NTB reductions on food system performance, relying instead on descriptive analyses that highlight constraints without linking them directly to measurable food production indicators.

Studies focusing on governance, trade systems, and food production highlight that NTB reforms have substantial potential to enhance regional food availability and market stability. Ibekwe (2024) observed that political and administrative inefficiencies restricting cross-border trade significantly affect food access in Nigeria, underscoring the importance of predictable and harmonized border processes. Toromade et al. (2024) similarly emphasize that reducing procedural bottlenecks and improving cross-border coordination is essential for mitigating climate-driven food production shocks across developing regions. Although these findings provide useful parallels for the EAC, most empirical studies do not isolate NTBs as a distinct variable influencing food production, and rarely examine their effect over extended time periods highlighting a contextual gap relevant to AfCFTA implementation in East Africa.

Non-tariff barriers such as lengthy border procedures, inconsistent standards, and restrictive import regulations significantly affect food system efficiency and regional food production. Evidence from the ECOWAS region shows that NTBs increase transaction costs, delay food movement, and reduce market availability, thereby worsening food insecurity among vulnerable populations (Umar et al., 2024). Similar patterns are observed in international trade, where Choi et al. (2025) found that SPS measures, documentation requirements, and inspection delays disrupt agricultural trade flows and amplify food price volatility. Kallummall et al. (2024) further demonstrate that market access barriers impede timely distribution of essential food commodities, reducing supply-

chain responsiveness and raising household food insecurity risks. Despite this, most studies emphasize macro-level impacts while offering limited empirical evidence on how specific NTB reductions such as improved border clearance times directly enhance food production outcomes, highlighting a persistent methodological gap.

Despite general agreement that NTB reduction supports food production, empirical findings remain mixed due to differences in trade governance structures, institutional capacity, and cross-country policy implementation. Some studies suggest that NTB reforms generate immediate gains through lower food prices and faster cross-border delivery, while others caution that weak enforcement, inconsistent SPS standards, and limited coordination dilute expected benefits. In the EAC context, AfCFTA's tariff reduction provision aligns with the Single Customs Territory (SCT) pillar, which aims to ensure duty-free and seamless movement of goods within the region. Although the SCT has been operationalized through joint customs clearance and harmonized documentation procedures, implementation remains uneven across member states, with persistent delays and administrative bottlenecks at certain border points. Many studies relied on qualitative or cross-sectional evidence and do not rigorously assess how the actual status and effectiveness of SCT implementation influence food production outcomes. This created both conceptual and methodological gaps in understanding how NTB reforms and tariff harmonization under AfCFTA interact with measurable indicators such as the Food Production Index.

In response to these gaps, the present study examined how reduction of non-tariff barriers measured through border clearance time affects food production in the EAC within the context of AfCFTA implementation. By employing panel data across multiple years and all EAC member states, the study moved beyond descriptive analyses to offer quantifiable evidence on how NTB efficiency improvements shape food production outcomes. This approach addressed existing conceptual, contextual, and methodological limitations and provides policymakers with actionable insights on how streamlined border processes can strengthen regional food production.

2.3.3 Market Access and Food Production

Global empirical research consistently shows that expanded market access plays a central role in strengthening food production, though impacts differ depending on the structure of trade and the

level of market integration. Yesbolova et al. (2024) found that increased economic integration among Eurasian countries enhanced food system stability by improving cross-border market connectivity and reducing disruptions in food supply chains. Hassan (2024) similarly demonstrated that global agricultural policies that promote wider market participation through improved logistics, streamlined trade processes, and reduced structural barriers significantly enhance food availability and affordability across regions facing production deficits. Supporting this evidence, Marion et al. (2024) reported that market access interventions in low- and middle-income countries led to higher agricultural output, improved household nutrition, and reduced vulnerability to food price shocks. Despite this extensive global literature, most studies focus on broad international or interregional contexts, leaving limited empirical insights on how continent-wide initiatives such as AfCFTA translate global market access principles into improved food production outcomes within specific regional blocs.

Regional studies across sub-Saharan Africa consistently show that improved market access enhances food production, though the pathways are not always fully explored. Rahman et al. (2025) found that stronger market integration supported by effective institutions and financial stability reduced food insecurity by improving the movement and availability of key staples. Mutale et al. (2025) similarly showed that enhanced market linkages in Southern Africa helped stabilize food supplies and moderate price shocks, though outcomes varied depending on infrastructure and policy environments. Evidence from Sierra Leone by Bonuedi et al. (2022) further demonstrated that proximity to well-functioning agricultural markets increased household dietary diversity and food availability by lowering transaction costs. Despite these insights, most studies focus on national or household levels, leaving limited empirical understanding of how broader regional arrangements like AfCFTA could reshape market access and food production at a multi-country scale such as the EAC.

Within the East African Community (EAC), studies show that improved market access is essential for strengthening food production, yet structural and regulatory constraints continue to limit its effectiveness. Chivunga and Tempest (2022) note that weak digital integration and fragmented value chains hinder efficient movement of agricultural goods across borders. Wassie et al. (2025) add that although AfCFTA offers major opportunities for expanding regional markets, persistent

logistical gaps and uneven regulatory harmonization continue to restrict the expected food production benefits. Similarly, Masiya et al. (2023) highlight that despite progress in reducing some trade barriers, high transport costs and persistent non-tariff obstacles still disrupt agricultural trade flows, limiting food availability and affordability across EAC member states.

Other EAC-focused studies explored regional integration and trade dynamics but offer limited insight into how improved market access under AfCFTA translates into food production outcomes. Onono et al. (2024) found that market liberalization within East Africa strengthened bilateral trade balances, yet the study did not assess whether expanded trade flows improved food availability or stability. Similarly, Chigudu (2025) examined broader human security implications of AfCFTA, including mobility and climate-related pressures, but did not specifically address how enhanced market integration affects food systems within the EAC. These studies therefore left unanswered questions on whether AfCFTA-driven market access reforms meaningfully influence food production indicators such as production stability, affordability, and cross-border supply reliability.

Existing evidence on the relationship between market access and food production reveals mixed and sometimes contradictory findings. Some studies argue that wider access to regional and international markets increases food availability by improving cross-border flows of agricultural commodities and stabilizing supply chains, particularly in regions prone to production volatility (Yesbolova et al., 2024; Hassan, 2024). Others caution that without adequate infrastructure, institutional support, and regulatory alignment, market access reforms may not automatically translate into better food production outcomes, especially in low- and middle-income countries where structural constraints remain significant (Mutale et al. (2025). Methodologically, many studies rely on aggregated trade indicators or short-term cross-sectional data, limiting their ability to capture how sustained access to diversified markets affects food production, affordability, and availability over time. This created uncertainty about whether improvements in food production are driven by market access itself or by broader changes occurring simultaneously within the trade and agricultural systems.

In response to these gaps, the current study examined AfCFTA-related market access as a distinct mechanism influencing food production in the East African Community. By operationalizing

market access through the export market diversification index, the study focuses on how expanding and stabilizing external markets may enhance food system performance, particularly in a region that depends heavily on trade to supplement domestic production. Using longitudinal country-level data before and after AfCFTA implementation, the study provided a more nuanced and context-specific assessment of whether deeper and more diversified access to African markets contributes to improved food production and greater overall food production in the EAC. This approach helped clarify the specific pathways through which AfCFTA-driven market integration may support or limit food production outcomes in the region.

2.3.4 Inter-African Trade Intensity Under AfCFTA and Food Production

Global research increasingly recognizes the importance of deeper regional trade integration in strengthening food system performance, yet findings remain uneven across contexts. Adedokun (2024) argued that enhanced intra-regional trade lowers transaction costs and stabilizes commodity flows, thereby reducing food supply volatility a trend observed in more integrated blocs such as the European Union. Similarly, Bouët et al. (2022) report that higher intra-African agricultural trade intensity can improve food availability by diversifying import sources and reducing reliance on distant markets that are more susceptible to global shocks. However, several global studies typically rely on aggregate trade intensity indicators without examining direct links to food production or affordability, creating a conceptual gap in understanding how intra-continental trade flows translate into measurable food production improvements at national or regional levels.

Regional evidence across Africa also shows that while stronger intra-African trade has the potential to reduce hunger and stabilize food supply chains, practical constraints often weaken these expected outcomes. Ogunniyi et al. (2021) demonstrated that increased inter-African agricultural trade is associated with reductions in hunger prevalence, yet the impact varies widely depending on commodity composition, logistics efficiency, and policy harmonization among member states. Fusacchia et al. (2022) further note that AfCFTA is expected to boost inter-African food trade by lowering barriers and improving value-added exchange, but the benefits may be unevenly distributed if structural bottlenecks such as inadequate infrastructure or slow customs procedures persist. These findings highlighted that trade intensity alone is insufficient;

complementary institutional and infrastructural reforms are necessary to unlock food production gains.

EAC studies broaden this perspective by showing how sector-specific integration influences poverty reduction and household welfare but often stop short of examining food production directly. Idu et al. (2025), for instance, show that increased inter-African energy trade has strong welfare effects, implying similar potential for agricultural markets, yet the study does not explore food system implications. Kale and Marimo (2025) observe that the composition of intra-African trade heavily influences its developmental impact, noting that low levels of processed agricultural exports limit opportunities for stabilizing food availability and improving nutrition. Such studies revealed conceptual and contextual gaps, as they emphasize economic integration and trade performance while leaving the food production dimension underexplored.

Other studies in Africa further highlight the relevance of intra-regional trade for agricultural development and food system performance, though their findings point to mixed outcomes. Nwali et al. (2025) report that AfCFTA is expected to expand ECOWAS agricultural trade by reducing barriers and widening market opportunities, yet they emphasize that the impact on food production will depend on each country's ability to enhance competitiveness, upgrade value chains, and address supply-side constraints. Similarly, Odjo and Traoré (2024), in the Africa Agriculture Trade Monitor, note that while intra-African agricultural trade has grown gradually, its contribution to food production remains limited by structural challenges such as low product diversification, high transport costs, and persistent non-tariff barriers. These studies reinforced the view that AfCFTA's effectiveness in improving food production hinges not only on increasing trade intensity but also on addressing deep-rooted infrastructural and institutional obstacles that restrict the movement of food commodities across African regions.

Existing studies on intra-African trade intensity and food production show mixed results, largely due to methodological and contextual limitations. While some research suggests that deeper regional trade links can enhance food availability and reduce reliance on external markets, others find that persistent structural barriers such as weak infrastructure, limited product diversification, and regulatory inconsistencies often prevent these benefits from materializing. Much of the literature relies on aggregate trade data or simulation models, which overlook the specific channels

through which increased trade intensity affects food production and stability. Moreover, many studies focus narrowly on tariff changes rather than the broader depth and direction of intra-African trade, making it difficult to determine whether observed food production outcomes are directly attributable to rising trade intensity or to other domestic policy factors.

To address these limitations, the present study adopted a more focused and context-sensitive approach by examining intra-African trade intensity as a distinct AfCFTA variable influencing food production in the EAC. Using the Intra-African Trade Intensity Index resolves the shortcomings of earlier studies by capturing both the scale and relevance of regional trade flows. By linking this measure to the Food Production Index across pre- and post-AfCFTA periods, the study generated clearer empirical evidence on whether deeper integration contributes to improved food system performance in the EAC. This approach filled a regional gap in the literature, which has often emphasized West African or continental trends, and provides more precise insights into how AfCFTA-driven trade integration may shape food production outcomes in East Africa.

2.4 Summary of Knowledge Gaps

The reviewed literature showed that tariff reduction, non-tariff barrier reform, expanded market access, and increased intra-African trade intensity all influence food production, but the evidence remains fragmented and uneven across global, regional, and EAC contexts. Global studies highlight broad benefits of trade openness but rarely assessed African sub-regions, while African research identifies key constraints without linking reforms to concrete food production indicators. EAC studies emphasize structural and regulatory barriers but provide limited empirical evidence on how AfCFTA-driven trade reforms affect food production and availability. Methodological reliance on simulations and cross-sectional data, along with conceptual treatment of trade variables in isolation, further limits understanding. These gaps justify a focused, empirical assessment of how AfCFTA-related trade reforms jointly shape food production outcomes in the EAC. Table 2.1 shows a summary of the existing knowledge gaps.

Table 2.1 Summary of Knowledge Gaps

Author(s)	Focus Study	of Methodology	Key Findings	Research Gaps
Häberli (2025)	Tariff reduction & food production	Qualitative/global analysis	Lower trade barriers improve food flow & resilience	Lacks African/EAC focus
Pasara (2025)	Tariff liberalization in SADC	Econometric analysis	Improved availability but uneven gains	Limited sub-regional EAC evidence
Maniriho et al. (2025)	AfCFTA tariff reforms & welfare	Simulation model	Tariff cuts improve welfare & trade	Did not assess food production directly
MacLeod (2025)	Tariffs & EAC food movement	Regional analysis	policy Lower tariffs ease staple movement	No link to food production index
Ramli et al. (2025)	NTBs & food supply chains	Conceptual/qualitative	NTB reduction improves timeliness & affordability	Lacks empirical multi-country testing
Naseri et al. (2025)	Border practices & food flows	Case study	Restrictive NTBs worsen shortages	No quantitative link to food production
Asaju & Kwakano (2025)	NTBs & food insecurity in West Africa	Empirical descriptive	Delays worsen food insecurity	No longitudinal analysis

Author(s)	Focus Study	of Methodology	Key Findings	Research Gaps
Choi et al. (2025)	SPS barriers & trade	Econometric	NTBs distort flows & raise volatility	Not food production–focused
Wassie et al. (2025)	AfCFTA & food production pathways	Systematic review	Deeper integration can improve supplies	EAC-specific evidence lacking
Rahman et al. (2025)	Market integration & food insecurity	Panel analysis	Institutions+markets reduce food insecurity	Not AfCFTA-specific
Mutale et al. (2025)	Market access & supply stability	Panel threshold model	Integration stabilizes supplies	Infrastructure not integrated
Idu et al. (2025)	Intra-African energy trade welfare	Panel model	Trade integration improves welfare	Did not assess food production
Yesbolova et al. (2024)	Regional integration & food stability	Comparative analysis	Integration reduces disruptions	Not Africa-focused
Hassan (2024)	Agricultural policy & food production	Global review	Market improves access availability	Limited regional breakdown
Toromade et al. (2024)	Climate change & food production	Multidisciplinary review	Trade facilitation mitigates shocks	No NTB-specific link

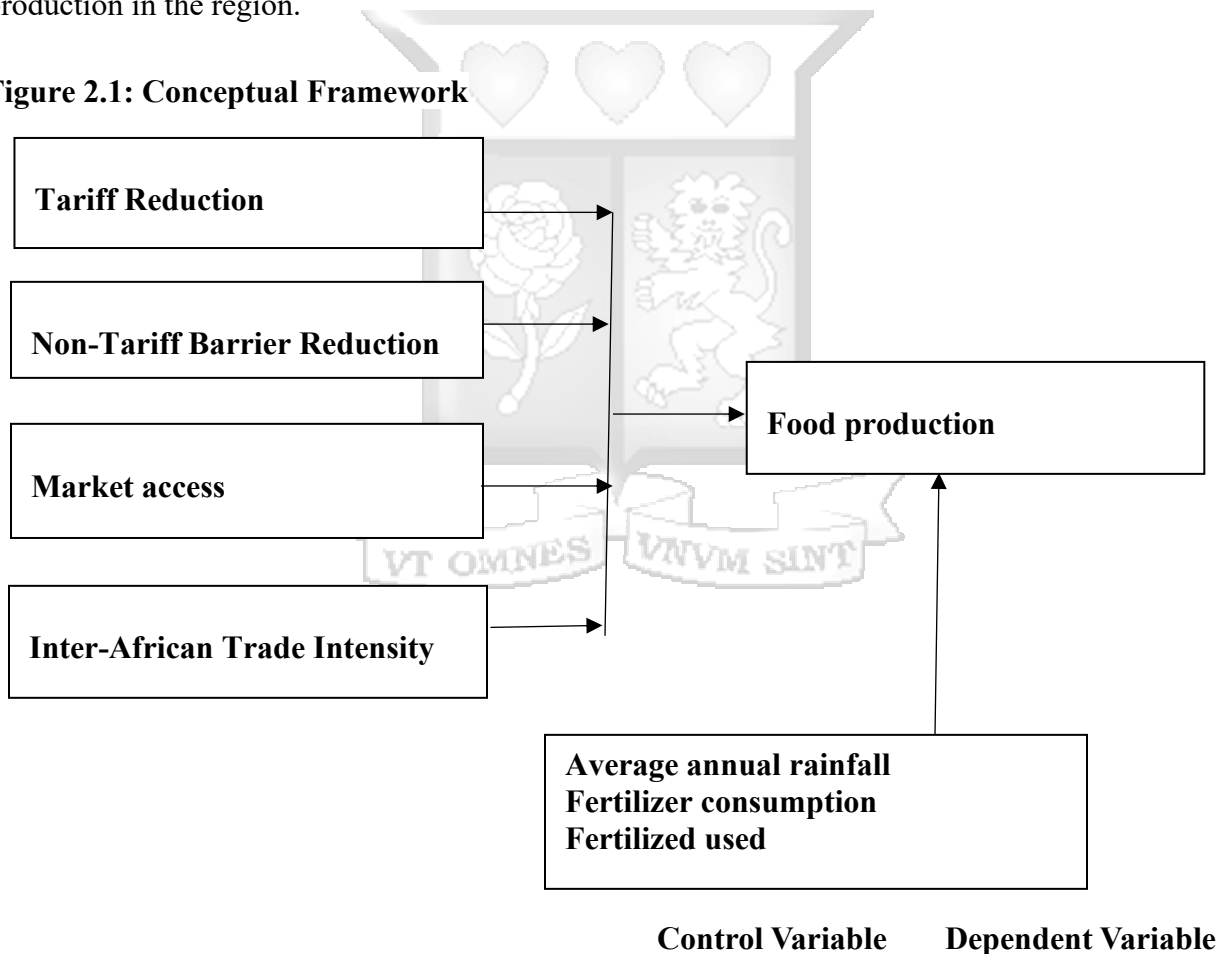
Author(s)	Focus Study	of	Methodology	Key Findings	Research Gaps
Ibekwe (2024)	Trade governance & food access		Political economy analysis	Inefficiencies reduce access	No quantitative food metrics
Odjo Traoré (2024)	& Africa Agriculture Trade Monitor		Continental analysis	Trade rising but not enough for security	Weak product diversification focus
Onono et al. (2024)	Liberalization & EAC trade		Econometric	Improves trade balances	No food production outcomes
Chigudu (2025)	AfCFTA & human security		Qualitative	Integration impacts mobility & welfare	No food production examination
Marion et al. (2024)	Market access interventions LMICs		Systematic review	Access improves nutrition & output	Not region-specific
Bonuedi et al. (2022)	Market access & food production Sierra Leone		Mixed methods	Access improves dietary diversity	Not AfCFTA-focused
Janssens et al. (2022)	Continental tariff liberalization		Simulation	Stimulates supply & stability	No EAC-specific test
Bouët et al. (2022)	Africa agriculture trade monitor		Continental survey	Trade intensity enhances availability	Food production link weak

Author(s)	Focus Study	of Methodology	Key Findings	Research Gaps
Gren et al. (2024)	Trade disruptions & food production Sweden	Simulation	Trade easing protects supplies	High-income context
Kallummal et al. (2024)	Market barriers & food access	Quantitative	Barriers reduce availability	No AfCFTA/EAC analysis
Masiya et al. (2023)	EAC trade trajectories	Regional assessment	Integration improving slowly	Food production not measured
Akullo (2023)	Cross-border food safety & flows	Policy analysis	Reduced barriers enhance flows	Did not measure food outcomes
Tiba (2023)	Tariffs & regional food flows	Regional case analysis	High tariffs limit food movement	Lacks empirical quantification
Nwali et al. (2025)	AfCFTA & ECOWAS agricultural trade	Econometric	Trade expands under AfCFTA	Food production effects unclear
Fusacchia et al. (2022)	AfCFTA & food	Simulation	Boosts food trade value-added	Food production not measured

2.5 Conceptual Framework

The conceptual framework outlines the proposed link between AfCFTA trade provisions and food production outcomes in the EAC. It linked the four AfCFTA dimensions—tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity—to food production measured by the Food Production Index. Anchored in New Trade Theory and supported by Food Production Theory, the framework posited that improved trade efficiency, expanded markets, and deeper regional integration enhanced food production within EAC member states, while average annual rainfall and fertilizer consumption were included as control variables. This structure guided the empirical analysis by clarifying the pathways through which AfCFTA may influence food production in the region.

Figure 2.1: Conceptual Framework



Independent Variables

Source: Researcher (2026)

2.6 Operationalization of Study Variables

Table 2.2 shows the operationalization of the study variables

Table 2.2: Operationalization of Variables

Variable Type	Variable	Indicators	Measurement	Sources
Independent Variable	Tariff Reduction	- Applied average agricultural tariff rate	Secondary data: % tariff rate (annual, country-level)	Häberli (2025); Gren et al. (2024); Rabbi et al. (2021)
Independent Variable	Non-Tariff Barrier Reduction	- Border clearance time - SPS/administrative delays - Customs harmonization	Secondary data: Average border clearance time (hours/days)	Gopinath et al. (2024); Ramli et al. (2025); Naseri et al. (2025)
Independent Variable	Market Access	- Export market diversification (HHI) - Market connectivity - Trade participation depth	Secondary data: Export diversification index (Herfindahl-Hirschman Index (HHI) score ranging from 0–1)	Yesbolova et al. (2024); Hassan (2024); Marion et al. (2024)

Independent Variable	Inter-African Trade Intensity	- Inter-African trade share - Relative trade flow intensity	Secondary data: Inter-African Trade Intensity Index (UNCTAD formula)	Adedokun (2024); Bouët et al. (2022); Ogunniyi et al. (2021)
Dependent Variable	Food production	- Food Production Index (FPI) - Production Index (Index value, base period = 100)	Secondary data: Food Production Index (Index value, base period = 100)	FAO (2024); WHO (2024); Varzakas & Smaoui (2024)

Source: Researcher (2026)

2.7 Chapter Summary

This chapter presented the theoretical and empirical foundation of the study by examining how AfCFTA trade provisions influence food production within the East African Community. It reviewed the key variables tariff reduction, non tariff barrier reforms, market access, inter-African trade intensity, and food production measured by the Food Production Index and anchored them in New Trade Theory and Food Security Theory. The chapter synthesized global, regional, and EAC-based empirical evidence to identify conceptual and methodological gaps justifying the study. It also presented the conceptual framework illustrating the relationship among the variables and outlined the operationalization of study variables, thereby providing a coherent structure for the methodological procedures detailed in Chapter Three.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodological procedures that was used to examine the effect of AfCFTA trade provisions on food production in the East African Community. It outlines the research philosophy and design, target population, units of analysis and observation, data sources, and study period underpinning the investigation. The chapter further describes the empirical model, data collection methods, and diagnostic tests that ensure the accuracy, validity, and reliability of the findings. Ethical considerations and a summary of the chapter are also provided to guide the structure and integrity of the study's methodological framework.

3.2 Research Philosophy

Research philosophy provides the foundation for how knowledge is generated and interpreted within a study. Several philosophical perspectives exist, including positivism, interpretivism, pragmatism, and critical realism (Saunders et al., 2019). Interpretivism emphasizes subjective meanings and social constructions, making it appropriate for research that seeks to understand perceptions, experiences, and institutional dynamics through qualitative inquiry. Pragmatism adopts a problem-solving orientation and permits the integration of qualitative and quantitative methods depending on the research objective. Critical realism, on the other hand, acknowledges the existence of an objective reality but argues that underlying structures and contextual forces shape observable outcomes, often requiring mixed methods to reveal deeper causal mechanisms (Creswell & Creswell, 2021). This study adopted a positivist research philosophy, which is grounded in the belief that reality is objective, measurable, and best understood through systematic observation. Positivism was appropriate for this study because it seeks to quantify the effects of AfCFTA-related trade variables on food production in the EAC using structured, numerical secondary data. The approach emphasized hypothesis testing, statistical modelling, and empirical verification, aligning with the positivist view that valid knowledge is derived from observable evidence and replicable analytical procedures (Cooper & Schindler, 2021).

The choice of the positivist philosophy was justified by the study's reliance on quantifiable secondary data and its aim to test hypothesized causal relationships between AfCFTA trade variables and food production outcomes. Positivism supports the use of objective measurement, statistical modelling, and longitudinal analysis, all of which are central to assessing how tariff reforms, NTB reduction, market access, and trade intensity influence the Food Production Index across EAC member states. Since the study focused on observable patterns and seeks generalizable conclusions, the positivist paradigm provides the most suitable framework for producing valid, reliable, and policy-relevant empirical evidence (Burns & Burns, 2020).

3.3 Research Design

Several research designs can be applied in social science research, including experimental, cross-sectional, descriptive survey, case study, and longitudinal designs. Experimental designs involve manipulation and control of variables to establish causality, but they are unsuitable for this study because trade reforms under AfCFTA cannot be controlled or experimentally assigned across countries (Saunders et al., 2019). Cross-sectional designs examine relationships at a single point in time and are useful for snapshot analysis, but they do not capture temporal changes or policy evolution. Case study designs provide in-depth contextual insights into specific countries, yet they limit generalizability across the entire EAC region (Creswell & Creswell, 2021).

This study adopted a longitudinal correlational research design, which enables the examination of how AfCFTA-related trade variables influence food production outcomes across EAC member states over time. This design was appropriate because it utilizes multi-year secondary data to observe trends before and after AfCFTA implementation, allowing the researcher to identify patterns, directional relationships, and policy-related effects without manipulating any variables. Longitudinal correlational designs are particularly suited for studies seeking to track changes, compare periods, and quantify associations among variables within real-world policy environments (Kothari, 2021). By applying this design, the study generated robust empirical evidence on how tariff reduction, NTB reform, market access, and intra-African trade intensity shape the Food Production Index across the region.

3.4 Target Population

The target population for this study consisted of all East African Community (EAC) member states, namely Kenya, Uganda, Tanzania, Rwanda, Burundi, South Sudan, and the Democratic Republic of Congo. These countries were selected because they constitute the regional bloc affected by AfCFTA trade reforms and food production dynamics. The study utilized annual secondary panel data covering the period 2016–2025 on tariff rates, non-tariff barriers, market access, inter-African trade intensity, and the Food Production Index. A census approach was adopted because the number of EAC member states was small and manageable, allowing inclusion of all countries and ensuring comprehensive regional coverage. The study period incorporated both pre-AfCFTA (2016–2020) and post-AfCFTA (2021–2025) observations to facilitate assessment of changes associated with trade integration over time. Although AfCFTA became operational in 2021 and the post-implementation period was relatively short, the inclusion of both periods enabled comparative analysis of trade and food production trends.

3.5 Data Collection

Data for this study was obtained entirely from secondary sources, which aligns with the requirements of a quantitative, multi-country panel analysis. Secondary data was suitable because the study variables tariff rates, non-tariff barrier indicators, export market diversification, intra-African trade intensity, and the Food Production Index are routinely published by reputable institutions using standardized methodologies. Core sources included FAOSTAT for food production statistics, the World Bank's World Development Indicators for tariff and border efficiency metrics, UNCTAD for trade intensity and diversification indices, and the EAC Secretariat for region-specific trade and policy data. Relying on established databases enhanced data accuracy, comparability, and validity, as these repositories undergo regular methodological updates and quality checks (Cooper & Schindler, 2021). To address potential data gaps inherent in multi-country panel datasets, data were cross-validated using multiple sources including FAOSTAT, the World Bank, UNCTAD, and EAC reports, while missing observations were carefully reviewed and treated using appropriate panel data procedures to maintain consistency and reliability of the dataset. Since the study adopted a census approach involving all seven EAC

member states and utilized the complete available panel dataset for the period 2016–2025, statistical power analysis and minimum detectable effect calculations were not undertaken.

To further strengthen the dataset, the study incorporated AfCFTA implementation reports, customs performance records, and trade policy monitoring documents to confirm variations in regional integration and trade facilitation procedures across the study period. Collecting data for both pre-AfCFTA (2016–2020) and post-AfCFTA (2021–2025) periods allows for a temporal assessment of how policy reforms have influenced food system outcomes in the EAC. The use of longitudinal secondary data also enabled the identification of emerging trends, structural changes, and cross-country differences that would be difficult to capture through primary data collection. This approach ensured a robust, cost-effective, and methodologically sound foundation for empirical analysis.

3.6 Data Analysis Methods

Data analysis for this study began with descriptive statistics to summarize the distribution and trends of key variables, including tariff reduction, non-tariff barrier efficiency, market access indicators, intra-African trade intensity, and the Food Production Index. Measures such as means, standard deviations, and trend plots helped illustrate pre- and post-AfCFTA patterns across EAC member states. Correlation analysis was then applied to identify preliminary relationships among variables and detect any multicollinearity concerns. These preliminary steps provided a foundation for understanding data behaviour before conducting inferential analysis, consistent with recommended econometric procedures (Gujarati & Porter, 2021).

Inferential analysis relied on panel regression modelling to estimate the effect of AfCFTA-related trade reforms on food production outcomes across the EAC. Both fixed-effects and random-effects models estimated, with the Hausman test guiding model selection. All statistical analyses were conducted using STATA, given its strong capacity for handling multi-country panel datasets and producing robust diagnostics. Additional tests such as checks for normality, heteroscedasticity, autocorrelation, and variance inflation factors ensured the accuracy and reliability of the final model estimates. The study applied a panel regression model to examine the direction and magnitude of relationships among variables, expressed as:

$$FS_{it} = \beta_0 + \beta_1 TR_{it} + \beta_2 NTB_{it} + \beta_3 MA_{it} + \beta_4 TII_{it} + \epsilon_{it}$$

Where:

- FS_{it} = Food production (Food Production Index) for country i in year t
- TR_{it} = Tariff Reduction (Average applied agricultural tariff rate)
- NTB_{it} = Border clearance time
- MA_{it} = Market Access (Export diversification index)
- TII_{it} = Inter-African Trade Intensity Index
- β_0 = Constant
- $\beta_1 - \beta_4$ = Coefficients
- ϵ_{it} = Error term

A Hausman test was determine whether to use Fixed Effects or Random Effects.

3.7 Diagnostic Tests

To ensure the reliability of the panel regression results, several diagnostic tests were conducted to confirm that the data meet key statistical assumptions. The study assessed normality, multicollinearity, heteroscedasticity, and autocorrelation, alongside panel-specific tests such as the panel unit root test for stationarity, the Hausman test for selecting between fixed and random effects. These diagnostics helped validate model suitability and strengthen the credibility of the empirical findings.

3.7.1 Normality

Normality assesses whether the distribution of study variables approximates a bell-shaped curve, with observations concentrated around the mean (Hair et al., 2019). The Kolmogorov–Smirnov and Shapiro–Wilk tests was used to evaluate this assumption, where p-values greater than 0.05

indicated no significant deviation from normality. Establishing normal distribution helps determine the suitability of parametric statistical techniques for the analysis.

3.7.2 Multicollinearity

Multicollinearity arises when independent variables exhibit strong intercorrelations, making it difficult to distinguish their unique contributions within a regression model (Sekaran & Bougie, 2020). This study applied Variance Inflation Factors and tolerance statistics, with VIF values below 10 and tolerance above 0.1 signaling acceptable levels. These checks help ensure that each predictor explains a distinct portion of variation in food production outcomes.

3.7.3 Heteroskedasticity

Heteroskedasticity refers to unequal variance in regression residuals across different values of the predictors, which can distort standard errors and weaken statistical conclusions (Kothari, 2021). The Breusch–Pagan test was used to detect this issue, where a non-significant result indicates constant variance. A p-value greater than 0.05 implied absence of heteroskedasticity, while a p-value less than 0.05 If detected, the study employed remedies such as robust standard errors to maintain the reliability of estimates.

3.7.4 Autocorrelation

Autocorrelation occurs when residuals from one observation are correlated with those of another, violating the independence assumption of regression analysis (Wooldridge, 2021). The Durbin–Watson statistic was used to assess this, with values between 1.5 and 2.5 indicating that autocorrelation is unlikely. Addressing autocorrelation ensures that parameter estimates remain unbiased and efficient.

3.7.5 Stationarity

Stationarity evaluates whether the statistical properties of variables such as mean and variance remain constant over time, which is essential for valid panel data regression (Baltagi, 2021). The study applied the Levin–Lin–Chu unit root test, where a significant p-value confirms stationarity.

Ensuring stationarity prevents spurious regressions and supports credible inference on AfCFTA-related trade effects.

3.7.6 Hausman Test

The Hausman test helps determine whether a fixed-effects or random-effects model is more appropriate for the panel regression (Greene, 2020). A significant result favors fixed effects, while a non-significant result supports the use of random effects. This test ensured that the chosen model aligns with the underlying data structure, improving the validity of the study's empirical results.

3.8 Ethical Considerations

Ethical considerations for this study were upheld by maintaining integrity, transparency, and responsible use of secondary data. All data was sourced from reputable institutions and reported accurately without manipulation or misrepresentation. Proper attribution was ensured through correct citation of all datasets and scholarly works to avoid plagiarism and uphold academic honesty. The study strictly used the data for academic purposes in compliance with university guidelines. In addition, a research permit from Strathmore research office to ensure full adherence to ethical and regulatory requirements governing research in Kenya.

3.9 Chapter Summary

This chapter has outlined the methodological framework guiding the study on the effect of AfCFTA trade provisions on food production in the East African Community. It described the research philosophy, research design, target population, sampling approach, data collection methods, and analytical techniques used to examine the relationships among tariff reduction, non-tariff barrier reform, market access, intra-African trade intensity, and food production. The chapter also detailed the diagnostic tests applied to ensure the validity and reliability of the regression model, alongside the ethical procedures observed, including compliance with NACOSTI requirements.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents results and discussion on the effect of African Continental Free Trade Area on Food production in the East African Community. The data was collected from 7 countries for a period of 10 years resulting to 70 observations. Analysis is organized into descriptive, diagnostic, and inferential sections. Descriptive statistics summarize in tariff reduction, non-tariff barrier, market access, inter-African trade intensity, and food production using mean, standard deviation, minimum, and maximum. Diagnostic tests assess normality, multicollinearity, heteroscedasticity, serial correlation, and model suitability using the Hausman test. Inferential analysis applies correlation and panel regression to examine relationships between variables and test hypotheses, with findings interpreted in line with the study objectives.

4.2 Descriptive Statistics

Table 4.1 presents the descriptive statistics for food production and African Continental Free Trade Area components among East African Community over the period 2016–2025, based on 70 observations. The statistics provide insights into the central tendency, dispersion, and variability of the study variables.

Table 4. 1: Descriptive Statistics

stats	Food Production	Tariff Reduction	Non-tariff barrier	Market Access	Inter-African trade intensity (%)
N	70	70	70	70	70
min	84.01	0.075	1	0.1	0.2
max	148	0.35	672	0.93	52
mean	113.1274	0.187654	113.1	0.376714	30.05857
sd	12.54223	0.059116	140.8956	0.263575	15.06001
C.V	0.110868	0.315026	1.245761	0.699668	0.501022

Food production, measured using the Food Production Index (FPI), recorded a mean of 113.13, with values ranging from 84.01 to 148 and a standard deviation of 12.54. The low coefficient of variation (0.11) indicates that food production across EAC countries remained relatively stable

over the study period. This suggests limited fluctuations in aggregate agricultural output despite external shocks such as climate variability and trade dynamics, implying that production levels were moderately consistent, although disparities still exist between lower-performing and higher-performing countries within the region.

Tariff reduction, proxied by the average applied agricultural tariff rate, recorded a mean of 0.188, with values ranging between 0.075 and 0.35 and a standard deviation of 0.059. The coefficient of variation of 0.32 indicates moderate variability, suggesting that tariff policies across EAC countries were relatively consistent but not uniform. This reflects gradual implementation of trade liberalization measures under AfCFTA, where some countries reduced tariffs more aggressively than others, potentially influencing cross-border agricultural trade flows and affecting incentives for domestic food production.

Non-tariff barriers, measured using average border clearance time in hours, recorded a mean of 113.1 hours, with a minimum of 1 hour and a maximum of 672 hours. The high standard deviation of 140.90 and coefficient of variation of 1.25 indicate substantial variability across countries and time. This suggests significant inconsistencies in trade facilitation processes, with some border points operating efficiently while others experience prolonged delays. Such disparities highlight inefficiencies in customs procedures and regulatory systems, which may hinder timely movement of agricultural goods and negatively affect food production and supply chains.

Market access, measured using the export market diversification index, recorded a mean of 0.377, with values ranging from 0.1 to 0.93 and a standard deviation of 0.264. The relatively high coefficient of variation (0.70) indicates considerable differences in the extent to which EAC countries diversify their export markets. This suggests that while some countries have broadened their market reach, others remain dependent on limited trading partners, potentially exposing them to market shocks and limiting the overall benefits of AfCFTA in enhancing food production and trade resilience.

Inter-African trade intensity index recorded a mean of 30.06%, with values ranging from 0.2% to 52% and a standard deviation of 15.06%. The coefficient of variation of 0.50% indicates moderate to high variability, reflecting differences in the degree of regional trade integration among EAC

countries. This suggests that while some countries are actively engaged in intra-African trade, others participate at lower levels, potentially limiting the overall effectiveness of AfCFTA in strengthening regional food systems and enhancing food production through improved market linkages.

4.3 Trend Analysis

This section presents the trend analysis of the study variables over the period under review (2016-2025) for food production in the East African Community. The analysis illustrates the movement and patterns in African Continental Free Trade Area components and food production in the East African Community over time.

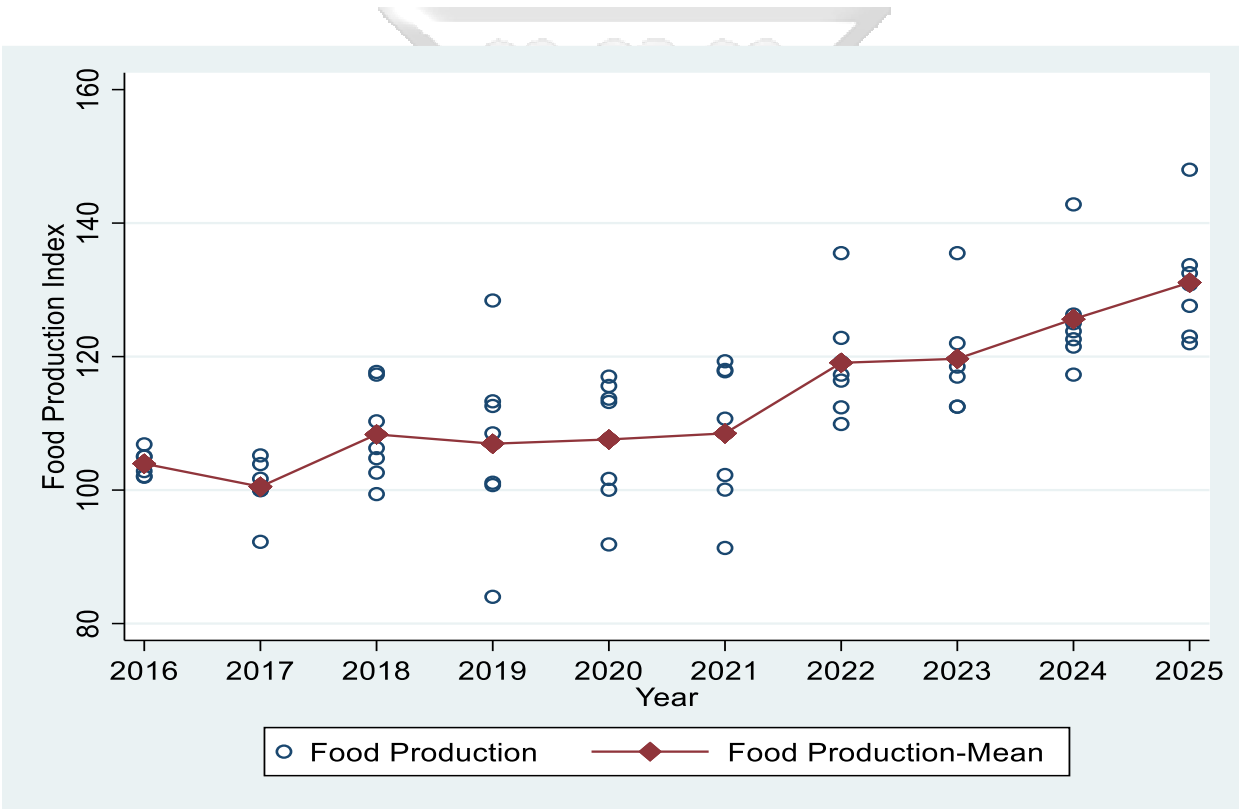


Figure 4. 1: Trend of Food Production (Food Production Index, 2016-2025)

Food production, measured using the Food Production Index, shows a generally upward trend over the study period, indicating improving agricultural output within the East African Community. Between 2016 and 2017, there is a slight decline, suggesting short-term challenges in agricultural performance. From 2018 to 2021, food production increases gradually, reflecting recovery and

moderate growth. A more pronounced rise is observed from 2022 to 2025, indicating stronger improvements in agricultural productivity and food availability. Overall, the trend suggests that food production has improved over time, possibly driven by enhanced trade integration, improved market access, and reductions in trade barriers under AfCFTA.

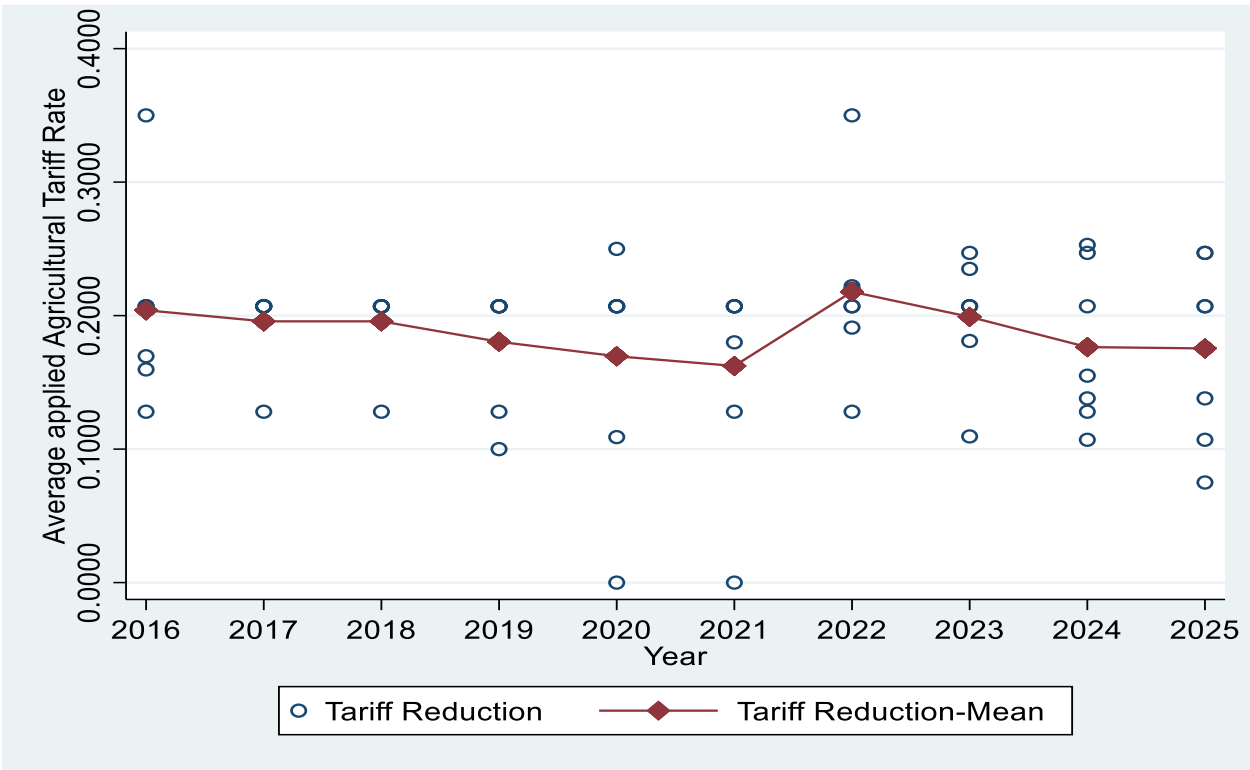


Figure 4. 2: Trend of Tariff Reduction (Average Applied Agricultural Tariff Rate) (2016-2025)

Tariff reduction, proxied by the average applied agricultural tariff rate, exhibits a generally declining trend over the study period, although with some fluctuations. Between 2016 and 2021, tariff rates gradually decrease, indicating progressive trade liberalization and reduction of agricultural trade barriers within the East African Community. In 2022, there is a noticeable increase in tariff rates, suggesting a temporary policy adjustment or shift in trade dynamics. However, from 2023 to 2025, tariff rates decline again and stabilize at relatively lower levels compared to earlier years. Overall, the trend reflects a movement toward reduced trade restrictions under AfCFTA. This decline in tariffs suggests improved access to agricultural inputs and markets, which enhances production incentives and supports increased food production in the region.

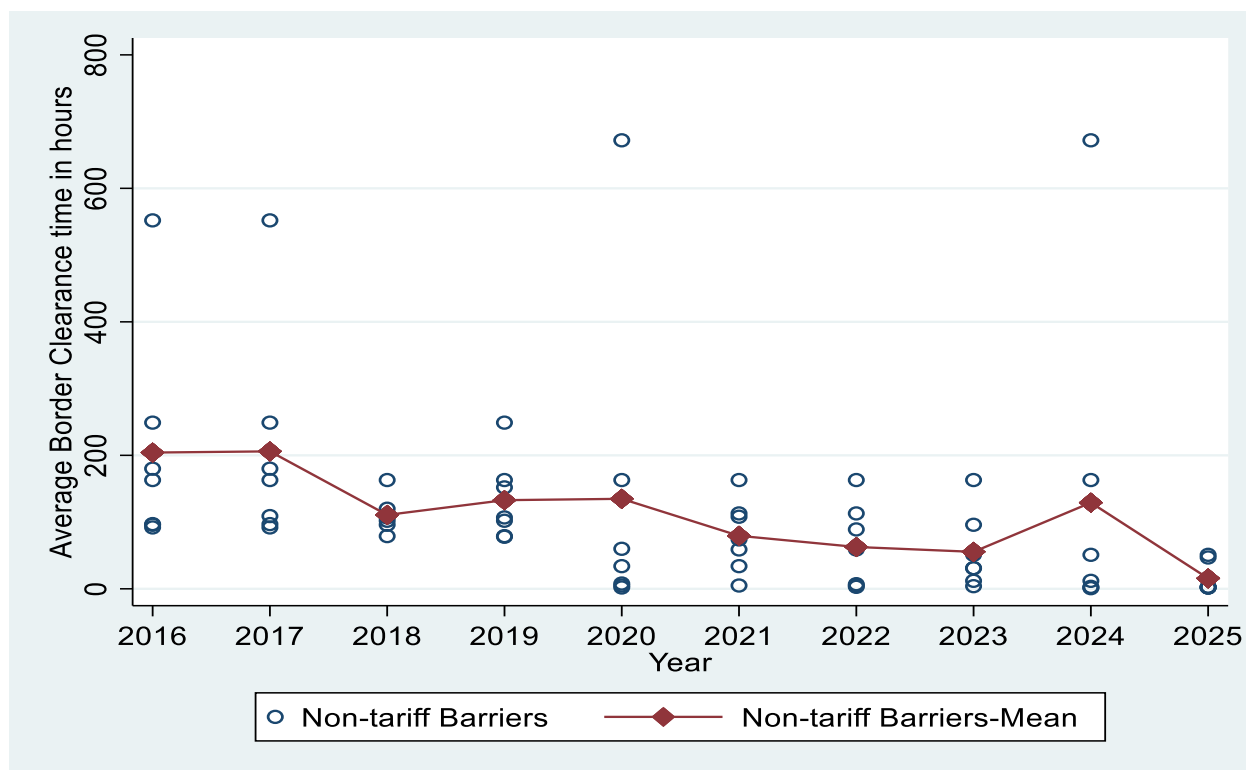


Figure 4. 3: Trend of Non-Tariff Barriers (Border Clearance Time) (2016–2025)

The graph shows that non-tariff barriers, measured by average border clearance time, exhibit a general downward trend over the study period, although with noticeable fluctuations. Between 2016 and 2017, clearance time remains relatively high, indicating significant inefficiencies in cross-border trade processes. From 2018 to 2023, there is a consistent decline, suggesting improvements in trade facilitation, including better customs procedures, reduced delays, and enhanced efficiency at border points. This trend reflects gradual progress in regional integration and implementation of trade reforms. However, in 2024, there is a temporary increase, indicating possible disruptions such as administrative bottlenecks or external shocks. By 2025, clearance time drops sharply to its lowest level, suggesting substantial improvement in border efficiency.

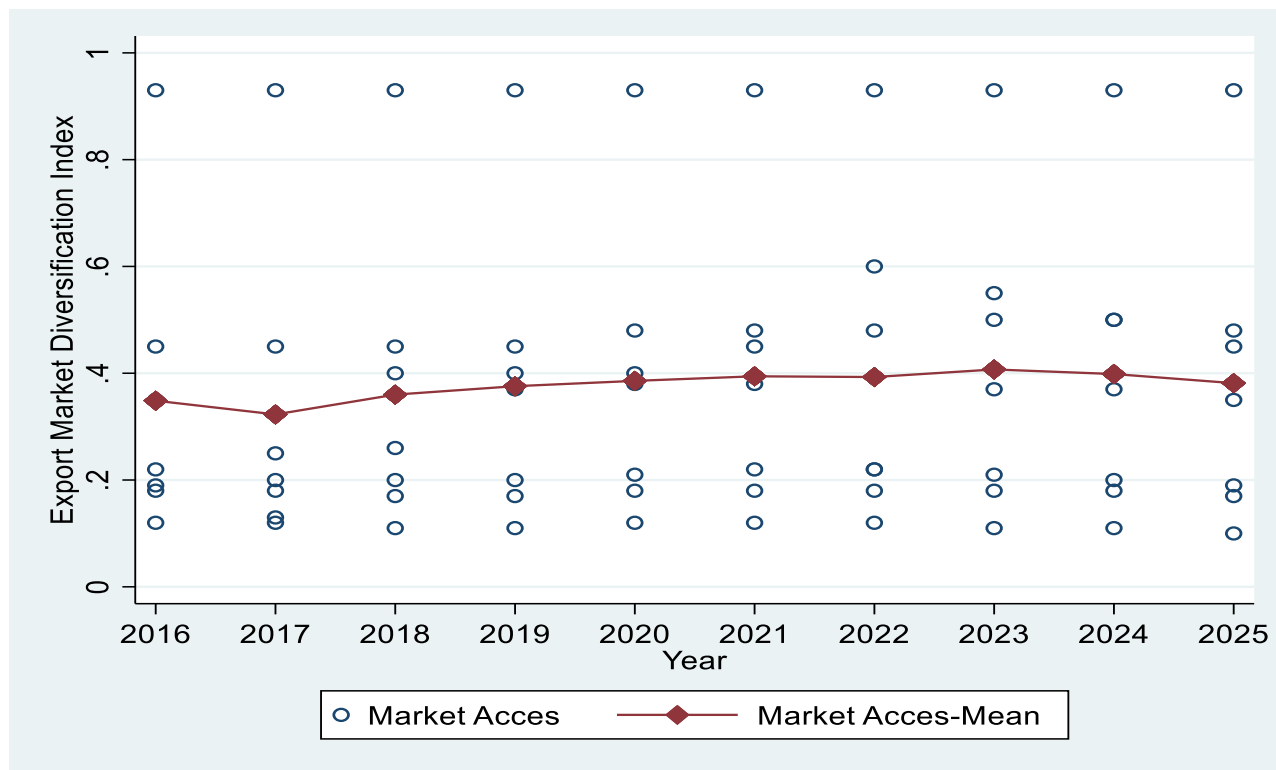


Figure 4. 4: Trend of Market Access (Export Market Diversification Index) (2016–2025)

Market access, measured using the export market diversification index, shows a generally increasing trend over the study period, indicating gradual improvement in export diversification within the East African Community. Between 2016 and 2017, there is a slight decline, suggesting temporary constraints in accessing diverse markets. From 2018 to 2023, market access steadily improves, reflecting enhanced regional and international trade linkages and increased participation in diversified export markets. However, from 2024 to 2025, there is a slight decline, indicating possible emerging challenges such as market concentration or external trade pressures.

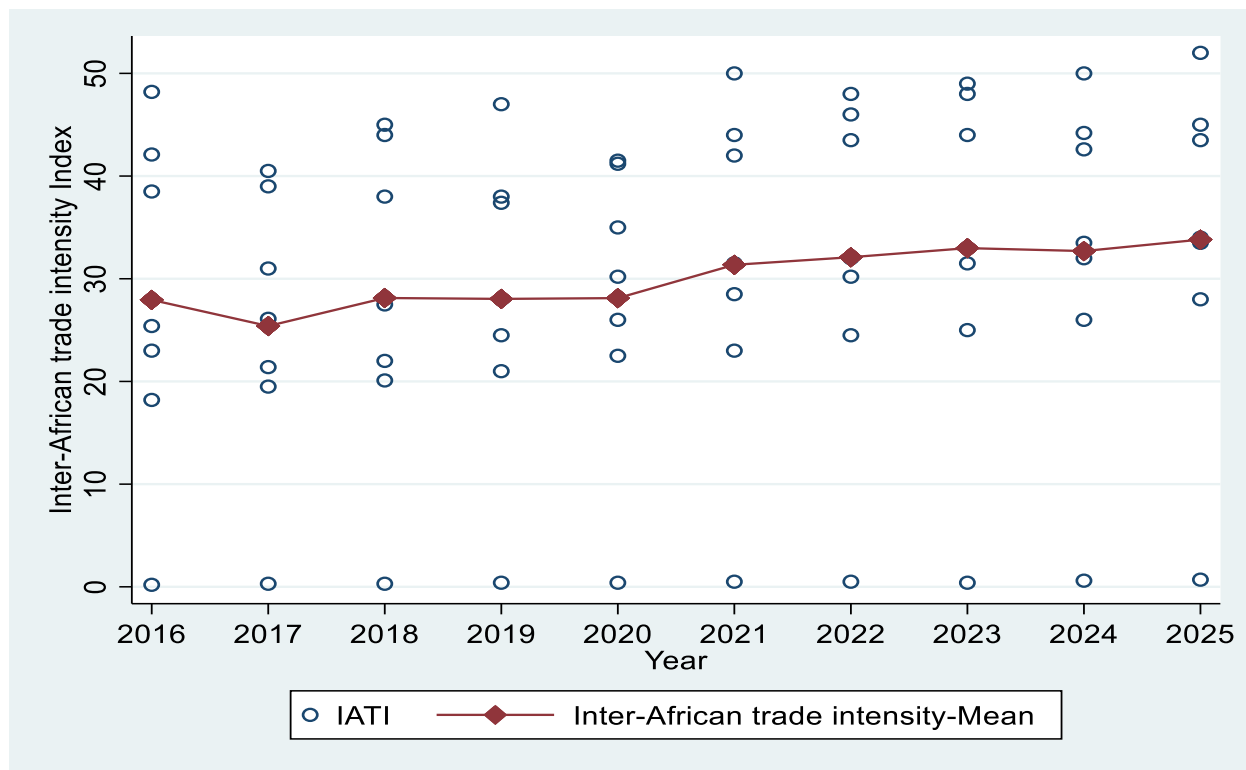


Figure 4. 5: Trend of Inter-African Trade Intensity (2016–2025)

The graph shows that inter-African trade intensity in the East African Community exhibits a generally upward trend over the study period, although with some fluctuations in the earlier years. Between 2016 and 2020, the trend is relatively unstable, with slight declines and modest increases, indicating inconsistent regional trade integration during this period. This suggests that structural and policy barriers may have limited the growth of intra-African trade. From 2021 onwards, there is a clear and steady increase in trade intensity. This upward movement coincides with the implementation phase of AfCFTA, suggesting that regional trade reforms may have started to strengthen intra-African trade linkages. By 2025, the trade intensity reaches its highest level, indicating improved regional integration, increased cross-border trade participation, and gradual strengthening of trade relationships among EAC countries.

4.4 Diagnostic Tests Results

The study conducted the following diagnostic tests; normality, test for heteroskedasticity, test for serial autocorrelation, stationarity test, Hausman Test and multicollinearity test for all the study variables.

4.4.1 Normality Tests Results

A normality test was conducted to determine whether the variables in the dataset follow a normal (Gaussian) distribution, which is a common assumption for many statistical analyses.

Table 4. 2: Normality Test Results

Variable	Obs	W	V	z	Prob>z
Food Production	70	0.94218	0.849	-0.266	0.60506
Tariff Reduction	70	0.9427	0.842	-0.281	0.61056
Non-tariff barrier	70	0.90526	1.392	0.571	0.28412
Market Access	70	0.94466	0.813	-0.336	0.63166
Inter-African trade intensity	70	0.94662	0.784	-0.394	0.65307

A normality test was conducted using the Shapiro–Wilk test to determine whether the study variables follow a normal distribution. The results in Table 4.2 show that all variables have probability values (Prob > z) greater than the 0.05 significance level. Specifically, food production ($p = 0.60506$), tariff reduction ($p = 0.61056$), non-tariff barriers ($p = 0.28412$), market access ($p = 0.63166$), and inter-African trade intensity ($p = 0.65307$) all fail to reject the null hypothesis of normality. Additionally, the W statistics for all variables are close to 1, further confirming that the data approximates a normal distribution. Although non-tariff barriers show relatively higher dispersion, the normality assumption still holds. These results indicate that the dataset satisfies the normality requirement, making it suitable for subsequent parametric analyses such as correlation and panel regression.

4.4.2 Auto Correlation Test Results

To determine the presence of serial correlation in the panel data, the study employed the Wooldridge test for autocorrelation. This test is specifically suited for detecting first-order autocorrelation in panel datasets. The null hypothesis (H_0) of the test posits that there is no first-

order autocorrelation meaning the error terms are not correlated across time while the alternative hypothesis (H_1) suggests the presence of such autocorrelation. The results of the test are presented in Table 4.3.

Table 4. 3: Autocorrelation Results

Wooldridge test for autocorrelation in panel data	
H0: no first-order autocorrelation	
$F(1, 6) = 4.727$	
Prob > F = 0.0726	

The Wooldridge test for autocorrelation was conducted to examine whether there is first-order serial correlation in the panel data. The test produced an F-statistic of 4.727 with a probability value of 0.0726. Since the p-value is greater than the conventional significance level of 0.05, the null hypothesis of no first-order autocorrelation is not rejected. This implies that there is no sufficient statistical evidence to suggest the presence of serial correlation in the error terms across time. Although the p-value is slightly above the threshold, indicating marginal proximity to significance, the results generally support the assumption of independence of residuals. Therefore, the panel data model is considered appropriate, and no correction for autocorrelation is required before proceeding with further regression analysis.

4.4.3 Multi-collinearity Test Results

To assess multicollinearity, the Variance Inflation Factor (VIF) and its reciprocal, Tolerance ($1/VIF$), were calculated. A VIF value less than 10 is generally considered acceptable and indicates that multicollinearity is not severe. Similarly, a tolerance value greater than 0.1 suggests that multicollinearity does not pose a serious issue. Multicollinearity test results are as shown in Table 4.4.

Table 4. 4: Multicollinearity Test Result

Variable	VIF	Tolerance($1/VIF$)
Tariff Reduction	1.22	0.820087
Non-tariff barrier	1.17	0.852883
Market Access	1.04	0.960487
Inter-African trade intensity (%)	1.01	0.98689
Mean VIF	1.11	

The Variance Inflation Factor (VIF) values for all explanatory variables are well below the commonly used threshold of 10, and the corresponding tolerance values are greater than 0.1. This indicates that multicollinearity is not a concern among the independent variables, and the regression estimates are reliable.

4.4.4 Heteroscedasticity Test Results

To assess whether the regression model satisfies the assumption of constant variance of the error terms, the Breusch–Pagan/Cook–Weisberg test for heteroskedasticity was conducted. The test evaluates the null hypothesis that the variance of the residuals is constant (homoskedasticity) against the alternative hypothesis that the variance is not constant (heteroskedasticity). Heteroskedasticity test results are as shown in Table 4.5

Table 4. 5: Heteroskedasticity Test Result

Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of LNFPI
H0: Constant variance
chi2(1) = 1.21
Prob > chi2 = 0.2713

The results of the test are presented in Table 4.5. The chi-square statistic was 1.21 with an associated p-value of 0.2713. Since the p-value is greater than the conventional significance level of 0.05, the null hypothesis of constant variance cannot be rejected. This finding indicates that there is no evidence of heteroskedasticity in the model, implying that the residuals exhibit constant variance. Therefore, the model satisfies the homoskedasticity assumption, and the estimated regression coefficients and their standard errors are considered reliable for statistical inference.

4.4.5 Stationarity Test Results

A stationarity test was conducted using the Levin–Lin–Chu (LLC) unit root test to determine whether the panel data variables exhibit constant mean and variance over time. Establishing stationarity is essential to avoid spurious regression results and to ensure the validity of inferential analysis. The results are presented in Table 4.6.

Table 4. 6: Unit-Root test

Variable	Adjusted statistic	t- p- value	Decision (5% level)	Conclusion
LNFPPI (Food Production)	-3.4127	0.0003	Reject H_0	Stationary
LNTARRIFS (Tariff Reduction)	-3.1735	0.0008	Reject H_0	Stationary
LNBORDER (Non-tariff Barriers)	-1.6632	0.0481	Reject H_0	Stationary
LNDIVERSIFICATION (Market Access)	-3.8940	0.0000	Reject H_0	Stationary
LNTII (Inter-African Trade Intensity)	-2.3643	0.0090	Reject H_0	Stationary

The Levin–Lin–Chu (LLC) unit root test results presented in Table 4.6 indicate that all study variables are stationary at level. The adjusted t-statistics for all variables are negative and statistically significant, with p-values less than the 0.05 significance level. Specifically, food production (LNFPPI) recorded -3.4127 ($p = 0.0003$), tariff reduction (LNTARRIFS) -3.1735 ($p = 0.0008$), non-tariff barriers (LNBORDER) -1.6632 ($p = 0.0481$), market access (LNDIVERSIFICATION) -3.8940 ($p = 0.0000$), and inter-African trade intensity (LNTII) -2.3643 ($p = 0.0090$). Since all p-values are below 0.05, the null hypothesis of unit roots is rejected for all variables. This confirms that the panel data series are stationary at level ($I(0)$), implying the absence of stochastic trends. Therefore, the variables can be used directly in panel regression analysis without the need for differencing, ensuring reliable and unbiased estimation results.

4.4.6 Hausman Test Results

Table 4.7 presents the results of the Hausman specification test, which was conducted to determine the appropriate panel data estimation technique between the fixed effects model and the random effects model for analyzing the relationship between African Continental Free Trade Area and the food production in the East African Community.

Table 4. 7: Hausman Tests

	Coefficients ----			sqrt(diag(V_b-V_B)) S.E.
	(b) Fixed	(B) Random	(b-B) Difference	
Tariff Reduction	-0.0346	-0.03722	0.002616	0.003503
Non-tariff barrier	-0.02914	-0.03481	0.005665	0.004569
Market Access	0.029879	0.037149	-0.00727	0.004338
Inter-African trade intensity	0.17952	0.018191	0.161329	0.06022

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg
 Test: Ho: difference in coefficients not systematic
 $\chi^2(4) = (b-B)'[(V_b-V_B)^{-1}](b-B)$
 $= 8.19$
 Prob > $\chi^2 = 0.0848$

The results of the Hausman test are presented in Table 4.7. The test yielded a chi-square statistic of 8.19 with a corresponding p-value of 0.0848. Since the p-value is greater than the conventional 0.05 level of significance, the null hypothesis cannot be rejected. This indicates that the differences in coefficients between the fixed effects and random effects models are not statistically significant. Therefore, the random effects model is considered appropriate for this study as it provides more efficient estimates while remaining consistent. Consequently, the study adopts the random effects model to estimate the effect of tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity on food production in the East African Community.

Table 4. 8: Breusch–Pagan Lagrangian Multiplier (LM) test

Component	Variance (Var)	Standard Deviation (SD = $\sqrt{\text{Var}}$)
LNFPi	0.01219	0.11041
e (Idiosyncratic Error)	0.00637	0.07979
u (Random Effect)	0.00313	0.05595
Test Statistic		Value
chibar ² (01)		2.85
Prob > chibar ²		0.0455

The Breusch–Pagan Lagrangian Multiplier (LM) test was conducted to determine whether a panel data model is more appropriate than a pooled ordinary least squares (OLS) model (Table 4.8). The test evaluates the null hypothesis that there are no significant panel effects, meaning that the variance of the unobserved country-specific effects is equal to zero ($\text{Var}(u) = 0$). The results

indicate a chibar² statistic of 2.85 with a corresponding p-value of 0.0455. Since the p-value is less than the 0.05 significance level, the null hypothesis is rejected. This implies that unobserved country-specific effects are present and statistically significant. Therefore, the pooled OLS model is not appropriate, and a panel data model is preferred. This finding justifies the use of either fixed effects or random effects estimation techniques. Combined with the Hausman test results, the random effects model is adopted for this study as the most suitable specification.

4.5 Correlation Analysis

To examine the relationship between African Continental Free Trade Area and food production, a Pearson correlation analysis was conducted. The findings presented in Table 4.8 show the strength and direction of the relationship between food production and tariff reduction, non-tariff barrier reduction, market access and Inter-African trade intensity among food production in the East African Community.

Table 4. 9: Pearson Correlation Analysis

	LNFP	LNTARR~S	LNBORDER	LNDIVE~N
LNTARRIFS	-0.2446 0.0413	1		
LNBORDER	-0.4625 0.0001	0.0028 0.9819	1	
LNDIVERSII~N	0.3857 0.001	-0.0758 0.5328	-0.1981 0.1003	1
LNTII	-0.0221 0.8558	-0.0501 0.6804	0.0646 0.5954	-0.3752 0.0014

Tariff rates showed a negative and statistically significant relationship with food production ($r = -0.2446$, $p = 0.0413$). This indicates that higher tariff rates are associated with lower levels of food production in the East African Community. The finding is consistent with the theoretical expectation that tariff reduction improves food production, since lower tariff rates facilitate access to agricultural inputs, reduce trade costs, and improve market efficiency. Therefore, the negative relationship observed between tariff rates and food production should be interpreted as evidence

that tariff reduction is associated with improved agricultural production outcomes. The result supports the argument that trade liberalization under AfCFTA can contribute to enhanced food production through increased cross-border trade and improved access to production resources. It also supports the argument that trade liberalization under AfCFTA can contribute to improved food production outcomes through reduced trade costs and increased cross-border flows.

Non-tariff barriers exhibit a strong negative and statistically significant relationship with food production ($r = -0.4625$, $p = 0.0001$). This implies that longer border clearance times are associated with lower food production levels in the East African Community. The results highlight the adverse impact of trade inefficiencies, delays, and administrative bottlenecks on agricultural productivity. Reducing non-tariff barriers through improved trade facilitation measures may enhance food production by ensuring timely movement of agricultural goods and reducing transaction costs.

Market access shows a positive and statistically significant relationship with food production ($r = 0.3857$, $p = 0.001$). This indicates that increased export diversification and improved access to regional and international markets are associated with higher levels of food production. The finding suggests that broader market opportunities stimulate agricultural output by encouraging investment, enhancing competitiveness, and improving incentives for producers. It also supports the view that AfCFTA-driven market integration can strengthen food production systems within the East African Community.

Inter-African trade intensity demonstrates a negative but statistically insignificant relationship with food production ($r = -0.0221$, $p = 0.8558$). This suggests that variations in intra-African trade intensity do not have a meaningful linear association with food production in the East African Community. The lack of significance may indicate that structural constraints, such as infrastructure gaps and policy inconsistencies, limit the effectiveness of regional trade integration. Further analysis is required to determine its influence when controlling for other variables.

4.6 Random Effect Linear Regression

The general objective of the study was to examine the effect of African Continental Free Trade Area on food production in the East African Community. Multiple linear regression analysis was conducted to assess the joint effect of independent variable on food production. Table 4.10 presents the results of the random effects model.

Table 4. 10: Regression Random Effect of African Continental Free Trade Area on Food production

Random-effects GLS regression	Number of obs	=	70
Group variable: CountryID	Number of groups	=	7
R-squared:	Obs per group:		
Within = 0.4008	min	=	10
Between = 0.3129	avg	=	10
Overall = 0.3535	max	=	10
	Wald chi2(4)	=	41.3
corr(u _i , X) = 0 (assumed)	Prob > chi2	=	0.000

The results of the random effects regression model are presented in Table 4.10. The model was estimated using 70 observations across 7 countries, with each country contributing 10 observations, indicating a balanced panel. The model reports three types of R-squared values: within, between, and overall R-squared, each capturing a different dimension of variation in panel data. The within R-squared (0.4008) measures how well the independent variables explain variations in food production within each country over time. This indicates that approximately 40.08% of the changes in food production within individual EAC countries are explained by tariff reduction, non-tariff barriers, market access, and inter-African trade intensity. The between R-squared (0.3129) explains variation in food production across different countries. It shows that about 31.29% of the differences in food production between EAC countries are accounted for by the model variables. The overall R-squared (0.3535) represents the combined explanatory power of the model across both time and cross-sectional dimensions. This implies that the model explains 35.35% of the total variation in food production across countries and over time. The Wald chi-square statistic of 41.3 with a p-value of 0.000 indicates that the model is statistically significant,

implying that the independent variables jointly have a significant effect on food production in the East African Community.

The regression model explained approximately 35.35% of the variation in food production within the East African Community. While this level of explanatory power is acceptable for studies involving complex socio-economic phenomena, it also indicates that a substantial proportion of the variation in food production is influenced by factors not captured in the model (Bofa & Zewotir, 2024; Silva et al., 2023; Ozili, 2023). Food production is a multifaceted outcome affected by climatic conditions, technological adoption, agricultural investment, infrastructure development, access to finance, land availability, policy interventions, and institutional factors. Long-term and short-term climate shifts, such as unreliable precipitation and rising temperatures, which create non-linear impacts on production (Ochieng et al., 2016). Therefore, although tariff reduction, non-tariff barriers, market access, and inter-African trade intensity contribute to explaining food production outcomes, other determinants also play an important role. The relatively modest explanatory power of the model suggests that future studies should incorporate additional economic, environmental, and institutional variables to provide a more comprehensive explanation of food production dynamics in the EAC.

Table 4. 11: Regression Coefficient of Random Effect

LNFPi	Coefficient	Std. err.	z	P>z	[95% conf. interval]
Tariff Reduction	-0.03722	0.015417	-2.41	0.016	-0.06743 -0.007
Non-tariff barrier	-0.03481	0.008756	-3.98	0.000	-0.05197 -0.01765
Market Access	0.037149	0.010826	3.43	0.001	0.01593 0.058368
Inter-African trade intensity	0.018191	0.014998	1.21	0.225	-0.0112 0.047586
_cons	4.786535	0.065935	72.6	0.000	4.657305 4.915764

The multiple regression results in Table 4.11 show the individual contribution of each African Continental Free Trade Area component to food production in the East African Community, Kenya. The regression model is:

$$Y = 4.787 - 0.03722X_{1it} - 0.03481X_{2it} + 0.037149X_{3it} + 0.018191X_{4it}$$

Where:

Y = Food production

X₁ = Tariff Reduction

X₂ = Non-tariff barrier

X₃ = Market Access

X₄ = Inter-African trade intensity

Table 4.11 presents the estimated coefficients of the random effects regression model examining the effect of AfCFTA variables on food production in the East African Community.

Tariff reduction has a negative and statistically significant effect on food production ($\beta = -0.03722$, $p = 0.016$). The results indicate that higher tariff rates are associated with lower levels of food production in the East African Community. This negative and statistically significant relationship suggests that higher tariffs hinder agricultural productivity by limiting access to inputs and restricting cross-border trade. Conversely, reducing tariffs under AfCFTA may enhance food production by lowering trade costs, improving market efficiency, and enabling producers to access wider regional markets, thereby strengthening agricultural output within the East African Community.

Non-tariff barriers also show a negative and highly significant effect ($\beta = -0.03481$, $p = 0.000$). The findings indicate that longer border clearance times and trade-related administrative inefficiencies are associated with lower levels of food production. This negative and highly significant relationship suggests that delays in the movement of goods increase transaction costs, disrupt agricultural supply chains, and contribute to post-harvest losses. Therefore, reducing non-tariff barriers through improved trade facilitation mechanisms is essential for enhancing food production and ensuring efficient regional food distribution systems.

Market access has a positive and statistically significant effect on food production ($\beta = 0.037149$, $p = 0.001$). The findings indicate that greater access to export markets is associated with higher levels of food production in the East African Community. This positive and statistically significant relationship suggests that broader market opportunities create incentives for increased agricultural production, encourage investment in the sector, and enhance competitiveness. Under AfCFTA,

expanded market access enables producers to benefit from larger regional markets, thereby strengthening food production systems within the region.

Inter-African trade intensity exhibits a positive but statistically insignificant effect ($\beta = 0.018191$, $p = 0.225$). The positive coefficient suggests that greater intra-African trade may be associated with improved food production; however, the relationship is not statistically significant. This implies that the effect is weak and cannot be reliably distinguished from zero. The finding may reflect persistent structural challenges such as inadequate infrastructure, policy inconsistencies, limited value chain development, and uneven implementation of regional trade reforms. Consequently, increasing trade intensity alone may not significantly enhance food production without complementary investments and institutional support mechanisms.

The constant term ($\beta = 4.786535$, $p = 0.000$) represents the baseline level of food production when all independent variables are held constant. Overall, the results indicate that tariff reduction, non-tariff barrier reduction, and market access are key drivers of food production in the East African Community, while inter-African trade intensity does not have a significant independent effect. The study found that intra-African trade intensity had a positive but statistically insignificant effect on food production in the East African Community. This finding suggests that increased trade within Africa does not automatically translate into higher food production levels. Several factors may explain this outcome. First, although AfCFTA seeks to deepen regional trade integration, actual intra-African agricultural trade remains relatively low compared to trade with external markets, limiting its influence on domestic production decisions. Second, the composition of intra-African trade may not be sufficiently concentrated in food and agricultural commodities to generate measurable production effects. Kale and Marimo (2025) argue that much of intra-African trade continues to consist of low-value or non-agricultural products, reducing the direct impact on food systems. Third, persistent structural constraints such as inadequate transport infrastructure, high logistics costs, weak storage facilities, and border inefficiencies may prevent increased trade intensity from stimulating agricultural production. Fusacchia et al. (2022) contend that trade integration benefits are often constrained when supporting infrastructure and institutions remain underdeveloped.

4.6.1 Ramsey RESET Test for Model Specification

The Ramsey RESET test was conducted to assess whether the model suffered from omitted variable bias or functional form misspecification as shown in Table 4.12.

Table 4. 12: Ramsey RESET Test for Model Specification

Test	Statistic	p-value	Decision
Ramsey RESET Test	$F(3,62) = 1.06$	0.3741	Fail to reject H_0

The test results indicated that the model had no omitted variables ($F = 1.06$, $p = 0.3741$). Since the p-value was greater than 0.05, the null hypothesis was not rejected. This suggests that there is no evidence of omitted variables or incorrect functional form in the model, implying that the model was correctly specified and suitable for analysis.

4.6.2 Outlier Test

An outlier assessment was conducted using the distribution of model residuals. The residuals were centered around zero and exhibited no extreme values, indicating the absence of influential outliers that could materially affect the regression results. The findings were therefore considered robust to potential outlier effects as shown in Table 4.13.

Table 4. 13: Outlier Test

Percentiles		e[CountryID,t]			
		Smallest			
1%	-0.15072		-0.1507216		
5%	-0.11847		-0.127846		
10%	-0.11026		-0.1212915	Obs	70
25%	-0.06818		-0.1184719	Sum of Wgt.	70
50%	0.006389			Mean	9.31E-11
		Largest		Std. Dev.	0.078564
75%	0.053679		0.1278441		
90%	0.089369		0.1280546	Variance	0.006172
95%	0.127844		0.179854	Skewness	0.203984
99%	0.204728		0.2047281	Kurtosis	2.553453

The residual analysis indicated that the model residuals were well-behaved and did not exhibit signs of influential outliers. The residuals were centered around zero, with a mean of approximately $9.31e-11$, suggesting that the model predictions were unbiased. The standard deviation was 0.0786, indicating relatively low dispersion around the mean. The residuals ranged from a minimum of -0.1507 to a maximum of 0.2047, showing no evidence of extreme negative or positive observations. Furthermore, the skewness coefficient of 0.2040 was close to zero, indicating that the residuals were approximately symmetrically distributed, while the kurtosis value of 2.5535 was close to the normal benchmark of three, suggesting no serious heavy-tail problem. Since the residual values fell within the narrow range of -0.1507 to 0.2047, which is well below the commonly accepted thresholds used to identify influential outliers, the results suggest that outliers were not a significant concern and are unlikely to have materially affected the regression estimates.

4.7 Chapter Summary

This chapter presented the empirical findings of the study on the effect of the African Continental Free Trade Area (AfCFTA) on food production in the East African Community (EAC). The analysis began with descriptive statistics and correlation analysis to establish preliminary relationships among the study variables. Diagnostic tests, including tests for multicollinearity, heteroskedasticity, autocorrelation, and model specification, confirmed that the data satisfied the assumptions required for panel regression analysis. The Breusch–Pagan Lagrangian Multiplier test indicated the presence of panel effects, justifying the use of panel data techniques over pooled regression. The Hausman test further confirmed that the random effects model was the most appropriate estimation approach for the study. The regression results revealed that tariff reduction and non-tariff barriers have negative and statistically significant effects on food production, while market access has a positive and significant effect. Inter-African trade intensity was found to have a positive but statistically insignificant effect on food production. Overall, the findings demonstrate that AfCFTA trade reforms play a significant role in influencing food production outcomes within the EAC.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions, and recommendations of the study on the effect of African Continental Free Trade Area on food production in the East African Community, Kenya. The chapter is organized into four sections. The first section provides a summary of key findings based on the study objectives. The second section presents discussion of the findings. The third section presents conclusions drawn from the findings. The fourth section outlines recommendations for investment firms, policymakers, and regulators. The fifth section outlines limitations of the study. The final section provides suggestions for further research in areas requiring additional investigation.

5.2 Summary of the Findings

The overarching objective of this study was to examine the effect of the African Continental Free Trade Area (AfCFTA) on food production in the East African Community (EAC). In line with this objective, the study specifically evaluated the influence of tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity on food production. The analysis utilized panel data from the seven EAC member states over a ten-year period (2016–2025), yielding a total of 70 country-year observations. To determine the appropriate estimation technique, the Hausman specification test was conducted, and the results supported the use of the random effects model for analysis. Panel regression results from the random effects model indicated that food production is explained by tariff reduction, non-tariff barriers, market access, and inter-African trade intensity. The model was statistically significant. Tariff reduction affected food production.

The first objective of the study was to analyze the effect of tariff reduction on food production in the East African Community. Descriptive statistics indicated moderate variation in tariff rates across countries and time. Correlation analysis showed a negative and statistically significant relationship between tariff rates and food production. Panel regression results further confirmed

that tariff rates had a significant effect on food production. This indicates that reducing tariffs enhances agricultural output.

The second objective was to determine the effect of non-tariff barriers on food production in the East African Community. Descriptive statistics revealed considerable variation in border clearance time, reflecting trade inefficiencies. Correlation results showed a strong negative and statistically significant relationship with food production. Panel regression findings confirmed that non-tariff barriers had a significant effect on food production. This demonstrates that reducing non-tariff barriers significantly improves food production.

The third objective was to assess the effect of market access on food production in the East African Community. Descriptive statistics showed increasing trends in export diversification across the study period. Correlation analysis indicated a positive and statistically significant relationship with food production. Panel regression results further revealed that market access had a significant effect on food production. This suggests that expanded market access significantly enhances agricultural productivity.

The fourth objective was to evaluate the effect of inter-African trade intensity on food production in the East African Community. Descriptive statistics indicated fluctuations in trade intensity across countries. Correlation results showed a negative but statistically insignificant relationship with food production. Panel regression findings indicated that inter-African trade intensity had a positive but statistically insignificant effect on food production. This implies a weak and inconclusive relationship.

5.3 Discussion of the Findings

This section discusses the study findings in relation to the research objectives, existing empirical literature, and the theoretical framework underpinning the study. The discussion focuses on how AfCFTA trade provisions tariff reduction, non-tariff barrier reduction, market access, and inter-African trade intensity influence food production in the East African Community.

5.3.1 Effect of Tariff Reduction on Food Production

The findings of this study indicate that tariff reduction has a significant influence on food production in the East African Community. Specifically, higher tariff levels constrain agricultural output, while reducing tariffs enhances food production by improving access to inputs and expanding market opportunities. This implies that trade liberalization under AfCFTA plays a critical role in strengthening agricultural productivity by lowering trade costs, improving efficiency, and enabling producers to participate more effectively in regional markets. It further suggests that reducing trade barriers is essential for enhancing food availability and supporting stable food systems within the region.

The significant effect of tariff reduction on food production suggests that trade liberalization is an important mechanism through which agricultural productivity can be enhanced within the East African Community. High tariff levels increase the cost of importing agricultural inputs and limit access to wider markets, thereby constraining production activities. By lowering these costs, tariff reduction improves the affordability and availability of inputs required for agricultural production while simultaneously creating opportunities for producers to expand their market reach. This encourages greater participation in regional trade and creates conditions that support increased agricultural output.

The findings further imply that reducing tariffs contributes to a more integrated and efficient agricultural sector by facilitating the movement of goods across borders and strengthening market linkages within the region. Improved access to regional markets increases demand opportunities for agricultural producers and provides stronger incentives for investment and production expansion. In addition, lower trade barriers promote a more predictable trading environment, enabling producers to plan and allocate resources more effectively. Within the EAC, where agriculture remains a key driver of economic activity and livelihoods, tariff reduction can therefore play a crucial role in enhancing food availability, supporting food system stability, and promoting sustainable agricultural development.

This finding is consistent with existing empirical literature that emphasizes the positive role of tariff liberalization in improving food production outcomes. Simola et al. (2021) and Janssens et

al. (2022) argue that reducing agricultural tariffs facilitates smoother trade flows, strengthens regional value chains, and enhances productivity. Similarly, Gren et al. (2024) and Rabbi et al. (2021) highlight that trade openness improves food availability and system resilience by stabilizing supply chains and reducing price distortions. Within the African context, Pasara (2025) further supports the view that tariff reduction contributes to improved food availability, although outcomes may vary depending on infrastructure and coordination across countries.

However, some studies present contrasting perspectives on the effects of tariff reduction. Häberli (2025) argues that trade liberalization may expose domestic producers to increased competition from imports, potentially weakening local agricultural systems if protective measures are not in place. This concern is particularly relevant in the EAC, where small-scale farmers dominate production and often face structural constraints such as limited access to finance, weak value chains, and low productivity. Supporting this view, Tiba (2023) and MacLeod (2025) emphasize that while tariff reduction can facilitate food flows, its benefits may not fully materialize without strengthening domestic production capacity and institutional support systems.

From a theoretical perspective, the findings strongly support New Trade Theory, which posits that reducing trade barriers enhances production efficiency by expanding market size, enabling economies of scale, and improving resource allocation. As noted by Zhong (2024) and Wang and Wang (2025), trade integration promotes competitiveness and productivity through access to larger markets. In addition, the findings align with Food Production Theory, which emphasizes the importance of efficient and integrated market systems in ensuring food availability. Reduced tariffs improve the movement of agricultural commodities across borders, thereby contributing to more stable and accessible food supplies, particularly within integrated regional frameworks such as the EAC.

The findings demonstrate that tariff reduction under AfCFTA is a key driver of food production in the East African Community. While the results are consistent with both theory and supporting empirical evidence, they also highlight important contextual limitations, particularly the vulnerability of local producers and the presence of structural constraints. This suggests that the effectiveness of tariff liberalization depends on a balanced approach that combines trade openness with targeted domestic support policies, improved infrastructure, and stronger institutional

coordination. By integrating these elements, AfCFTA can more effectively translate trade reforms into sustained improvements in food production and regional food system resilience.

5.3.2 Effect of Non-Tariff Barrier on Food Production

The findings of this study indicate that non-tariff barriers have a significant influence on food production in the East African Community. Specifically, increased border clearance time constrains food production, while reducing non-tariff barriers enhances agricultural output by improving the efficiency of cross-border trade. This implies that trade facilitation under AfCFTA plays a critical role in strengthening food production by ensuring timely movement of agricultural inputs and outputs, reducing transaction costs, and minimizing post-harvest losses. It further suggests that inefficiencies in customs procedures and administrative systems directly undermine agricultural productivity and food system performance within the region.

The significant effect of non-tariff barriers on food production suggests that the efficiency of cross-border trade processes is a key factor influencing agricultural performance within the East African Community. Longer border clearance procedures disrupt the timely movement of agricultural inputs and outputs, increasing transaction costs and creating uncertainty within agricultural value chains. Such delays can limit farmers' access to essential production inputs, constrain market participation, and reduce the efficiency with which agricultural commodities move from production areas to consumers. As a result, inefficiencies in trade procedures may weaken production incentives and undermine efforts to increase agricultural output across the region.

The findings further imply that reducing non-tariff barriers can contribute to a more stable and productive agricultural sector by facilitating smoother trade flows and improving market integration. When goods move more efficiently across borders, producers are better able to access wider markets, respond to demand opportunities, and minimize losses associated with delays and spoilage. This creates a more predictable trading environment that encourages production and investment in agriculture. Within the EAC, where agricultural markets are increasingly interconnected, improvements in trade facilitation are likely to strengthen regional food systems by enhancing the availability of agricultural products and supporting sustained growth in food production.

This finding is strongly supported by existing empirical literature, which highlights the importance of reducing non-tariff barriers in improving food production outcomes. Gopinath et al. (2024) found that streamlining customs procedures and harmonizing trade standards significantly improves food availability by reducing delays in food imports. Similarly, Ramli et al. (2025) emphasize that lowering procedural bottlenecks enhances supply chain efficiency, particularly for perishable agricultural goods. Within developing regions, Toromade et al. (2024) and Ibekwe (2024) demonstrate that improving trade systems and reducing administrative inefficiencies strengthens food access and stabilizes food systems. In the African context, Umar et al. (2024), Choi et al. (2025), and Kallummal et al. (2024) further show that non-tariff barriers such as delays, restrictive regulations, and documentation requirements disrupt food distribution and increase food insecurity, reinforcing the importance of trade facilitation in enhancing food production.

However, the findings also reflect contrasting perspectives in the literature. While many studies emphasize the benefits of non-tariff barrier reduction, others caution that the effectiveness of such reforms depends on institutional capacity and policy coordination. Asaju and Kwakano (2025) argue that weak governance structures and poor coordination of cross-border processes may limit the impact of trade facilitation reforms. Similarly, Naseri et al. (2025) highlight that restrictive border practices and fragile institutional systems can continue to disrupt food flows even when reforms are introduced. These concerns are particularly relevant in the EAC context, where uneven implementation of trade policies and persistent administrative bottlenecks continue to affect the efficiency of regional trade systems. This suggests that reducing non-tariff barriers alone may not automatically translate into improved food production without addressing broader governance and institutional challenges.

From a theoretical perspective, the findings are consistent with both New Trade Theory and Food Production Theory. New Trade Theory emphasizes that reducing trade frictions enhances efficiency, promotes specialization, and improves productivity by facilitating access to larger markets. By minimizing non-tariff barriers, AfCFTA enables smoother trade flows and reduces inefficiencies that constrain production. At the same time, Food Production Theory highlights the importance of efficient supply chains and market systems in ensuring food availability and stability. Reduced border delays improve the movement of agricultural commodities, thereby

strengthening food availability within the region. However, as noted by Zirgulis and Hashimoto (2023) and Asche (2021), theoretical gains from trade integration may be constrained by real-world frictions such as infrastructure gaps and regulatory inconsistencies, which remain prevalent in the EAC context.

The findings demonstrate that non-tariff barrier reduction is a critical driver of food production in the East African Community, with strong support from both empirical and theoretical perspectives. However, the effectiveness of such reforms is contingent upon the strength of institutional frameworks, coordination of trade policies, and investment in trade infrastructure. Without addressing these structural constraints, the potential benefits of AfCFTA in enhancing food production may not be fully realized. Therefore, improving trade facilitation must be accompanied by broader institutional and infrastructural reforms to ensure sustainable and inclusive gains in food production across the region.

5.3.3 Effect of Market Access on Food Production

The findings of this study indicate that market access plays a critical and transformative role in influencing food production in the East African Community. Specifically, expanded market access enhances food production by creating broader and more stable demand for agricultural products, improving incentives for producers, and facilitating access to diversified regional and international markets. This implies that AfCFTA-driven market integration is not merely a trade mechanism but a production-enhancing strategy that strengthens agricultural output through increased competitiveness, investment opportunities, and efficient allocation of resources. In the EAC context, improved market access reduces dependency on limited trading partners, enhances resilience to market shocks, and supports sustained growth in food production systems.

The significant effect of market access on food production suggests that the availability of broader and more diversified markets is an important driver of agricultural growth within the East African Community. Expanded market access creates greater demand opportunities for agricultural products, encouraging producers to increase production and invest in productivity-enhancing activities. Access to wider markets also reduces the risks associated with dependence on a limited number of buyers or trading partners, thereby providing a more stable environment for agricultural

production. As producers gain confidence in their ability to sell output beyond domestic markets, they are more likely to allocate resources towards expanding production, adopting improved technologies, and enhancing overall production efficiency.

The findings further imply that market integration under AfCFTA has the potential to strengthen food production by improving the connection between producers and consumers across the region. Enhanced market access facilitates the movement of agricultural commodities to areas where demand is highest, promoting more efficient allocation of resources and reducing market inefficiencies. It also creates opportunities for producers to benefit from economies of scale, increased competitiveness, and greater investment in agricultural activities. Within the EAC, where agriculture remains a major source of livelihoods and economic growth, improved market access can contribute to more resilient food systems by strengthening production incentives, supporting stable market conditions, and enhancing the long-term sustainability of food production.

This finding is strongly supported by empirical literature, which consistently emphasizes the positive relationship between market access and food production outcomes. Yesbolova et al. (2024) demonstrate that enhanced market integration improves food system stability by strengthening cross-border connectivity and reducing supply disruptions. Similarly, Hassan (2024) shows that policies promoting broader market participation significantly enhance food availability and affordability. Marion et al. (2024) further argue that improved market access increases agricultural output and reduces vulnerability to food price shocks. Within Africa, Rahman et al. (2025) and Mutale et al. (2025) highlight that stronger market linkages improve food availability and stabilize supply systems, while Bonuedi et al. (2022) finds that access to well-functioning markets reduces transaction costs and improves food security outcomes. These studies collectively reinforce the view that market access is a key driver of food production.

However, the findings also reflect important contradictions within the literature. While many studies emphasize the benefits of market access, others caution that its effectiveness depends on underlying structural conditions. Mutale et al. (2025) argue that without adequate infrastructure and policy coordination, improved market access may not translate into meaningful production gains. In the EAC context, Chivunga and Tempest (2022) highlight that weak digital integration

and fragmented value chains limit the efficiency of cross-border trade. Similarly, Wassie et al. (2025) and Masiya et al. (2023) emphasize that logistical constraints, high transport costs, and persistent non-tariff barriers continue to restrict the benefits of market integration. Further, studies by Onono et al. (2024) and Chigudu (2025) indicate that although market liberalization improves trade flows, its direct impact on food production outcomes remains uncertain, suggesting that market access alone may not be sufficient to drive sustained agricultural productivity.

From a theoretical perspective, the findings strongly support New Trade Theory, which emphasizes that expanded market access enhances productivity through economies of scale, improved resource allocation, and increased specialization. As noted by Zhong (2024), Wang and Wang (2025), Jerzy et al. (2022), and Chandra (2021), access to larger markets enables producers to increase efficiency and competitiveness. However, the theory's limitations, as highlighted by Zirgulis and Hashimoto (2023) and Asche (2021), suggest that real-world constraints such as infrastructure gaps and regulatory inconsistencies may limit these benefits. In addition, the findings align with Food Production Theory, which emphasizes that efficient and integrated markets are essential for ensuring food availability and stability. By improving access to diversified markets, AfCFTA enhances food system performance through better distribution and production incentives, although these outcomes remain dependent on broader institutional and structural conditions.

The findings demonstrate that market access is a powerful driver of food production in the East African Community, with strong support from both empirical and theoretical perspectives. However, the effectiveness of market access reforms is not automatic and depends on the extent to which structural barriers such as infrastructure deficiencies, policy inconsistencies, and weak value chains are addressed. This suggests that while AfCFTA provides a critical framework for expanding market opportunities, its success in enhancing food production requires complementary investments in trade infrastructure, institutional coordination, and agricultural development. By integrating these elements, market access can more effectively translate into sustained improvements in food production and regional food system resilience.

5.3.4 Effect of Inter-African Trade Intensity on Food Production

The findings of this study indicate that inter-African trade intensity has a weak and statistically insignificant influence on food production in the East African Community. While increased regional trade integration under AfCFTA is expected to enhance food production by improving market linkages and facilitating the movement of agricultural commodities, the results suggest that this relationship is not strong enough to produce meaningful production gains. This implies that simply increasing the volume of intra-African trade does not automatically translate into improved food production outcomes. Instead, it highlights the presence of deeper structural constraints such as inadequate infrastructure, weak value chains, and policy inconsistencies that limit the effectiveness of regional trade integration in enhancing agricultural productivity within the EAC.

The insignificant effect of inter-African trade intensity on food production suggests that increased regional trade alone is insufficient to generate meaningful improvements in agricultural output within the East African Community. Although greater trade intensity may enhance the movement of agricultural commodities across borders, its impact on production appears to be limited by factors beyond the volume of trade itself. This indicates that the existence of regional trade linkages does not automatically create the conditions necessary for higher agricultural productivity. Producers may continue to face constraints related to production capacity, access to inputs, technology adoption, financing, and market infrastructure, thereby limiting the extent to which increased regional trade can stimulate food production.

The findings further imply that the benefits of regional trade integration are likely to depend on the presence of complementary economic and institutional conditions. Without efficient transport networks, well-developed value chains, coordinated trade policies, and adequate investment in agriculture, increased trade intensity may have little influence on production decisions at the farm level. In the EAC context, the results suggest that efforts to strengthen food production should focus not only on promoting regional trade but also on addressing structural challenges that constrain agricultural productivity. Therefore, while inter-African trade remains important for market integration and economic cooperation, its contribution to food production is likely to

remain limited unless accompanied by broader reforms aimed at improving the competitiveness and efficiency of the agricultural sector.

This finding is supported by existing empirical literature, which recognizes the potential benefits of increased intra-African trade while also emphasizing its limitations. Adedokun (2024) argues that deeper regional trade integration can reduce transaction costs and stabilize commodity flows, thereby improving food system performance. Similarly, Bouët et al. (2022) highlight that increased intra-African agricultural trade can enhance food availability by diversifying supply sources and reducing dependence on global markets. Ogunniyi et al. (2021) further show that inter-African trade is associated with reduced hunger levels, while Fusacchia et al. (2022) emphasize that AfCFTA has the potential to strengthen agricultural trade through improved value chain linkages. These studies collectively support the idea that trade intensity can contribute to improved food systems.

However, the findings also align with a substantial body of literature that questions the direct impact of trade intensity on food production. Fusacchia et al. (2022) and Ogunniyi et al. (2021) caution that the benefits of increased trade are often uneven and depend on factors such as logistics efficiency, policy harmonization, and commodity composition. Kale and Marimo (2025) argue that low levels of processed agricultural exports limit the developmental impact of intra-African trade, while Idu et al. (2025) show that although trade integration may improve welfare outcomes, its direct effect on production systems is not always evident. Similarly, Nwali et al. (2025) and Odjo and Traoré (2024) emphasize that structural challenges such as limited product diversification, high transport costs, and persistent trade barriers continue to restrict the contribution of intra-African trade to food production. These findings suggest that trade intensity alone is insufficient to drive meaningful improvements in agricultural output.

From a theoretical perspective, the findings partially support New Trade Theory, which posits that increased trade integration enhances productivity through economies of scale and improved resource allocation. While greater intra-African trade should theoretically expand market size and improve efficiency, the weak relationship observed in this study reflects the limitations of the theory in real-world contexts. As noted by Zirgulis and Hashimoto (2023) and Asche (2021), structural constraints such as infrastructure deficiencies and regulatory inconsistencies often

prevent countries from fully realizing the benefits of trade integration. In addition, the findings align with Food Production Theory, which emphasizes that food production depends not only on market integration but also on the efficiency of supply chains and institutional systems. Without effective coordination and infrastructure, increased trade intensity may not translate into improved food availability or production outcomes.

Overall, the findings demonstrate that while inter-African trade intensity has the potential to support food production under AfCFTA, its current impact in the East African Community remains limited. This reflects the gap between policy ambition and implementation reality, where structural and institutional barriers continue to constrain the effectiveness of regional trade integration. Therefore, enhancing food production through AfCFTA requires more than increasing trade intensity; it necessitates targeted investments in infrastructure, value chain development, policy harmonization, and institutional capacity. By addressing these constraints, intra-African trade can more effectively contribute to sustainable food production and regional food system resilience.

5.4 Conclusion

The first objective of the study was to examine the effect of tariff reduction on food production in the East African Community. The study concludes that tariff reduction significantly enhances food production by lowering trade barriers, improving access to agricultural inputs, and expanding market opportunities for producers. However, the effectiveness of tariff liberalization depends on complementary domestic policies that strengthen agricultural productivity and protect local producers from adverse competitive pressures.

The second objective was to determine the effect of non-tariff barriers on food production in the East African Community. The study concludes that non-tariff barriers significantly constrain food production by causing delays, increasing transaction costs, and disrupting the movement of agricultural goods. Therefore, reducing non-tariff barriers through improved trade facilitation, streamlined customs procedures, and harmonized regulations is essential for enhancing food production and ensuring efficient regional food systems.

The third objective was to assess the effect of market access on food production in the East African Community. The study concludes that improved market access significantly enhances food production by creating incentives for increased agricultural output, promoting investment, and strengthening competitiveness. However, the realization of these benefits requires addressing structural challenges such as infrastructure gaps, weak value chains, and regulatory inconsistencies that limit effective market participation.

The fourth objective was to evaluate the effect of inter-African trade intensity on food production in the East African Community. The study concludes that inter-African trade intensity has a limited and inconclusive effect on food production. While regional trade integration has the potential to enhance food systems, its current impact is constrained by structural and institutional challenges. Therefore, increasing trade intensity alone is insufficient, and must be supported by investments in infrastructure, value chain development, and policy coordination to achieve meaningful improvements in food production.

The study further concludes that the findings strongly support the propositions of the New Trade Theory and Food Security Theory. The positive effects of tariff reduction, reduced non-tariff barriers, and improved market access on food production affirm the argument of New Trade Theory that regional trade integration, expanded markets, and reduced trade costs enhance production efficiency and productivity. At the same time, the findings support Food Security Theory by demonstrating that efficient trade systems and improved food movement contribute to greater food availability and stability within the region. However, the insignificant effect of inter-African trade intensity indicates that trade integration alone cannot guarantee improvements in food production without adequate institutional support, infrastructure development, and policy harmonization. The study therefore concludes that while AfCFTA provides an important framework for enhancing food production in the EAC, its success depends on the effective implementation of supportive regional and domestic policies.

5.5 Recommendations

5.5.1 Recommendation for Policy

Based on the findings of this study, several policy recommendations are proposed to enhance the effectiveness of AfCFTA in improving food production within the East African Community (EAC).

The study found that tariff rates had a significant negative effect on food production. Therefore, EAC governments and the AfCFTA Secretariat should accelerate the implementation of tariff liberalization measures for agricultural products. Priority should be given to reducing tariffs on agricultural inputs such as seeds, fertilizers, farm machinery, and other production-enhancing technologies. This would lower production costs, improve farmers' access to essential inputs, and enhance agricultural productivity across the region.

The findings revealed that non-tariff barriers significantly constrain food production. Policymakers should therefore strengthen trade facilitation measures by reducing border clearance times, harmonizing customs procedures, digitizing border processes, and improving coordination among border agencies. Particular attention should be given to streamlining sanitary and phytosanitary certification processes to minimize delays in the movement of agricultural commodities across EAC member states.

Since market access was found to have a significant positive effect on food production, governments should support export diversification initiatives and strengthen access to regional agricultural markets. This can be achieved through trade promotion programs, market information systems, export support services, and the removal of remaining barriers that limit access to regional markets. Expanding market opportunities would create stronger production incentives for agricultural producers.

Although inter-African trade intensity had a positive coefficient, its effect was not statistically significant. Consequently, policymakers should not focus solely on increasing trade volumes. Instead, future policy interventions should prioritize improving the composition and efficiency of agricultural trade by strengthening agricultural value chains and addressing constraints that may

limit the translation of trade flows into food production gains. Since infrastructure and institutional quality were not directly tested in this study, further empirical research should first establish their specific contribution before major policy interventions are designed around them.

5.5.2 Recommendation for Practice

Given that tariff reduction was found to have a significant effect on food production, agricultural producers, agribusiness firms, and exporters should take advantage of lower tariff regimes under AfCFTA by expanding cross-border sourcing of agricultural inputs and increasing participation in regional agricultural markets. Producer organizations should also enhance awareness among farmers regarding emerging market opportunities created through tariff liberalization to maximize production gains.

The significant effect of non-tariff barriers on food production highlights the need for customs agencies, border management authorities, and trade facilitation institutions to prioritize the reduction of border clearance delays and administrative bottlenecks. Agricultural traders and exporters should adopt digital trade documentation systems and strengthen compliance with regional trade requirements to facilitate faster movement of agricultural products and reduce transaction costs.

Since market access significantly enhanced food production, agricultural producers, cooperatives, and export-oriented agribusinesses should actively pursue market diversification strategies by exploring new regional markets within Africa. Trade support organizations should strengthen market information systems, provide export readiness training, and facilitate business linkages that enable producers to access a broader range of markets and increase production incentives.

Although inter-African trade intensity exhibited a positive relationship with food production, the effect was not statistically significant. Therefore, agricultural stakeholders should focus not only on increasing trade volumes but also on improving the quality and value of agricultural products traded within the region. Producers and agribusinesses should strengthen value addition, product competitiveness, and participation in regional value chains to ensure that increased trade activities

translate into meaningful food production outcomes. Further research is necessary to identify the factors that may strengthen the relationship between intra-African trade and food production.

5.5.3 Theoretical Recommendations

The findings provide strong support for New Trade Theory by demonstrating that reductions in trade barriers and improvements in market access contribute significantly to food production within the East African Community. The significant effects of tariff reduction, non-tariff barrier reduction, and market access suggest that agricultural producers benefit from lower transaction costs, improved access to production inputs, and expanded market opportunities. These findings reinforce the theoretical proposition that trade liberalization enhances productive efficiency and stimulates output through greater market integration. The results therefore extend the applicability of New Trade Theory beyond traditional trade and welfare outcomes by showing that regional trade reforms can also influence agricultural production performance in developing regional blocs such as the EAC.

The study also contributes to Food Production Theory by highlighting the importance of trade-related factors in shaping food production outcomes. While the theory emphasizes production efficiency, resource availability, and market functioning, the findings demonstrate that food production is significantly influenced by the extent to which trade systems facilitate the movement of agricultural inputs and outputs. However, the statistically insignificant effect of inter-African trade intensity suggests that increased regional trade alone may not automatically translate into higher food production. This finding indicates that the relationship between trade integration and food production is more complex than theoretical expectations imply and may depend on additional factors such as competitiveness, value-chain development, and production capacity that warrant further theoretical exploration.

5.6 Limitations of the Study

This study was subject to several limitations, which were carefully addressed to ensure the reliability of the findings. First, the study relied on secondary panel data obtained from international databases, which may contain inconsistencies, missing values, or measurement errors

across countries and time periods. To overcome this limitation, the data were carefully cleaned, cross-checked across multiple sources, and standardized to ensure consistency and comparability across all observations. AfCFTA implementation was not uniform across EAC member states during the study period. In addition, South Sudan and the Democratic Republic of Congo joined regional integration frameworks at different stages and may have experienced varying levels of AfCFTA implementation compared to older member states.

Second, the study focused on a limited set of variables tariff reduction, non-tariff barriers, market access, and inter-African trade intensity and did not include other factors such as climate variability, technological adoption, political stability, and institutional quality. To mitigate this limitation, the study employed a panel data approach that controls for unobserved heterogeneity across countries and over time, thereby reducing the risk of omitted variable bias.

Third, the analysis was restricted to seven East African Community countries over a ten-year period, which may limit the generalizability of the findings. This limitation was addressed by using a balanced panel dataset and selecting a period that captures both pre- and post-AfCFTA implementation phases, thereby improving the robustness and relevance of the results within the regional context.

Finally, although the study used panel regression techniques to analyze relationships among variables, the results are primarily associative and may not fully establish causality. To address this, appropriate diagnostic tests including the Hausman test and Breusch–Pagan Lagrangian Multiplier test were conducted to ensure the validity of the model and strengthen the reliability of the findings. Despite these limitations, the study provides credible and meaningful insights into the role of AfCFTA in influencing food production in the East African Community.

5.7 Suggestion for Further Studies

Future studies should consider incorporating additional variables such as climate variability, technological adoption, institutional quality, and political stability to provide a more comprehensive understanding of the factors influencing food production. Including these variables

would help address potential omitted variable bias and offer deeper insights into the structural drivers of agricultural productivity.

Further research could also expand the scope beyond the East African Community to include other African regional blocs or conduct comparative studies across regions. This would enhance the generalizability of findings and provide broader evidence on the impact of AfCFTA on food production across different economic and policy environments.

Additionally, future studies should explore the use of advanced econometric techniques, such as dynamic panel models or causal inference methods, to better establish causal relationships between trade integration and food production. This would strengthen the robustness of findings and provide more precise policy-relevant conclusions.

Future studies should conduct robustness checks using alternative indicators of food production and food security to determine whether the findings remain consistent across different measures. While this study employed the Food Production Index as the primary indicator, future research may utilize alternative measures such as the prevalence of undernourishment, food insecurity experience scale, per capita food availability, agricultural value added, crop yield indices, and the Global Food Security Index. Comparing results across multiple indicators would enhance the robustness and generalizability of findings regarding the effects of AfCFTA-related trade reforms on food systems within the East African Community.

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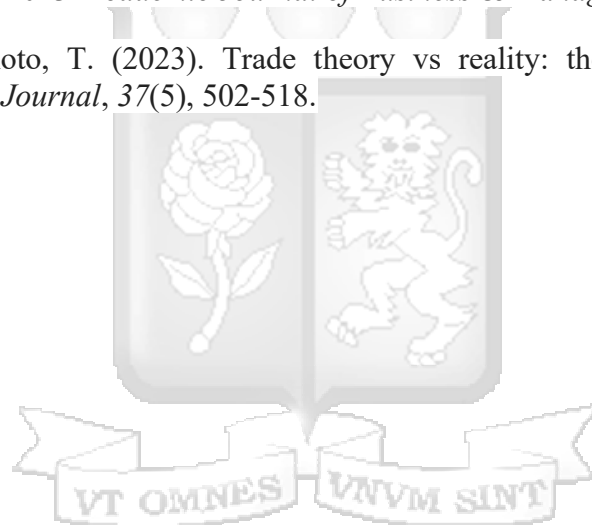
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APPENDICES

Appendix I: Ethics approval



16th April 2026

Ms Wandei Irene,
irene.wandei@strathmore.edu

Dear Ms Wandei,

RE: Effect of the African Continental Free Trade Area on Food Production in the East African Community

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC3544/26**. The approval period is from **16th April 2026 to 15th April 2027**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, and MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification
- iv. Any changes, anticipated or otherwise, that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.

Yours sincerely,



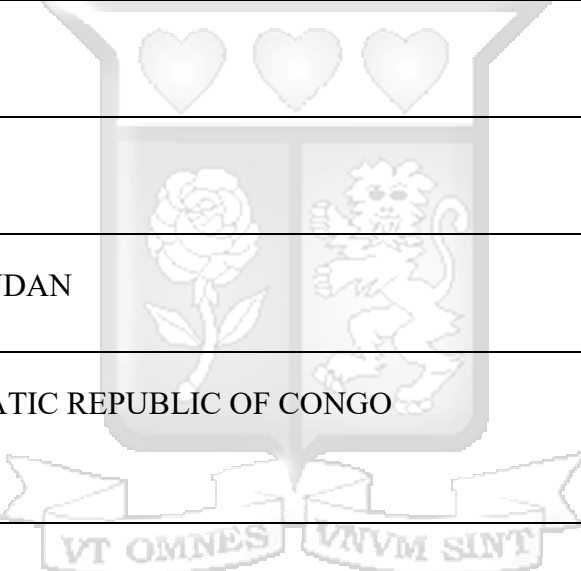
Mr Ambrose Rachier,
Chairperson; SU-ISERC

Ole Sangale Rd. Madaraka Estate. PO Box 59857-00200. Nairobi. Kenya. Tel +254 (0)703 034000



Appendix II: Population Frame

NO.	COUNTRY
1	KENYA
2	UGANDA
3	TANZANIA
4.	BURUNDI
5.	RWANDA
6.	SOUTH SUDAN
7.	DEMOCRATIC REPUBLIC OF CONGO





Yours sincerely,

Mr Ambrose Rachier