



**NATIONAL DEFENCE UNIVERSITY, KENYA (NDU-K)**

**THESIS**

**INFLUENCE OF COUNTY GOVERNMENT AGRICULTURAL  
INITIATIVES ON FOOD SECURITY IN TRANS NZOIA EAST, KENYA**

**(2013 TO 2022)**

**BY: FLAVIA AKUMU**

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**SUPERVISORS:**

**DR. SOLOMON O. OWUOCHE**

**DR. PETERLINUS O. ODOTE**

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Signature of Candidate.....*Flavia*..... Date.....*15<sup>th</sup> September 2024*.....

Flavia Akumu

ND601/0078/2023

1. Supervisor.....*Solomon*..... Date.....*17<sup>th</sup> September 2024*.....

Dr. Solomon O. Owuoché

2. Supervisor.....*Peterlinus*..... Date.....*16/09/2024*.....

Dr. Peterlinus O. Odote

## **DEDICATION**

I dedicate this thesis to my grandmother Philister A. Otunya. When informed you that I was going back to school and that I am going to be away from home and work for a long time, you told me; "...education is good, go and work hard my grandchild...." Thank you for the inspiration grand ma'.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>FAO</b>	Food and Agriculture Organization
<b>GDP</b>	Gross Domestic Product
<b>GHI</b>	Global Hunger Index
<b>HLPE-FSN</b>	High-Level Panel of Experts on Food Security and Nutrition
<b>ICT</b>	Information Communication Technology
<b>ISP</b>	Input subsidy program
<b>NAAIAP</b>	National Accelerated Agricultural Inputs Access Program
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>UCLA</b>	The University of California, Los Angeles
<b>UNDP</b>	United Nations Development Programme
<b>USD</b>	United States Dollar

## ABSTRACT

The exponential growth of Kenya's population in recent decades has resulted in a corresponding surge in food consumption. This has exerted significant strain on the country's agricultural infrastructure. Trans Nzoia County, situated in the Rift Valley region of Kenya, has gained a reputation as the agricultural hub of the nation due to its fertile soils and favorable climatic conditions. The county has the capacity to make a substantial contribution to Kenya's food security. However, it has encountered many challenges that have hindered its progress. This study, therefore, looked at the County Government's Agricultural Initiatives and their influence on Food Security in Trans Nzoia East. The study was guided by three main objectives, to assess the influence of subsidized input by the County government on agricultural production in Trans Nzoia East, to examine the influence of County government capacity building on farmers' agricultural production in Trans Nzoia East and to investigate how County infrastructure development has affected food accessibility and availability in Trans Nzoia East. The study was grounded in Schultz's Schultsian Theory. The research design of the study was a descriptive research design incorporating a mixed methodology approach. The research used both primary and secondary data. The study adopted the survey as the data collection instrument, which took the form of a questionnaire. The sample frame for this study involved 65 local farmers, 15 County government officials, and other professionals within the farming industry ecosystems in Trans Nzoia East. The results show that County government Agricultural Initiatives have had a significant positive effect on food security in Trans Nzoia East. Subsidized inputs programs such as fertilizers and seeds have translated into high agricultural production rates with greater household food availability. Additionally, capacity-building programs and extension services have helped to increase the knowledge and skills of farmers so that they can adopt modern agriculture practices, generating higher yields. Nevertheless, obstacles like lack of adequate infrastructure, inability to reach markets, and governance have continued to undermine the full realization of benefits. The major themes that emerge from the qualitative analysis include subsidized input and its influence on farmers' choice of crops, extension services as a way of improving agricultural production efficiency, and infrastructure problems in transportation as well as market access. Input subsidies were also criticized in terms of sustainability, and stakeholders emphasized the importance of transparency and accountability required from implementation levels. From the findings of this research, recommendations are provided with a view to improving efficiency and effectiveness performance of County government Agricultural Initiatives in boosting food security levels within the region. Some of these are strengthening extension services, improving input provision, enhancing infrastructure investment, motivating diversification efforts, and encouraging public-private partnerships in procurement and financing incentives programs, respectively. By focusing on these research priorities and implementing the recommendations provided, policymakers can act with practitioners and stakeholders to pursue sustainable agricultural growth that is able to provide food security and improve the livelihoods of rural communities in the Trans Nzoia East, Kenya, as well as the rest of the country.

## **CHAPTER ONE**

### **Introduction**

Food security is a state in which individuals have access to sufficient quantities of nutritious food that is suitable for maintaining a healthy and active lifestyle. This encompasses the availability, accessibility, and use of food. Many countries, particularly those situated in developing regions, exhibit a significant level of uncertainty around the issue of food security. Kenya, like many other countries within the sub-Saharan region, is faced with challenges pertaining to food security. This chapter of the study will address the background to the study, the statement of the problem, the research aims, objectives and questions, the justification of the study, finally the scope and limitation.

### **1.1 Background of the Study**

Food security remains one of the major global issues in the 21<sup>st</sup> century. According to FAO, millions of people all over the globe suffer from hunger and malnutrition (FAO, 2022). This is further emphasized by the United Nations' Sustainable Development Goals (SDGs), particularly Goal 2: concerning the Zero Hunger goals, it focuses on the significance of making sure that food is available as well as promoting sustainable agriculture for all (United Nations, 2021). Agricultural programmes at different levels in government are of great significance in confronting this problem. By way of introducing policies or programmes, national as well as local governments can help advance crop productivity, market access, and the resilience of the farming communities (Pingali, 2015).

Climate change exacerbates the food security crisis. Agricultural output has been interrupted, and crop yields have been lowered as a result of erratic rainfall patterns, extended droughts, and unexpected weather events (UNDP, 2019). Weather patterns that are inconsistent and unpredictable have an influence on the livelihoods of smallholder farmers, who account

for a substantial section of the population and depend significantly on rain-fed agriculture (UNDP, 2019).

Africa has for the longest time been plagued with food insecurity, aggravated by issues such as climate change, conflicts and economic challenges, as was seen in the year 2005 (Haile). Although Africa is gifted with a large agricultural potential, this untapped capacity is yet to translate into food self-sufficiency in many African countries. A concentration on decentralization and giving power to local governing bodies that play role in the development process, including food security (Awortwi 2010) is a recent phenomenon.

Food security is a prominent concern in Kenya, characterized by a multifaceted interplay of factors that hinder the consistent availability and accessibility of sufficient, secure, and nourishing food for the nation's population. The problem arises from a convergence of factors, including population growth, the impact of climate change, constraints on economic resources, and inadequate agricultural practices.

The exponential growth of Kenya's population in recent decades has resulted in a corresponding surge in food consumption, therefore exerting significant strain on the country's agricultural infrastructure. The conversion of land for residential and commercial use has led to a decrease in available agricultural land, which has subsequently impacted the nation's ability to meet its food production requirements (Kimenju et al., 2016). The increase in population density is also associated with shifting dietary patterns, characterized by an increase in the use of processed and imported food products. This trend puts significant pressure on domestic agricultural production (Kimenju et al., 2016).

Despite the Country's agricultural potential, Kenya has failed to maintain food security for its population on a constant basis. The Global Hunger Index (GHI) emphasized the severity of the problem in early 2013, classifying Kenya's food security situation as "serious" owing to high levels of hunger and malnutrition (von Grebmer et al., 2013).

The adoption of a new constitution in 2010 established a decentralized government structure, allocating considerable authority and resources to 47 newly formed county administrations. The purpose of this devolution was to improve local decision-making, encourage development, and solve regional imbalances. Agriculture, a sector critical to attaining food security, was one of the primary sectors decentralized.

Trans Nzoia County, situated in the Rift Valley region of Kenya, has gained a reputation as the agricultural hub of the nation due to its fertile soils and favorable climatic conditions. Agriculture serves as the primary economic activity, engaging a significant portion of the population. The county has a rich historical background in the cultivation of maize and wheat, therefore playing a significant role in bolstering the national food supply. Despite the significant agricultural potential of Trans Nzoia County, it has faced challenges in ensuring food security within its borders.

Trans Nzoia County has the capacity to make a substantial contribution to Kenya's food security; nevertheless, it has encountered many challenges that have hindered its progress. For instance, it has been observed that despite the significant agricultural productivity, there is a prevalent occurrence of post-harvest losses due to inadequate storage facilities and limited market accessibility (Kibet & Mutai, 2017). The region's reliance on rain-fed agriculture renders it vulnerable to the risks associated with climatic unpredictability, potentially leading to crop failures and reduced yields (Mutunga et al., 2015). In addition, agricultural productivity has been hindered by the predominance of smallholder farming, characterized by the restricted availability of contemporary farming techniques and resources (Munene & Sule, 2019). Therefore, this study looks at the county government's agricultural initiatives and their influence on food security in Trans Nzoia East.

## **1.2 Statement of the Problem**

Kenya faces a critical food security challenge, with over 5.4 million people suffering from acute food insecurity and malnutrition (European Commission, 2023). Despite efforts at both national and County levels, food consumption in many regions continues to outpace food production, exacerbating the food insecurity crisis. Trans Nzoia East Sub-County, historically known as the country's breadbasket, is not immune to these challenges. Despite the region's agricultural potential, food security concerns persist, raising questions about the effectiveness of local interventions. The devolution process in Kenya, initiated over the past decade, has granted County governments increased authority and resources to drive local development. In Trans Nzoia East, the County government has implemented various agricultural initiatives aimed at enhancing food security. These initiatives include the provision of subsidized inputs, capacity building for farmers, and infrastructure development. However, a contradiction arises: despite these efforts, food insecurity remains a significant concern in the region.

This research problem centers on the apparent disconnect between the County government's agricultural initiatives and the persistent food security issues in Trans Nzoia East. While these initiatives theoretically address key aspects of agricultural production, their actual impact on food security, particularly in terms of food accessibility and availability, remains unclear. This study therefore sought to fill this gap by investigating the effectiveness of these initiatives in achieving their intended outcomes. The focus on food accessibility and availability is deliberate, as these are critical components of food security that directly affect the population's ability to obtain and utilize food. While other aspects of food security, such as food utilization and stability, are important, this study prioritizes accessibility and availability due to their immediate and measurable impact on the community's well-being. By narrowing the focus, this research aims to provide a more detailed analysis of how County-level agricultural policies influence these specific aspects of food security.

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

To determine the Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East, Kenya, 2013 to 2022.

#### **1.3.2 Specific Objectives**

- i. To assess the influence of subsidized County government agricultural input on food security in Trans Nzoia East.
- ii. To examine the influence of County government capacity building on agricultural production in Trans Nzoia East.
- iii. To investigate how County government agricultural infrastructure development has affected food security in Trans Nzoia East.

### **1.4 Research Questions**

The research questions for this study are:

- i. To what extent has the provision of subsidized input by the County government affect food security in Trans Nzoia East?
- ii. What is the influence of County government capacity building on food security in Trans Nzoia East?
- iii. How has the County agricultural infrastructure development affected food security in Trans Nzoia East?

### **1.5 Justification of the Study**

The findings of this study will be important to a number of stakeholders.

#### **1.5.1 Policy Justification**

Food security has become a major policy issue in Kenya and Globally. As such, food security policy choices need evidence-based insights. As such, analyzing the efficacy of County agricultural programs in Trans Nzoia East Sub County allows a deeper assessment of

the influence of devolution on solving difficult challenges like food insecurity. Examining the effects of individual agricultural programs allows policymakers to make better-informed decisions regarding resource allocation, program refinement, and strategic planning in order to improve food security throughout the County and perhaps duplicate successful interventions in other counties. Effective food security efforts not only address urgent hunger problems but also contribute to larger long-term development objectives. The research will offer insight into the role of county government agricultural efforts in improving livelihoods, decreasing poverty, and boosting general community well-being by examining their long-term consequences. The study's findings will help develop and construct agriculture policy at the local and national levels. Understanding the merits and shortcomings of diverse projects will help policymakers modify interventions to better fit local circumstances, improving the likelihood of success.

### **1.5.2 Academic Justification**

This study's academic value stems from its ability to broaden our knowledge of the interaction between county-level governance, agricultural initiatives, and food security results. Among the significant contributions is the study's goal to collect empirical data on the influence of county government agricultural efforts on food security. According to Canare (2021) empirical research may help to inform the scholarly debate on the efficacy of decentralized government in tackling complex development issues. The findings will be useful for other Kenyan counties and areas experiencing similar difficulties throughout the world. Scholars, researchers, and practitioners investigating government, agriculture, and development may learn from the study's triumphs and weaknesses. The extensive investigation of the different elements impacting food security outcomes in the research will help to improve a conceptual framework for understanding the multifaceted nature of food security and county government interventions.

### **1.5.3 Justification General Public**

The study's relevance to the broader public is crucial since it directly tackles a basic problem that impacts everyone and every community in their everyday lives. The research educates the general public on the intricacies of the problem beyond simply food supply by throwing light on the elements influencing food security. It improves awareness of the significance of agricultural activities and the role of County government in determining local food security through various initiatives. The study's findings have the potential to enable local populations to actively participate in creating food security strategies alongside County governments. Citizens who are well-informed may demand better interventions and hold authorities responsible for their actions. The research on the impact of County government agricultural programs on food security in Kenya's Trans Nzoia East County acts as an important link between policy, academia, and the general public. The findings of the study have the potential to inform politicians, deepen scholarly debates, and enable people to actively engage in the development of long-term and successful solutions to the critical issue of food security.

### **1.6 Significance of Study**

The main goal of this study is to improve the food security situation in the counties and country. The findings of this study will provide information on how well County-level agricultural initiatives can improve food security. The research will clarify the advantages and difficulties that local farmers experience as a result of County government agricultural initiatives. This information will help farmers make wise judgments regarding their farming methods and provide suggestions for enhancing their standard of living. The study adds to the body of evidence already available about how government agriculture policies and the results of food security are related. The findings will help the County government make the necessary changes to the initiatives to improve food security better. It will be used as a guide for future studies on related subjects and as a case study for comparisons with studies done in other areas.

## **1.7 Assumptions**

This study starts from the point of knowledge that with devolution, the County government of Trans Nzoia has put initiatives in place to improve food security. The study makes the assumption that improving food security in Trans Nzoia East is the main reason for the development of the County government's agricultural programs. As such, the study assumed that the initiatives had no unintended consequences or detrimental effects on food security. To reach its results, the study depended on trustworthy and accurate data sources. It was based on the assumption that information gathered from multiple sources, including surveys and government records, properly reflects the condition of agricultural efforts and food security. The research also assumed that while examining the impact of agricultural activities on food security, external variables, including weather patterns, market dynamics, and larger economic trends, are taken into account. These elements may have an indirect impact on the results.

## **1.8 Scope and Limitation of the Study**

This study aims to assess the impact of County Government Agricultural Initiatives on the state of food security in Trans Nzoia East, Kenya, spanning the years from 2013 to 2022. The research is consistent with Kenya's devolution program, which was enshrined in the 2010 Constitution and gives county administrations authority and resources to better the lives of Kenyans. The study, however, anticipates potential limitations that might arise during the course of the study. One significant limitation is the potential influence of external factors on the outcomes of the agricultural initiatives, including broader economic trends and climatic variations. These factors could affect the overall effectiveness of the initiatives and subsequently impact food security.

Furthermore, the study anticipates limitations in getting reliable access to historical data and accurate information about the various county government agricultural initiatives spanning

almost a decade, which is crucial. Inaccurate or incomplete data might hinder the thorough analysis required for this study. To mitigate these challenges, a meticulous data collection process will be implemented. This involves not only relying on official government records but also engaging directly with local farmers, agricultural experts, and community members to obtain a well-rounded perspective on the initiatives' influence.

Given the comprehensive scope of the study, it's important to allocate ample time and resources for data collection and analysis. The study period of 2013 to 2022 encompasses several years of agricultural activities, policy changes, and potential shifts in food security trends. Thus, the study will require rigorous data triangulation and cross-referencing to ensure the accuracy and reliability of the findings.

## **1.9 Summary**

This chapter introduces the study on food security in Trans Nzoia East, Kenya, highlighting its significance amid global challenges. It outlines the multifaceted nature of food security, emphasizing issues like climate change, population growth, and inadequate agricultural practices that contribute to persistent food insecurity. The chapter presents a clear statement of the problem, noting the disconnect between County government agricultural initiatives and ongoing food security challenges. The research objectives and questions focus on the influence of county policies on agricultural production and food accessibility. The study's justification emphasizes its importance to policymakers, academia, and the general public, aiming to provide evidence-based insights into the effectiveness of local agricultural programs. The chapter concludes with assumptions regarding the initiatives' impacts and acknowledges potential limitations, including external factors and data reliability.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **Introduction**

This section presents a review and synthesis of research and other sources in line with the effect of subsidized input and capacity-building agricultural production and the effect of infrastructure development on food accessibility and availability. It adopts a funnel approach, looking at the literature concentrating on the international sphere and regional sphere, i.e., Africa and the country of Kenya.

#### **2.1 Empirical Review**

##### **2.1.1 Influence of Subsidized Input by Governments on Agricultural Production**

Globally, governments have provided subsidized inputs to boost agricultural production. A study by Banga in 2016 investigated the effects of the shift towards the Green Box policies on production. Over the course of thirteen years, Green Box subsidies were responsible for a rise in agricultural productivity of almost sixty percent in the European Union and fifty-one percent in the United States (Banga, 2016). The findings of the author pose significant implications in the study of the effect of agricultural input subsidies. It presents a new direction, which is research into green box subsidies. However, this study has a gap in that it does not go into the specifics of the type of Green Box subsidies used; it only considers them in general terms as opposed to going into the effect of the specific input subsidy applied.

According to Skully (2009), the current agricultural support system promotes production while discouraging the use of crop-related products inside the country, which lowers the overall amount of worldwide trade in farm goods and frequently lowers commodity prices. It hinders investment and agricultural development by reducing rewards to non-OECD agricultural producers. As a result, subsidies for agriculture in OECD countries are expensive, alter global commodity trade, and favor disproportionately wealthy households who have

substantial agricultural land holdings. This study presents an interesting approach to the study of input subsidies, that is, the effect that input subsidies in high-income countries have on the rest of the world. The study implies that input subsidies have far-reaching consequences beyond the country applying input subsidies. This research presents a gap in that it only considers the effect of input subsidies on the rest of the world based on OECD countries.

Similarly, Dorward and Morrison (2015) assert that simply put, subsidies affect trade in agriculture balance to the degree that they encourage farmers to expand production, either through lowering import demands of the sponsoring nation or by raising the rate of exports from that nation. When there are not any demand shifters, while there is an enormous spike in surplus inventory from any number of subsidizing countries, this leads to worldwide markets having a greater surplus supply, which lowers global prices. These decreased global prices could have an effect on import and/or export prices for all nations, impacting country-specific prices as well as producer profits and consumer spending. This study also adds to the research by demonstrating the effect of agricultural subsidies as it pertains to international trade, with the implication being that input subsidies affect other countries. The gap in research in this work is the fact that the work does not delve deep into the effects of production in low-income countries.

Through a meta-analysis, Nguyen et al. (2023) examine the effects of input subsidies on agricultural production. They find that since input subsidy schemes raise harvests and agricultural family revenues by roughly 20%, a rise in yields corresponds directly to higher earnings. They go further by using four papers included in the meta-analysis to demonstrate the cost efficiency of subsidy programs. A quick calculation of Malawi's program efficiency shows that the input subsidy program, which aimed to help 900,000 farmers, will cost forty-nine million US dollars in 2019. These suggest that in 2019, the expected program cost per farmer will be fifty-four US dollars. The country's primary food crop, maize, had an average

yield of 1,782 kg per hectare and a GDP per capita of four hundred and eleven US dollars in 2019. The result would correspond to 2,100 kilograms per hectare, determined by our average predicted impact, making Malawi's yield equivalent to Bolivia's maize production. The study sufficiently demonstrates the impact input of subsidies on agricultural production as an increase in yield. This study, however, presents a gap in that it does not address the longer-term question of whether farmers continue to utilize fertilizer after they stop receiving input subsidies.

Across Africa, different governments have also been recorded to develop initiatives such as subsidized agricultural inputs to enhance production. Carter et al. (2021) investigated the initial randomized controlled trial of an African government-run input subsidy program (ISP) designed to spark a Green Revolution. They discovered that transitory input subsidies could efficiently promote knowledge regarding and embracing Green Revolution technologies amongst both subsidy recipients and those who are part of their social networks, as well as gains in agricultural productivity and living standards. They assert that through the economic theory, input subsidies serve two purposes. First, they eliminate incomplete information, encouraging farmers who originally underestimated the benefits to learn more about the genuine productive returns to technologies. Second, they reduce the under supply of products that have advantageous externalities. Subsidies encourage technological innovation, and knowledge is spread from subvention recipients through their social network friends, who also profit from the information. People possess the motivation to free-ride, foregoing expensive exploration so that they can benefit from others' testing instead when commodities create favorable information or knowledge spillover. The study contributes to research on the effects of agricultural input subsidies by providing the relationship between subsidy programs and the adoption of new technologies and knowledge. The study presents a research gap in the form of a focus on one country. The study can be expanded to other similar countries to prove the generalisability of the findings.

Nwafor (2018) examines the effect of agricultural subsidies on agricultural output. The empirical results of the research revealed that credit Guarantee Scheme Fund Loans to Nigeria's agricultural sector had a substantial impact on the output of agriculture and decreased the nation's rate of poverty during the study period. The upward slope also shows that the outcome is favorable. The study's methodology adopts a specific location and type of agricultural production. The study presents empirical evidence that agricultural subsidies heavily influence agricultural output and decrease the rate of poverty. However, the study presents a research gap because of the specific nature of the research. The study may lack the generalisability necessary to be applied to different scenarios across Africa.

In Kenya, input subsidies take the form of fertilizers. For instance, Magut et al. (2019) examined the effect of subsidies on maize yield and found the nation's input subsidy program significantly increases maize production. The study found that the cost of fertilizer has increased, which has increased corn productivity. However, the price of fertilizer does not encourage growers to plant maize, nor has the rise in maize yield been attributed to the types of fertilizer offered through subsidy programs. According to the survey, purchasing fertilizer continues to be the most expensive resource during the cultivation of maize. Additionally, data demonstrates that despite government-subsidized fertilizer being accessible, the majority of farmers nevertheless are unable to purchase it due to elevated costs, which results in low maize yields. The study presents somewhat conflicting results, which presents an opportunity for further research into the effect of input subsidies on the maize yield in Kenya. The conflicting results also demonstrate an opportunity to evaluate the effect of agricultural input subsidies, including various variables such as the cost of products under subsidies.

A study by Mason et al. in 2016 investigates the effects of the National Accelerated Agricultural Inputs Access Program (NAAIAP). This program substantially boosted maize production through a mean of 201-471 kilograms, which was achieved primarily by increasing

maize output/acre in contrast to increasing the amount of land cultivated with maize, according to estimates generated from nationwide panel survey data from Kenyan small-scale farmers. The aggregate acreage cultivated was unaffected by NAAIAP, but maize's percentage of producers' total crop value grew. In addition, the program dramatically decreased the disparity in poverty and the extent of impoverishment by 4.10 and 4.11 percent, respectively (Mason et al., 2016). The study uses empirical data, which strengthens the validity of its results. This study focuses on only one of the subsidy programs run in Kenya; it is possible to extend this research to other programs running subsidies in Kenya as well as other crops, not just the production of maize.

### **2.1.2 Influence of Capacity Building of Farmers on Agricultural Production**

A study by Simões et al. (2010) to evaluate the effect of enhancing the adaptive capacity of farmers in Brazil to climate change highlights the importance of capacity building on productivity. They contend that a switch to drought-resistant crops is a simple way to adapt to water shortages. Change from cultivating crops to pastoral practice may be an increasingly significant adaptation. A considerable more profound adaptation might entail to forgo farming completely. A consistent adaptation approach can be created following each unique socio-environmental setting by better comprehending, exploring, and analyzing the semi-arid northeast in its entirety. This is because the region is seen as a large "edaphoclimatic patchwork," which requires it to be better understood. The study presents a strong argument for the deep comprehension of the local context and environment in the investigation of the effect of capacity building on agricultural production. The study focuses on capacity building in terms of adaptive capacity and focuses on farmers in semi-arid areas. The study can be expanded to other geographical areas.

Mittal and Tripathi (2009) evaluate the effect of technology, specifically the use of mobile phones for capacity building for farmers. The investigation unveils numerous benefits

brought about by the accessibility, personalized content distribution, and accessibility of mobile phones, which have been highlighted in the study. The study found that whilst at this early phase of the cellular phone transformation in Indian agriculture, there are indicators of increased agricultural output, which is further impacted by emerging smartphone-enabled information services. For numerous farmers, cell phones have provided the only practical means of accessing information; this is the most prevalent advantage of handheld devices. Using empirical data as its foundation, the study spotlights the benefits and potential for a positive impact on agriculture through technology in capacity building. This research presents an interesting approach to the use of technology for capacity building; however, it leaves room for more research into the specific use of technology for capacity building and a more effective way to measure the effect of capacity building on agricultural productivity.

Guimaraes et al. (2006) conducted an assessment of the Plant Breeding and biotechnology capacity in Africa, presenting several recommendations on capacity building and its importance. The study encourages the education of all interested parties on the strategic significance of sustainable agriculture development through breeding plants. The motivation of all parties involved in plant breeding, in both developing and developed nations, is to raise knowledge of its importance and effects and use appropriate technologies for growth. Consider creating a fund to aid with sustainable plant breeding, including genetic modification, for crops that haven't yet been genetically modified and acquired the proper plant breeding attention. The findings of this study would go a long way in increasing productivity and the diversity of crops in Africa. The study also contributes to research by providing relevant recommendations that could be investigated further in other studies. The study's limitation was based on the fact that the study limited scope to one region of the world, with the results being generalized across the world.

Another study by Asenso-Okyere and Mekonnen (2012) considers the use of ICT in Africa for capacity building. The study acknowledges the importance of information and understanding in promoting growth has increased recently, if not already, and this tendency is expected to continue. Farmer problem-solving, transfer of technology, learning assistance, and much more can all be achieved through agricultural education and extension, which can also help farmers become more actively integrated into the agricultural knowledge and information system. There is proof that the use of ICTs for obtaining information and expertise has increased rural earnings. A significant portion of the rural population is involved in agriculture; therefore, making ICT platforms accessible to them presents issues that must be addressed through public policy in the setting of rural growth and the benefits of investing in rural regions. The study generally supports the proposition that the use of capacity building is critical in capacity building for agricultural purposes. Additionally, the study provides a framework to study the effects of ICT I capacity building for farmers. However, the study does not delve into the specifics of the type of ICT resources applied in the capacity building of farmers.

Babu et al. (2015) evaluate the ways and impact of strengthening capacity building for agri-businesses in Africa. They contend that different strategies applied in the capacity building of farmers serve different purposes. For instance, some capacity building is conducted to take advantage of human and natural resources. Moreover, strategies such as public-private partnerships support the development of research in agriculture, diversification of value chains, and quality management. For example, in the case of the Ghanaian Cocoa Board assisting farmers with quality control procedures, agronomic methods such as optimizing yields, controlling diseases, and keeping up with high-quality seeds contribute to better yields and better returns. The thoroughness of the study's look at the particular strategies involved in capacity building presents a stepping stone to evaluating the role and impact of different strategies on output. Though the study is comprehensive in its evaluation of the types of

strategies applied in capacity building, it doesn't delve deeply into the effects of the specific strategies applied in capacity building.

Ndagi et al. (2016) evaluate the effect of capacity building, specifically in the monitoring and evaluation of small-scale farming initiatives. According to the results of the research, strengthening monitoring and evaluation and capacity building have a big impact on how long agricultural food crop programs can last. Due to an absence of backing for capacity-building initiatives, not enough effort has been put towards building capacity. Farmers ultimately lack sufficient monitoring and evaluation skills for planning, data utilization, and surveillance. Therefore, an absence of capability makes agricultural food crop enterprises less likely to be sustainable. The strength of the study lies in the use of a theoretical framework to evaluate the monitoring aspect of capacity building for small-scale farmers. Nonetheless, this study presents a gap in the literature. While it focuses on small-scale food programs, the research can be expanded to observe individual farmers and large-scale producers.

Okoth et al. (2013) look at the effect of community capacity building on the sustainability of food security projects in Kenya. Specifically, the study focused on the Millennium Villages Project for ensuring food security. The study found that despite the training during the course of the projects, the residents in Bar-Sauri would be unable to sustain the objectives of the food security project. The residents require additional training and capacity-building in techniques of farm management and post-harvesting practices to avoid wastage of the yields of their farms. This study demonstrates the effects of a lack of sufficient capacity building for those involved in farming projects. The study also presents an opportunity to study or investigate the role of capacity building in similar initiatives around the world. Additionally, the study only focuses on financial literacy, marketing and managerial skills, beekeeping, fish farming, and conservation of the environment. There is room for more variables, such as crop farming, in such studies.

### **2.1.3 Effect of Agricultural Infrastructure Development on Food Accessibility and Availability**

According to HLPE (2023), When it comes to food availability, the implied meaning is in the actual physical accessibility of desirable food stock levels. Food grain availability is determined by the country's production net of feed, seed, and wastage as well as net imports as well as a drawdown of inventories, which is appropriate considering that edible grains make up a significant portion of dietary consumption. Physical accessibility in any area of a country is reliant on the integration of markets, transportation and storage facilities, and those facilities themselves. The package of privileges that relate to an individual's initial foundations, the things they can obtain (in particular concerning both financial and physical access to food), and the opportunities available to individuals for achieving entitlement sets with sufficient nourishment by self-help, government intervention, or the two all determines food accessibility.

According to Rydge et al. (2015), by 2030, the world is projected to have a USD 90 trillion infrastructure deficit. To meet the severe issues brought on by increasing urbanization, policymakers and governments have tended to use these frightening numbers to boost investment in their urban sectors, whereas rural infrastructure requirements have received less attention. The study demonstrates that when it comes to infrastructure and food security, infrastructure plays a role in the accessibility and availability of food in the world, thus presenting a strong incentive to investigate the effects of infrastructure on the accessibility and availability of food. The gap presented by this report is in the predictive model and generalization of the infrastructure deficit in the world; country-specific deficits would be ideal for research and corrective actions.

A report by Turley and Uzsoki (2018) highlights the different types of infrastructure and their effect on accessibility. Storage infrastructure offers producers bargaining power:

regardless of whether farmers are aware of market values, it will not matter much if they cannot store their harvest. Farmers must have the choice to refuse to sell, at the very least postpone sales, or schedule them in advance to have negotiating leverage. Rural transport infrastructure can link both agricultural and non-agricultural populations while also improving accessibility to agricultural inputs, marketplace accessibility, and commodity freshness and quality. When weighed against rain-fed agriculture, irrigation infrastructure is capable of doubling agricultural yield per acre. All of this is made possible by energy infrastructure, which also enables additional on-farm services like telecommunications and cold storage, improving the quality of life in rural areas. The strength of the report lies in the demonstration and consideration of different types of infrastructure and their effects on accessibility. This report presents an opportunity to consider the other different types of infrastructure that relate to food accessibility and availability, including market infrastructure, as an avenue for research in other geographical areas.

One such study, Ako and Wanie (2022), evaluates the challenges that rural-urban road transportation presents to food security in Cameroon. The study found that the roads in the area under study were dilapidated, inadequate, and seasonal. This increases the difficulty in movement, particularly in the rainy season when roads are muddy. In turn, the movement of perishable agricultural products is inhibited, thus affecting the availability of food in urban areas. The study's detailed investigation into the pathways that support accessibility presents a framework for research into transport infrastructure in food accessibility and security. However, this study looks at only one aspect of infrastructure that affects food accessibility and availability. More research is necessary to look at other forms of infrastructure that affect food security.

Adoyele and Oluwagbenga (2023) evaluated the role of transport systems in food security in Nigeria. According to the study's findings, Osun State faces difficulties with food

delivery and safety. The article goes on to describe how transportation infrastructures can increase the mobility of food products to other markets. Poor and difficult-to-use roads cause incidents that have an impact on robbery and criminal activity on the roadways. This limits the movement of food items (groceries) from farmlands and other nearby cities to many different markets. They come up with the following recommendations: every road ought to be considerably improved because accessibility is really important. For the safe transportation of food goods (groceries), it is important to fix dangerous or inadequate roadways that frequently result in accidents. This research reaffirms the importance of transport infrastructure as a factor in food accessibility and brings in a new aspect of security in transport infrastructure. As in the case of the previous source, the literature presents a significant gap in the study of other elements of infrastructure that affect food accessibility and availability.

Emongor (2014) highlights how, in Kenya, infrastructure development affects food accessibility and availability in multiple ways. Transport infrastructure, especially those that link rural areas with high agricultural production and other areas, is missing or underdeveloped, inhibiting the accessibility to food for those seeking consumption in urban areas and preventing the farmers from reaching the markets they require for their produce. Storage infrastructure that is critical for the preservation of perishable farm products is inadequate and it limits the availability of fresh produce as well as pushes farmers to sell their produce at throwaway prices. In addition to these key issues, there is a lack of electricity in some areas, which hinders the development and investment in processing facilities. This implies that the agricultural value chains are underdeveloped and result in fruit and vegetable spoilage during their excess seasons and lack of accessibility. This study is extensive in its evaluation of the influence of infrastructure on food accessibility and availability; however, the study only considers secondary data rather than primary data. This research, with a primary data approach, would result in a more accurate depiction of the situation in Kenya.

Similarly, Boulanger et al. (2020) consider different infrastructural elements as the challenges to food productivity and, by extension, food accessibility and availability. Poor rural infrastructure and informational infrastructure contribute to poor agricultural productivity and food availability. Another factor that affects food availability is the high cost of fertilizers, which lowers farmers' productivity. This study contributes to the literature by taking a different approach to the role of infrastructure in accessibility and food security, specifically, informational infrastructure. This study presents a gap in the literature on the effect of infrastructure on food accessibility because its primary focus is on food availability and little focus on food accessibility.

## **2.2 Theoretical and Conceptual Framework**

### **2.2.1 Theoretical Framework**

#### **2.2.1.1 Schultz's Theory of Traditional Agriculture Transformation**

Theodore W. Schultz's Schultzian Theory, developed in the mid-20th Century, also holds relevance for this study (Schultz, 1963). Schultz's theory focuses on the transformation of traditional agriculture to modern farming practices. The theory emphasizes the role of human capital, specifically education and skill development, as a key driver of agricultural productivity. This theory focuses on the pivotal role of human capital, which includes knowledge, skills, and education, in promoting agricultural productivity and rural development. Within the context of County Government Agricultural Initiatives in Trans Nzoia East, Kenya, the Schultzian Theory underscores the significance of investing in human capital through education and training programs. These investments can empower local farmers with the necessary skills and knowledge to adopt modern agricultural technologies and practices more effectively, ultimately leading to increased agricultural productivity (Schultz, 1975). Additionally, the theory aligns with the study's goal of assessing the broader impact of

agricultural initiatives on rural development, emphasizing how investments in human capital contribute to poverty reduction and, consequently, improved food security in the region.

### 2.2.2 Conceptual Framework

A conceptual framework is a visually represented interconnected collection of concepts, theories, and assumptions that collectively provide a comprehensive understanding of a phenomenon. In this particular framework, the independent variables encompass input subsidies, capacity building, and infrastructure, while the dependent variable under consideration is food security.

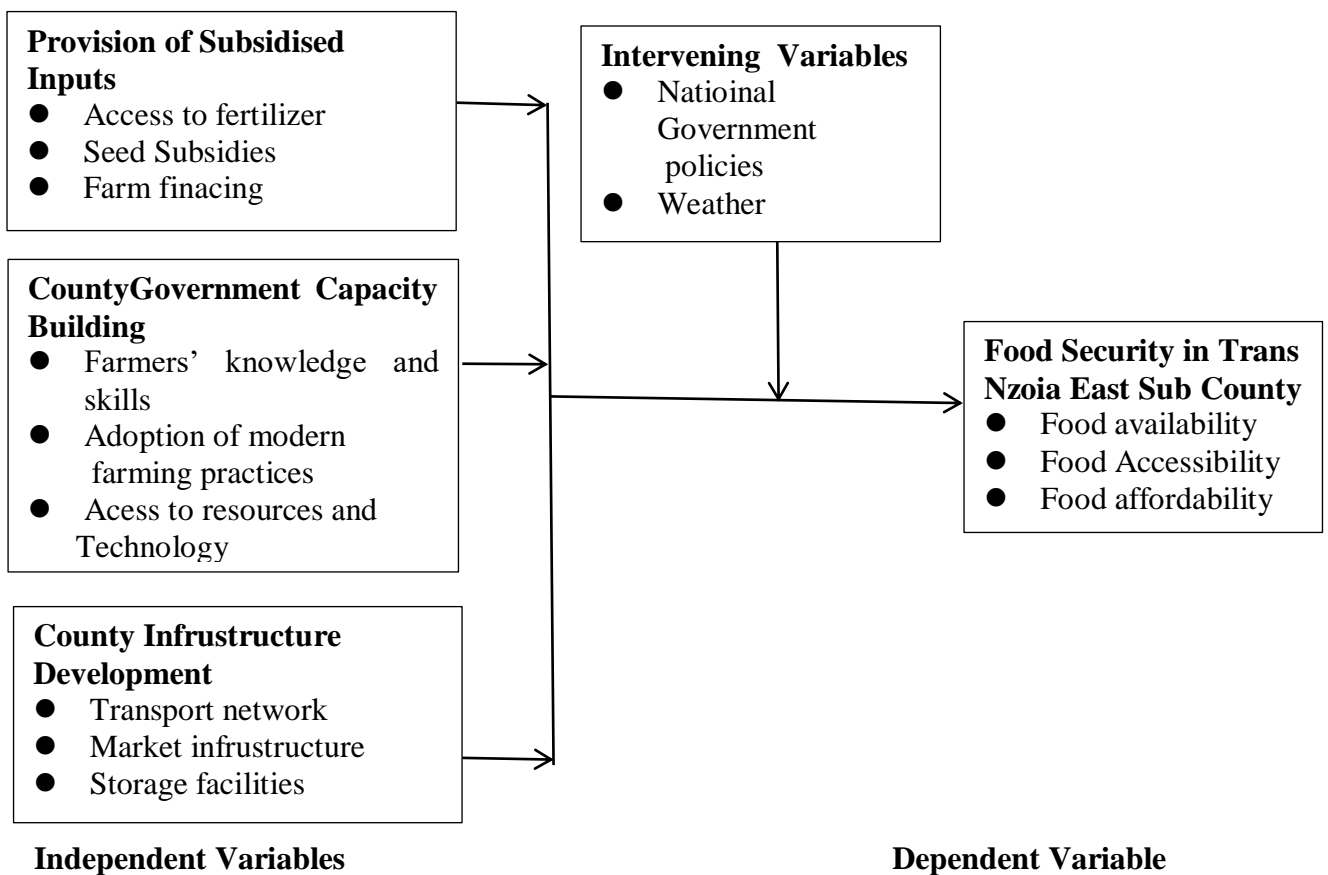


Figure 1: Conceptual Framework

### 2.3 Summary

This literature review evaluates the current literature on food security as it relates to infrastructure, capacity building on farmers, and input subsidies using the food systems approach. The effect of input subsidies on agricultural productivity is majorly positive, but

there are several gaps in the literature; most studies look at input subsidies in general as opposed to the specific types of input subsidies and their effects, and there is a lack of investigation into whether the subsidized products are used by farmers after the subsidy period.

The literature finds that capacity building is important to productivity in farming and that capacity building doesn't only apply to actual farming skills but also skills that would enable farmers to get the most profit from their produce. The gaps in the literature include a lack of comprehensive evaluation of the different strategies applied in capacity building and their effect on farm productivity and a focus on small-scale farmers.

The literature review identifies that there are several elements to infrastructure development, including transport, storage, irrigation, and processing facilities, and that these elements affect food accessibility and availability. The review also identifies that the most common infrastructure element in research is transport infrastructure; poor transport infrastructure limits food accessibility and availability. This presents a gap in the literature and the need to carry out more research relating to the other elements of infrastructure development, including storage facilities and processing facilities.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Introduction**

This section looks at the methodology applied in this research. It evaluates the approaches to research design, data collection and analysis, and the ethical considerations in the research. This study used a cross-sectional survey to assess the influence of County government Agricultural Initiatives on Food Security in Trans Nzoia, Kenya, from 2013 to 2022.

#### **3.1 Research Design**

This study utilized a descriptive research design employing a mixed-methods approach, integrating both qualitative and quantitative research methods (Creswell, 2014). Descriptive research is particularly effective for exploring and characterizing the existing conditions and relationships within a specific context. To achieve the research objectives, which include examining the influence of capacity building on farmers' agricultural production, assessing the impact of subsidized inputs from the county government on food security, and investigating how agricultural infrastructure development affects food accessibility and availability, the study employed document analysis and surveys. Questionnaires were utilized for data collection, as they are effective in yielding realistic results and are a cost-efficient method for gathering data.

#### **3.2 Area of Study**

The area of study in this case was Trans Nzoia East Sub-County. It is located within Trans Nzoia County in Kenya, 380km north west of Nairobi. It is populated with both large- and small-scale farmers whose main produce is maize, but it is not limited to dairy farming and horticultural farming. It enjoys a cool and temperate climate with average temperatures that range from 10°C to 27°C and an annual rainfall ranging from 1000mm to 1200mm (County

Government of Trans Nzoia, 2023). Trans Nzoia East Sub-County is an ideal study area due to its significant agricultural activities, primarily maize production, alongside dairy and horticultural farming. The region's favorable climate, characterized by moderate temperatures and ample rainfall, supports diverse farming practices. Additionally, the presence of both large- and small-scale farmers provides a comprehensive perspective on agricultural initiatives. Understanding food security in this region is crucial, given its vital role in Kenya's agricultural economy and food supply.

### **3.3 The Target Population**

The target population for this study was the local farmers, County government officials, and other professionals within the farming industry ecosystems in Trans Nzoia East, Kenya. The target population determined the sample frame, which, in this case, was suitable because it contains the relevant sample units. A sample frame in a study should contain units that have the desired traits in the population (Kabir, 2016). The sample size list was articulated and randomly selected by study stakeholders after careful consideration and deliberations.

### **3.4 Sampling Techniques**

Simple random sampling and purposive sampling were the appropriate sampling methods for this study. The most straightforward and popular technique of obtaining a sample is simple random sampling, whereby the sample is chosen unit by unit with an equal likelihood of being chosen for each unit at each draw. Each person has a comparable likelihood of being chosen for the population sample in this methodology (Noor et al., 2022). The study involves a homogenous population of farmers in Trans Nzoia East Sub County. When choosing participants for a random research study, simple random sampling is used for very homogeneous populations (Bhardwaj, 2019). Meanwhile, for the interview participants, the study used judgmental purposive sampling by interviewing individuals who were judged to have the relevant information for the study.

### 3.5 Sample Size Determination

The sample size for this was 88, comprising 20 participants to be interviewed and 68 participants for the questionnaire survey. The participants comprised 10 County government officials and 10 agricultural and food security experts. The 88 were calculated from a population of 50,017 (Kenya National Bureau of Statistics, 2019), Confidence level: 80%, Margin of error: 6.8% and Assumed proportion: 50% ( $p = 0.5$ ); Using the Finite Population Correction:  $n_{\text{corrected}} = n / (1 + (n - 1) / N)$

$$n / (1 + (n - 1) / N)$$

$$(1 + (n - 1) / 50,017)^2$$

$$n = (1.28^2 * 0.5 * 0.5) / 0.068^2 = 88.6$$

$$n=88$$

### 3.6 Instruments and Tools

The study adopted the survey as the data collection instrument, which took the form of a questionnaire. The questionnaires provided the participants of the survey with a series of questions in line with the objectives of the study. Key informant interviews are qualitative deep interviews with individuals who are knowledgeable about government Agricultural Initiatives on Food Security in Trans Nzoia.

### 3.7 Data Validity and Reliability

To ensure data validity and reliability, the study adopted data triangulation. Data triangulation is a technique for improving the validity and trustworthiness of the findings of research. Triangulation can assist in guaranteeing that underlying biases brought about by the application of a single method or one observer are addressed by combining hypotheses, methods, or participants in a research study (Noble & Heale, 2019).

### **3.8 Data Collection Procedures**

The research used both primary data and secondary data. The choice of primary data was because of the uniqueness of the study. The study was specific to food security in Trans Nzoia East. Additionally, the area was not well-researched, so it was necessary to use primary data for the study. For a specific goal, researcher used a range of techniques to access and gather primary data. As a consequence, original data has greater validity, dependability, objectiveness, and veracity than secondary data (Taherdoost, 2021). Secondary data was used to complement the primary data and generate a convincing argument.

In the case of this study, the questionnaire was utilized to collect quantitative data. The qualitative data was collected through an interview following a key informant interview guide. After the participants of the study were identified, the questionnaires were issued to the participants for filling. The filled questionnaires were then recovered and used in the analysis. An interview was conducted for those selected for the key informant interview.

### **3.9 Data Processing and Analysis Method**

To meet the aim of the research, which is to assess the influence of the County Government Agricultural Initiative on Food security in Trans Nzoia East, Kenya, between 2013 and 2022, the data collected (quantitative) was analyzed using descriptive statistics not limited to the average, frequency, and percentage. The statistical tools to be applied in this endeavor were SPSS 20.0 and Microsoft Excel.

The qualitative data collected was analyzed using the thematic analysis technique. Thematic analysis is a qualitative analysis technique that involves identifying themes from information collected through categorization and evaluation of the data set. The most common procedure in thematic analysis involves becoming acquainted with the data, creating preliminary codes, theme discovery, review, definition, and labeling, as well as report writing (Dawadi, 2020). Researchers back the use of thematic analysis as it is suitable for analyzing

qualitative data, especially when the primary goal is to understand the experience presented in a dataset (Kiger & Varpio, 2020)

### **3.10 Ethical Considerations**

The study practiced informed consent when dealing with the study participants. The study's participants were given detailed information regarding the objective of the study, the procedures involved, and possible advantages and pitfalls. The study afforded the participants the right and opportunity to pull out from the study throughout its length. The study resolved issues of confidentiality and anonymity by issuing unique codes to maintain anonymity. This use of codes was instrumental in ensuring the individual responses were anonymous and could not be traced back to any individual. These moral guidelines were followed in order to protect the study's integrity and the participant's rights and welfare.

### **3.11 Summary**

This chapter outlines the methodology employed in this research on the influence of county government agricultural initiatives on food security in Trans Nzoia, Kenya. A cross-sectional survey design was adopted, utilizing a mixed-method approach that included both qualitative and quantitative data collection through document analysis and questionnaires. The target population comprised local farmers, county officials, and professionals in the agricultural sector. Sampling techniques included simple random sampling for quantitative data and purposive sampling for qualitative interviews. A sample size of 88 participants was determined using Cochran's formula, ensuring representation. Data validity and reliability were enhanced through triangulation. The study utilized primary data, supplemented by secondary sources, with quantitative data analyzed using SPSS and qualitative data through thematic analysis. Ethical considerations were prioritized, ensuring informed consent and participant confidentiality throughout the research process.

## CHAPTER FOUR

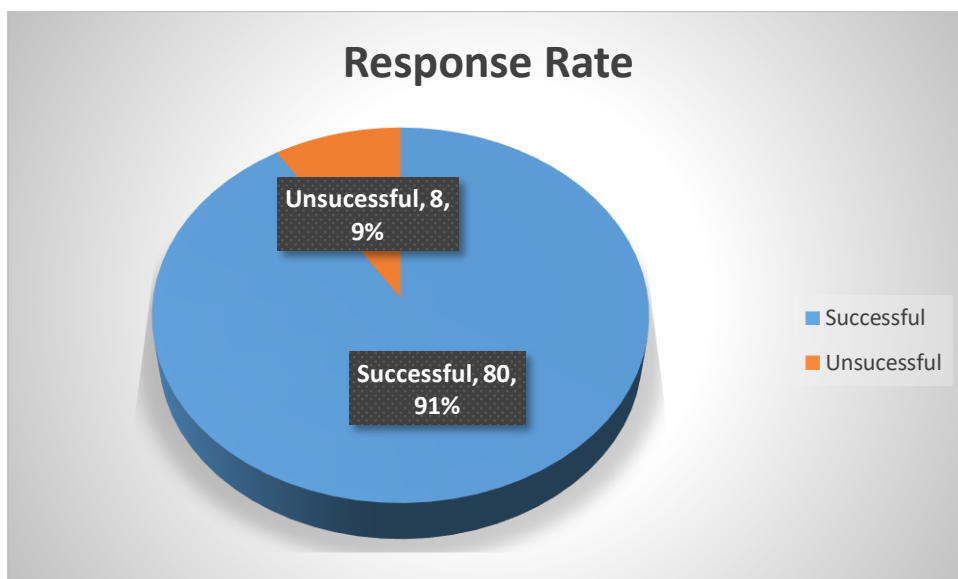
### RESULTS, FINDINGS AND PRESENTATION

#### Introduction

This chapter discusses the findings and results and presents the analysis of the data and information collected from participant interviews and questionnaire responses. Through the use of descriptive statistics, analysis of specific initiatives, and qualitative insights and information, this chapter provides a comprehensive understanding of the influence of County government agricultural initiatives on food security in Trans Nzoia East. The synthesis of the findings will help and add to the broader discussion on agricultural development and food security across the country.

#### 4.1 Response Rate

Having distributed 68 questionnaires and aimed to interview 20 experts, making the total population sample to be 88 participants, the research was ultimately able to successfully complete with 80 participants. This implies that the researchers interviewed 15 experts, and 65 out of the 68 distributed questionnaires were successfully filled out and returned for tabulation. Clear communication reminder emails and phone calls were sent to participants who had not yet responded to the survey and interview requests. As such, the majority of the sample chosen agreed to add to the research endeavor by proving their views, insights, and opinions. Therefore, the response rate was at 91%, which is quite adequate for analysis, as demonstrated in Figure 2 below. The other 8 participants, five scheduled for interviews and three for questionnaire responses, failed to show up or submit their responses for unknown reasons despite follow-up to understand reasons for non-participation.



*Figure 2: Response rate*

**Source:** Field data (2024)

## 4.2 Demographic Characteristics of Respondents

### 4.2.1 Gender Distribution

Males	47
Females	33
Total	80

*Table 1: Gender Distribution of respondents*

**Source:** Field data (2024)

The gender distribution of the respondents from this research sample presents an interesting picture that needs discussion. Out of the 80 respondents surveyed, there were as many as 47 men and women equal in number to only 38. This distribution shows a slight asymmetry whereby more male respondents are represented than females. This gender bias in participation could result from different socio-cultural dynamics that exist within the study area, such as access to education, employment, and social norms with regard to involvement in research activities.

Moreover, the gender of respondents highlights that in agricultural development initiatives and research projects, there is a need for gender-sensitive approaches to be considered. Understanding the gender composition of respondents is critical to the study's objectives, particularly in assessing the effectiveness of county government agricultural initiatives. The under representation of women suggests the need for gender-sensitive approaches in agricultural policies and programs. By ensuring equitable participation of both genders in decision-making processes, the study highlights the importance of addressing gender disparities in agricultural development.

#### 4.2.2 Age Distribution of Respondents

Age group	Participants
19– 30	15
31 – 40	42
41 – 50	13
Above 51	10
<b>Total</b>	<b>80</b>

*Table 2: Age Distribution of respondents*

**Source:** Field data (2024)

#### 4.2.3. Educational Background of Respondents

The educational composition among the respondents provides useful information about the academic backdrop and possible knowledge of participants, which can greatly affect construction or employability amongst different research outcomes. Of the total 80 participants that were sampled, more than half (62.5%) had a certificate and diploma, with 26 people (32.5%) surveyed having just a certificate, while about an additional quarter of our respondents have diplomas, as depicted in Figure 2 below. This shows that there is a clear representation of people who were trained in vocational or technical training, implying practical knowledge of

agricultural practices and even specific skills applicable to this study dealing with food security for Trans Nzoia county. In addition, 22 (27.5%) respondents have graduate degrees, which shows a significant population of higher-educated individuals. The possession of a degree generally suggests knowledge that goes beyond agricultural concepts, policies, and methodologies that are otherwise known, which may positively impact more sophisticated insights and analyses applied in d research.

Additionally, the number of 6 respondents (7.5%) holding a Master's degree supports the idea that there are people with higher academic education who possess specific scientific knowledge and skills related to such disciplines as agricultural economics, agronomy, or rural development. Generally, the distribution of respondents by education level shows a wide spread knowledge level in terms of academic qualifications that have been achieved within the Trans Nzoia East agricultural community. A proper understanding of the educational heterogeneity among study participants is essential to interpreting research outputs appropriately as well as making interpretations based upon a clear picture of agricultural practices, policies, and innovations through different sheets. By taking into account the heterogeneity in the education orientation of respondents when analyzing and interpreting data, researchers may formulate more adequate recommendations for a policy as well as practice with an impact on multidimensional challenges facing this sector.

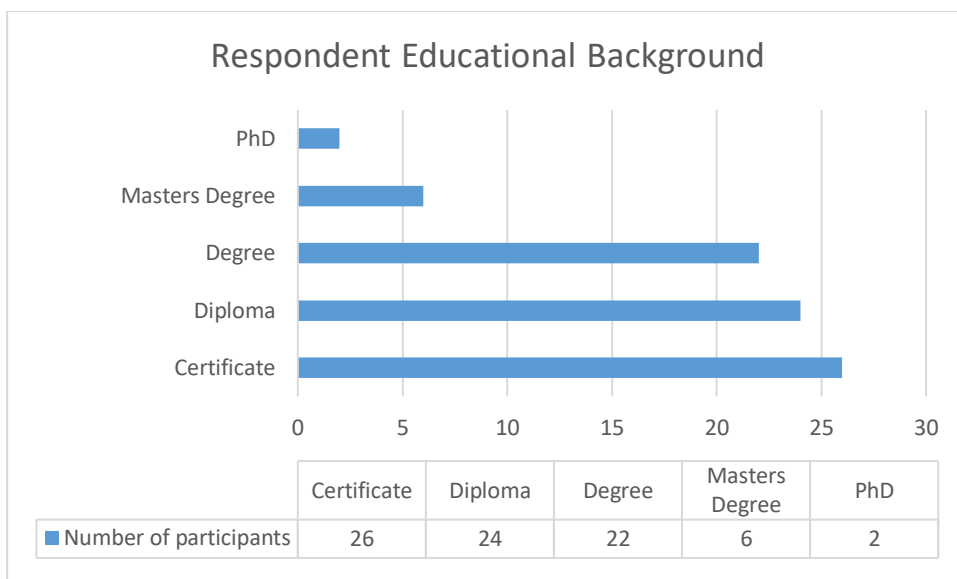


Figure 3: Respondent's Educational Background

Source: Field data (2024)

#### 4.3.1 Influence of Subsidized County Government Agricultural Input on Food Security in Trans Nzoia East

The study also sought to examine the influence of subsidized County Government Agricultural input on food security in Trans Nzoia East. The respondents were engaged on the various subsidies by the county government of Trans Nzoia

	a.	b.	c.	d.	e.
	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
1. To what extent do you believe the government provides access to quality fertilizers as subsidized input?	15	35	5	8	2

2. To what extent do you believe the government offers farm financing opportunities?	12	30	18	3	2
3. To what extent do you believe that access to quality fertilizers affects agricultural production?	25	30	5	3	2
4. To what extent do you believe that farm financing opportunities affect agricultural production?	28	27		3	6

*Table 3: Respondents view on the effect of subsidized input on agricultural production*

**Source:** Field data Questionnaire analysis (2024)

Understanding the extent to which the use of subsidized inputs, such as fertilizers of good quality, and farm financing mechanisms in Trans Nzoia East affect agricultural production is a crucial way of assessing government intervention success in increasing food security and uplifting the livelihoods of farmers. This section presents a discussion on the findings in regards to the impact of subsidized inputs on agricultural production, especially on access to quality fertilizers and farm financing demonstrated by Table 3 above.

Out of the total respondents, 50 (76.9%) strongly agree or simply agree that the government provides efficient fertilizers as subsidized input, suggesting a favorable perception of support from the government. In addition, 55 (84.6%) of the respondents stated that the availability of quality fertilizers impacts agricultural output, thus complementing the argument on subsidized inputs and their impact on productivity. This conforms to earlier findings that the availability

of quality inputs in terms of fertilizers influences crop production positively and agricultural output overall.

Accordingly, in relation to farm financing opportunities, the vast majority of respondents agree with the idea of government involvement in this specific area. The total number of the respondents who strongly agreed and agreed with the statement that the government provides agricultural financing facilities is 42 (64.6%) (12 strongly agree, 30 agree), indicating a perceived availability of financial support for agricultural activities. This means that the Government programs, which are mainly geared towards availing monetary assistance to farmers, like credit schemes and loan facilities, are being recognized by the farmers in Trans Nzoia East.

Additionally, respondents to the question think that the availability of good agricultural fertilizers has an effect on agricultural production. A significant number of the respondents (55 respondents, including 25 strongly agreeing and 30 agreeing) (84.6%) believe that quality fertilizers do have a positive influence on agricultural production. This perception, therefore, demonstrated the vital contribution of fertilizers in improving soil fertility, increasing crop yields, and hence promoting higher agricultural outputs. It additionally underlines the view of farmers regarding the fact that the inputs that are subsidized, mainly fertilizers, help a lot in making their farming activities easier and improving their living conditions.

Likewise, more than 50 percent of the respondents realize the impact of farm financing on the production of agricultural products. A total of 52 respondents (80%) (28 strongly agree and 24 agree) expressed their agreement that access to farming funds directly contributes to the agricultural output. This, therefore, aligns with the findings of Adesina et al. (2014) and implies that financial resources are important and provide the farmers with inputs, machines, and technologies that increase their output and income. Moreover, it represents respect for the role

of financial support in overcoming constraints that are usually characterized by the scarcity of capital and the high cost of inputs, which are common to smallholder farmers.

Findings confirm a positive relationship between farmer access to quality inputs, which include the convenience of quality fertilizers, farm financing opportunities, and agricultural production. According to a study by Hemming et al. (2018), subsidized provision of inputs such as seed fertilizers as well as financial schemes plays a key role in farmers' perception and behavior on the adoption of modern farming technologies and productivity improvement. The positive perception among respondents of government support in ensuring the availability of quality fertilizers shows that input subsidies play an important role in increasing productivity. On the other hand, lower confidence in farm financing opportunities suggests that farmers may need a mechanism to bridge the gap in the financial assistance programs and, therefore, require some improvements so as to support more investment by farmers into the incorporation of modern technologies or practices. Additionally, the number of respondents who are undecided or disagree on some capacity-building initiatives may imply that targeted interventions and more effective communication strategies would be needed for relevant audiences. These varied viewpoints might also signify differences in experience/information access/socio-economic background among farmers, and this highlights the need for targeted interventions and context-specific support mechanisms that would cater to the particular challenges and obstacles that face different farmer groups.

Generally, the main results reveal the role of subsidized inputs and financial incentives for agricultural output and food security in Trans Nzoia East. Through analyzing farmers' perspectives and experiences of accessing quality fertilizers and farm financing opportunities, policymakers and monitories can plan their interventions that will be more objective and target-oriented toward the priorities of smallholder farmers. Thus, continuous monitoring and

evaluation of government programs and projects aiming at agricultural development and improved rural livelihoods is important so that they remain relevant and effective in the region.

#### **4.3.2 Influence of County Government Capacity Building of Farmers on Agricultural Production in Trans Nzoia East**

This section explores the evaluation of capacity-building interventions offered by the County government in Trans Nzoia East, Kenya. It discusses the results of how these initiatives affect agricultural productivity and assesses their efficacy in raising farmers' awareness and skill levels of individuals' modern farming practices adoption while highlighting any observable patterns or noteworthy outcomes.

	<b>a.</b>	<b>b.</b>	<b>c.</b>	<b>d.</b>	<b>e.</b>
	<b>Strongly agree</b>	<b>Agree</b>	<b>Don't know</b>	<b>Disagree</b>	<b>Strongly disagree</b>
5. To what extent do you believe the county government offers capacity building?	10	30	20	4	1
6. To what extent do you believe that county government capacity-building initiatives influence farmer's knowledge and skills?	8	20	30	4	3
7. To what extent do you believe that county government capacity-building initiatives influence the adoption of modern farming practices?	13	17	20	5	10

8. To what extent do you believe that access to resources and technology affects county government capacity-building initiatives?	10	40	5	6	4
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*Table 4: Respondents' view on the influence of county government capacity building on farmers on agricultural production in Trans Nzoia East*

**Source:** Field data Questionnaire analysis (2024)

The results suggest different opinions in relation to the County government’s capacity building and its effectiveness on agricultural productivity. There is agreement from a considerable number of respondents, 40 (61.5%) that the county government provides capacity-building programs. This translates to a middle level of confidence in the government’s efforts at training and assisting farmers on this side of the country. On the other hand, a large number of respondents, 24 (36.9%), are indecisive, suggesting an unclear or even lack of awareness about the extent to which capacity-building programs exist. The effectiveness of capacity-building programs in generating knowledge and skills among the farmers is often reported differently depending on how respondents perceive it. However, 28 (43.1%) agree or strongly agree that county government capacity-building initiatives have an impact on farmers’ knowledge and skills, with a notable portion, 23 (35.4%) disagreeing or outrightly saying no to this claim. This implies a discrepancy of views on whether training and educational programs offered by the county government are effective or not. However, more research is necessary to define the associations responsible for these varying views and locate areas that need refinement in capacity building.

Analyzing the correlation between capacity-building initiatives and modern farming practice adoption yields valuable findings regarding the interaction of training programs with

agricultural innovations. The results indicate that 30 (46.2%) respondents either agree or strongly agree on the impact of capacity-building initiatives for county government and their influence on the adoption of modern farming practices. On the contrary, a significant number, 15 (23.1%), strongly disagree with this statement as they find skepticism in the effectiveness of training programs for enhancing technology adoption in agriculture.

Respondents' perceptions on the role of access to resources and technology in informing capacity-building initiatives at the county level provide broader insight into contextual factors influencing agriculture development. More than half, 50 (76.9%), agree or strongly agree on the influence of access to resources and technology on capacity-building effectiveness, emphasizing its relationship with infrastructure, technological support, and training programs. On the other hand, there is a considerable number, 19 (29.2%), that are indifferent or disagree with this statement, suggesting obstacles inhibiting access to sources and technology for agricultural development.

A number of notable patterns can be observed from the data provided in Table 4 above, pointing to a range of context-specific interventions and focused measures for agro development. To begin with, Onyango (2019) argues that the ambiguities of perspective on the efficiency of capacity-building programs indicate communication problems that should be clarified through monitoring and evaluation as well to determine compliance training initiatives correspondence between needs and priorities farmers. Moreover, the high level of undecided respondents highlights the need for outreach and engagement efforts to increase awareness about capacity-building activities. In addition, the different perspectives regarding access to resources and technology emphasize the conflicting dynamics between socio-economic issues, infrastructure improvements, and agriculture extension services. In order to address these challenges, a multi-dimensional approach should be developed that will focus on capacity building, technology transfer, and infrastructure investment for creating the enabling

environment necessary for long-term agriculture development. According to Othieno (2021), the County government capacity-building initiatives assessment provides important information about their impact on agricultural productivity and the implementation of modern farming techniques in Trans Nzoia East. Through the discussion of findings and implications in this section, policymakers, extension agents, and development professionals can now better tune interventions to support smallholder farmers in improving their resilience against climate change for sustainable agricultural livelihoods in the region.

### 4.3.3 Effect of County government Agricultural Infrastructure Development on Food Security in Trans Nzoia East.

Infrastructure development plays a crucial role in ensuring food accessibility and availability, particularly in rural areas like Trans Nzoia East. This section presents the findings regarding the impact of infrastructure development on food security, focusing on transportation, market, and storage facilities, as well as irrigation infrastructure. The analysis explores the relationship between infrastructure improvements and farmers' access to markets, storage facilities, and irrigation systems, shedding light on their contribution to enhancing food security in the region.

	a.	b.	c.	d.	e.
	<b>Strongly agree</b>	<b>Agree</b>	<b>Don't know</b>	<b>Disagree</b>	<b>Strongly disagree</b>
9. To what extent do you agree with the statement that county government development (transport infrastructure) affects food security	21	29	5	7	3

10. To what extent do you agree with the statement that county government development (market infrastructure) affects food security?	20	40	2	3	0
11. To what extent do you agree with the statement that county government development (storage facilities) affects food security?	25	35	2	10	

*Table 5: Respondents' Views on the Effect of infrastructure development on food accessibility and availability in Trans Nzoia East.*

**Source:** Fields data Questionnaire analysis (2024)

The respondents were then asked to rate the level of their agreement that county government development in transport infrastructure impacts food security. From the results, it is clear that most of the respondents agreed or strongly agreed with this statement; 21 (32.3%) totally agreed, and 29 (44.6%) partly agreed, while only 5 (7.7%) did not concur. This implies a common trend among respondents that acknowledged transport infrastructure benefited food security. Better roads and transportation infrastructures facilitate the easy transport of agricultural produce from farms to markets, minimizing post-harvest losses and, hence, early access for both producers and farmers by making foods available on time.

The study also investigated the link between market infrastructure development and food security. The findings reveal a high level of consensus among respondents on the importance that county government development in market infrastructure has had for food

security. In particular, 20 (30.8%) respondents strongly agreed with the statement, and 40 (61.5%) slightly agreed. This shows that investments into market infrastructural amenities like the building of market stalls, warehouses, and trading centers contribute immensely to the enhancement of food accessibility (Adeyeye, 2017). As a result of the availability of modern markets equipped with good production facilities, farmers are able to sell at fair prices, hence improving their income, leading them to transform lives and supply food to local people as well.

In addition, the assessment looked into how storage facilities contributed to food security. The results show a common pattern where most of the respondents agree with county government development in terms of storage facilities. In particular, 25 (38.5%) respondents strongly agreed, and 35 (53.8%) agreed with the statement, while only a few disagreed or did not know. Sufficient storage facilities, like silos and warehouses, reduce post-harvest losses by ensuring safe conditions for preserving perishable agricultural products. This creates food security in the region because it guarantees the availability of foods during scarcity and price fluctuations. However, in addition to transport market and storage infrastructure, irrigation is also vital for improving food security, especially among people living in arid semi-arid regions like Trans Nzoia East. Although the survey did not measure irrigation infrastructure directly, its relevance in increasing agricultural output and adaptation to climate change is worth mentioning. Investments in irrigation schemes and water management systems can help significantly improve crop yields as well as agricultural production potential, which serves to ensure food security all year round.

The results underscore the significance of infrastructure development in ensuring food security for Trans Nzoia East. The development of transport infrastructure, market facilities, and storage and irrigation systems are essential ingredients in a comprehensive food security plan (Bjornland et al., 2020). The general agreement among respondents that infrastructure

development has a positive influence draws out emphasis toward more investment in these fields by county government and other stakeholders. Nevertheless, there are likely to be inequities in infrastructure provision and quality across areas of Trans Nzoia East, leading to variations in food security outcomes between regions. Thus, attempts should be made to eliminate these differences and provide equal opportunities for other communities in terms of infrastructure assets. Infrastructure development is vital in the promotion of food security through better access to markets, storage facilities, and irrigation systems, among others (Memon & El Bilal, 2020). This assessment highlights the need for continuous investment in infrastructure by the county government to address food security issues in Trans Nzoia East and other rural areas.

#### **4.4 Thematic/ Qualitative analysis**

The qualitative analysis of interview responses from the 15 study participants provides valuable insights into their perceptions and experiences regarding County government Agricultural Initiatives related to food security between 2013 and 2022 in Trans Nzoia East, Kenya. Through thematic analysis, several key themes emerge, shedding light on the effectiveness, challenges, and sustainability of these initiatives.

##### **4.4.1 Benefits of County Government Agricultural Initiatives**

Participants noted several benefits from initiatives undertaken by the County government towards Agriculture. Some of these are ready markets for produce and subsidized inputs such as fertilizers and seeds, among other input-based services in the agricultural sector, namely extension services and capacity-building programs.

According to one respondent (009) interviewed she says;

*“I have benefited from county government agricultural initiatives through capacity building and provision of subsidized farm inputs, training, contracted as a trainee to farmers, participated in workshops.”*

Participant 001 pointed out the importance of the county government's subsidized fertilizers, which has definitely benefited farmers in this region. Among the respondents, the provision of subsidized farm inputs such as fertilizers and seeds was identified to be a recurrent theme. This implies that these schemes have benefited the farmers as they reduced their input costs and increased farm productivity. Other interviewees also talked about having access to a ready market for their goods and receiving details needed in the production of farm products through extension services and workshops organized by the county government.

#### **4.4.2 Food Security and the Role of County Government**

Different opinions were offered by participants on the general food security status of Trans Nzoia since the beginning of this study. Some pronounced it in a positive way as either 'fair' or 'good,' mentioning the presence of maize and higher rains; others pointed out difficulties, such as insufficient food supply, stagnant level of food security due to weather, and input costs deficiency low stability at prices. The diversity of opinions shows the fluctuating nature of food security development dynamics across this area due to issues such as variability, market reliance, and farming methods. According to the respondents, There has been food security in recent years due to an increase in rains and diversification in agricultural practice.

Participants understood the role of the County government in dealing with challenges on food security through varied interventions. They praised initiatives, such as extension services offered to the farmers, subsidized inputs availed to them, and capacity building strengthened for improvement of performance through a series of policy formulations by the ministry. Nevertheless, issues of staffing shortage and inadequate infrastructure, as well as storage facilities, were also highlighted by some participants. This brings to light the need to address issues related to institutions and infrastructural challenges, which boosts the effectiveness of food security interventions. Respondents 014 and 020 quipped that;

*“Stagnant food security due to weather, cost of farm inputs, and farmers don’t take on new technologies.”*

*“The county, through the agriculture sector, implements the ministry's policies on the ground. They registered farmers for proper planning. Play a key role in pest control and diseases.”*

This highlights the importance of tackling institutional and infrastructural challenges that directly influence the success of food security programs. As noted by Respondents 014 and 020, stagnant food security is often the result of adverse weather conditions, rising costs of farm inputs, and farmers' reluctance to adopt new technologies. Addressing these barriers can improve the implementation of agricultural policies at the county level, where proper registration of farmers, pest control, and disease management are critical to ensuring sustainable food production. These efforts strengthen the overall effectiveness of interventions aimed at achieving food security

#### **4.4.3 Sustainability of Input Subsidies and Effect of Input Subsidies on Crop Choice**

The issue of input subsidy sustainability became a dominant concern among the interviewed respondents. Some people argued that subsidies were sustainable as government support, while others doubted their sustainability by indicating the financial limitations, governance changes, and lack of value addition for farmers’ output products. This also points out the importance of a holistic approach to ensure the long-term sustainability of agricultural interventions beyond subsidies. Besides, respondents also pointed out the importance that input subsidies had in determining farmers' crop choices as well as agricultural practices. The results show that subsidy is also a very vital component in influencing farmers’ preferences as most of them choose crops whose inputs have been, therefore, subsidized. Also, input subsidies contribute to the increase of crop acreage in agricultural production and transformation into other crops such as beans, sunflowers, and canola, among others. This implies that subsidies

not only diminish the cost of production but promote innovation in diverse agricultural opportunities for farmers.

Farmer preferences for the choice of crops or farming practices and the influence input subsidy has on their decision-making regarding these choices were overwhelmingly supported by participants. According to a majority of respondents interviewed, Farmers opt for crops whose inputs have been subsidized. The results show that farmers tend to choose those crops whose inputs are subsidized by the county government. The preference for crops that have been subsidized is due to the cost savings benefits accruing from these subsidies, which allow farmers to increase their output and viability. On the other hand, some of the participants highlighted that a lack of subsidized inputs could also cause delays in making decisions as people wait for availability to make planting choices.

#### **4.4.4 Importance of Participation in Capacity Building Programs**

Most of the people interviewed indicated that they had attended different capacity-building programs or training regarding farming, both as growers and agricultural professionals. Such programs are deemed relevant in providing necessary knowledge and skills to farmers, increasing agricultural performance as well as improving livelihoods. The following is a sample recommendation from an interviewed respondent (015);

*“Training farmers on the most economical way of agricultural production and increasing extension officers. Mass training and frequent follow-up visits to farmers. Visit farmers to check the progress. Improve on staffing.”*

Workshops organized by agricultural organizations were also referenced among participants as the sources of such opportunities for learning and skill development in project initiatives like the Kenya Soil Extension Project (KSEP). In addition, interview respondents mentioned a number of approaches to building capacity that have strong implications for increasing agricultural productivity. Some of these are the preparation for training, field days

and benchmarking visits to other farmers, massive training with regular follow-up visits, and outreach through public *baraza* as well as media. Emphasis was also placed on extension services, farmer education, and organizing agricultural tours for knowledge transfer as well as skill improvement. Generally, the participants highlighted that ongoing training and specialized extension services would be important to ensure farmers successfully implement contemporary farming methods.

#### **4.4.5 Impact of poor infrastructure on agricultural Transportation**

The participants noted that poor road networks negatively affected the movement of agricultural products in Trans-Nzoia East. The responses also revealed that bad roads, particularly during the rainy season, are a very big problem for farmers in their efforts to transport agricultural produce into market centers. This leads to time losses, higher transportation costs, and harvest loss, especially for highly perishable goods. Moreover, the matter of roads means that some farmers are forced to use other forms—donkeys, for instance—which in turn aggravates distribution problems in agricultural trade. Another major theme that has been identified is the limited space across storage units and processing centers in the region. A lack of storage facilities was another issue that the participants highlighted, which resulted in farmers selling their produce at giveaway prices and having no means to preserve surplus harvest. The lack of processing centers also limits value addition to agricultural products, thereby reducing the chances for farmers to increase their income by selling processed goods. Below is a respondent sharing her views on the impact of roads and infrastructure in agricultural activities;

According to respondent 010,

*“Roads in Makutano and Bonde increase the cost of transportation. Poor roads in bad weather sessions and topography of some areas around Kabolet hamper agricultural*

*activities. Nyakinywa to Kapchepsir road is in a very bad state, especially during rainy seasons, and hampers transportation of produce.”*

The interviewees highlighted that the state of infrastructure, especially on roads, storage facilities, and processing centers, has a great effect on agricultural productivity as well as the livelihoods of the people of Trans Nzoia East. Poor infrastructure not only obstructs the transportation of agricultural products to market but also worsens post-harvest losses and reduces possibilities for value addition and income mobilization. A respondent (012) also shared that;

*“Farmers in the interiors where the roads are poor end up selling their produce to brokers at low prices. Roads in the interiors are impassible, especially during rainy seasons, leading to after-harvest losses of perishable agricultural produce.”*

The poor state of roads in interior regions forces farmers to sell their produce to brokers at lower prices, as they cannot access broader markets due to transportation challenges. During the rainy season, these roads often become impassable, leading to significant post-harvest losses, especially for perishable goods. This situation not only diminishes the profitability of farming activities but also undermines food security efforts by reducing the availability of agricultural products. Consequently, the lack of reliable infrastructure hinders both economic viability for farmers and the overall food supply chain, deepening food insecurity. This, in turn, impacts the economic reasonability that is attached to farming activities and the general situation of food security.

#### **4.4.6 Unintended Consequences of Agricultural Initiatives**

The detrimental effects on food security outcomes of various county government initiatives in the agricultural sector were highlighted by several participants. Some of these problems were corruption in the allocation of agricultural financing, delays in project funding, and the introduction of poisoned seeds into markets.

*“Delay of funding in agricultural financing and corruption in agricultural projects. Some projects they initiate are not viable, and licensing to farmers in transportation is costly.”*

Moreover, certain respondents pointed out the unwillingness of farmers to embrace new farming methodologies and crime rise following agricultural projects due to an influx in population. These unintended negative impacts justify the importance of enhanced governance, accountability, and transparent implementation of agricultural projects to minimize any harm to food security.

#### **4.5 Summary**

This chapter explores the influence of County government agricultural initiatives on food security in Trans Nzoia East, focusing on infrastructure development, survey findings, and qualitative insights. It highlights the critical role of infrastructure—transport, market, and storage facilities—in enhancing food accessibility and availability. Survey results indicate that a significant majority of respondents believe that improvements in transport and market infrastructure positively impact food security, as they facilitate the movement of produce and create access to markets. Additionally, the chapter examines the importance of storage facilities in reducing post-harvest losses and ensuring food availability during scarcity.

Qualitative analysis reveals several themes, including the benefits of County initiatives, such as subsidized inputs and capacity-building programs, which enhance agricultural productivity. However, challenges like poor infrastructure, limited storage, and governance issues hinder progress. Participants expressed concerns about the sustainability of input subsidies and the need for ongoing capacity-building efforts. The chapter concludes that while infrastructure development is essential for food security, addressing inequities and improving governance are crucial for maximizing the impact of agricultural initiatives in the region.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **Introduction**

This chapter concludes the study by offering a summary, conclusions, and recommendations based on the findings of our research. The major aim of the research was to determine the Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East, Kenya, from 2013 to 2022. The chapter opens with a summary of the principal findings, followed by a close analysis of those implications. In addition to this, the chapter will then conclude the study and provide recommendations regarding the implementation of policy and practice, as well as future areas of research that could help improve the issue. This chapter seeks to provide useful information to the stakeholders and add to the scholarly debates on the Influence of County Government Agricultural Initiatives on Food Security.

#### **5.1 Summary of Findings**

Using a multidimensional approach that factored in capacity-building activities, infrastructure development, and input subsidies, among other elements, the research strives to shed some light on agriculture's productivity and food stability. One critical finding concerning the research is that capacity-building programs have played a very crucial role in enhancing agricultural productivity. The research showed that capacity-building programs like training workshops and extension services contribute significantly to improving farmers' knowledge and skills. The respondents appreciated that these programs played a good role in changing farming culture by seeing the use of advanced agricultural technologies. Additionally, the respondents were unified in opinion concerning a need for capacity building to foster sustainable agricultural development and secure food supply in the region.

Another important finding concerns the influence of input subsidies on farmers' choice of crops and practices in agriculture. It was discovered by the research that subsidized inputs, such as fertilizers and seeds, play an extensive role in facilitating farmers' decision-making processes. Participants stated that the provision of subsidized inputs frequently dictates what crops farmers choose to grow and, by so doing, raises overall production levels as well as supports better food security. Nevertheless, the question arose about the sustainability of input subsidies as some respondents contended with such problems related to funding and governance transits. In addition, the study analyzed how infrastructure development affected food availability and access in Trans Nzoia East. Results showed that the provision of improved infrastructure, mainly transport and storage facilities, has a significant influence on the improvement in food security. Better road networks ensure that agricultural produce is brought to the markets, thus reducing post-harvest losses and ensuring timely availability of food for both producers and consumers. On the other hand, insufficient storage facilities were noted as a major challenge, resulting in weaknesses along the agricultural value chain, which leads to food shortage and hunger.

Moreover, the study looked into stakeholders' perceptions of food insecurity status in Trans Nzoia East from 2013-2022. Although the responses from some respondents were very optimistic concerning the food security status of the region due to increased agricultural productivity and government interventions, others pointed out persisting challenges such as weather volatility and constrained markets. The wide range of views emphasizes the complexity of food security matters and also shows that there is a need for interventions to deal with particular challenges facing farmers in this region. The results of this study offer interesting perspectives on the complexity and nature of food insecurity in Trans Nzoia East, Kenya. In studying the role of County government Agricultural Initiatives on components of agricultural production and food access, the research thus contributes to a deeper understanding

of determinants driving outcomes in these parts as far as agriculture is concerned. Going forward, policymakers and practitioners can use these findings to help plan better interventions for the promotion of sustainable agricultural development in Trans Nzoia East that enhances food security among all residents.

In addition, the thematic analysis of interview responses from stakeholders in Trans Nzoia East Kenya shed light on insight pertaining to enduring success or otherwise for the County government's Agricultural Initiatives related to food security between 2013 and 2022. A number of critical underlying themes emerged from the deliberations, providing subtle insights into a range of issues as they relate to agricultural development in this part. Notably, the participants also pointed out direct benefits from interventions, which included the availability of subsidized inputs such as fertilizer and seeds, hence improving their access as well as market linkages together with extension services. Subsidized inputs were hailed specifically for their role in lowering production costs for farmers and increasing agricultural productivity.

Secondly, the interviewed participants had a wide range of perspectives in characterizing the general food security situation prevailing within the region. Although some considered it just or enough, given the abundance of staple crops such as maize and conducive weather conditions, food shortage and volatility in prices, among other issues, were an issue of concern, with many citizens coming to this realization due to external factors, including climate change. Further, participants acknowledged the initiatives of the County government in combating food security issues through various interventions. Such measures included extension work, capacity-building programs, and agricultural policy packages. Nevertheless, the fundamental challenges that continue to persist include staff shortages and infrastructural deficits that prevented these initiatives from fully achieving their potential.

A major topic of discussion centered on the sustainability aspect relating to input subsidies offered by the County government. While the stakeholders agreed on short-term benefits gained by these subsidies in changing the crop choices farmers practice, they called into question their sustainability in the long term, given concerns about funding constraints and governance changes. Further, stakeholders highlighted the need for farmers to participate in engagement programs such as capacity-building programs, which would enhance farmers' knowledge and skills. Employing various strategies, including field demonstrations, benchmark visits, and extension services, was observed to be useful for the increases in crop productivity- which also impacted household livelihoods.

In addition, interviewees pointed out the negative impacts brought about by poor infrastructure, especially road networking and storage facilities, on agricultural operations such as transportation of commodities after harvesting. Difficult roads and insufficient storage facilities brought transportation delays as one of the challenges for inducing post-harvest losses. However, despite the benefits achieved from County government agricultural initiatives, participants noted undesirable consequences such as corruption in project implementation and delay of funding, among others. These challenges highlighted the importance of better governance and openness in program delivery. Based on these results, stakeholders proposed a number of recommendations to improve food security in the region.

These included expansion of extension services, improved infrastructure, provision for sustainable input subsidies, and diversification in the types of farming implemented. Moreover, stakeholders highlighted the need for additional research to resolve emerging issues and direct evidence-based policymaking. The addition of stakeholders' views contributes to an in-depth insight into the advantages and difficulties associated with agricultural projects, thereby creating a platform for making informed decisions guiding policy development in this area.

## **5.2 Contribution to Knowledge**

This research has made a great impact on the current literature with regard to agriculture development and food security, especially in the Trans Nzoia East region of Kenya. Through a thorough analysis of county government agricultural initiatives between 2013 and 2022, with an emphasis on the impact on food security, the study addresses various crucial gaps in the literature. The first aspect that the research provides illumination on is the role of County governments' Agricultural Initiatives in addressing food security issues within a particular location. While many research works have focused on analyzing agricultural interventions at the country-wide or even regional level, few studies have investigated localized impacts of these initiatives. By focusing on Trans Nzoia East, the study offers an informative snapshot of agricultural evolution within a county setting, contributing to our knowledge about different factors that contribute to food security outcomes. In addition, the study informs on how input subsidies play a crucial part in determining farmer crop choice and type of farming. Although input subsidies are a commonly used method of governmental support for agricultural production, the effect that such aid has on food security and sustainability is an ongoing debate in many regions. This research analyzes how farm input subsidies are perceived and experienced by farmers; it is, therefore, empirical evidence on the issues of effectiveness challenges as well as unintended consequences. Analyzing the subtle dynamics of input subsidy programs in-depth within this specific local setting provides insight into such implications as agricultural development and food security.

Additionally, the study points out gaps in the literature that have been overlooked regarding sustainable agricultural interventions and capacity building as a basis for improving farmers' resilience and productivity. Though other studies have focused on the immediate benefits of capacity-building programs, there is an absence of understanding regarding their long-term sustainability and ability to promote agricultural innovation and adaptation.

Through the investigation of stakeholders' perceptions towards capacity building and its influence on agricultural productivity, this research offers important information about how knowledge transfer produces increased output in finite resources. Moreover, the study has epistemological significance in that it brings to light how infrastructure plays a critical role in facilitating agricultural trade and securing food. Although infrastructure development is widely acknowledged as one of the main enablers of economic growth and development, its role in agricultural productivity with respect to food security outcomes remains mostly neglected.

This research emphasizes that functional infrastructure consisting of road networks, storage facilities, and processing hubs is vital for value chain support and lowering loss of time. Through highlighting the infrastructure deficits in Trans Nzoia East and its ramifications on food security, the study reinforces a focus on specific investments with regards to rural infrastructure as support of agricultural development so that they will lead to better outcomes perspectives at enhancing internal nutritional security. Finally, the study contributes to knowledge through empirical evidence that is gathered to assess the effectiveness, challenges, and sustainability of county government agricultural initiatives in Trans Nzoia East. The research addresses crucial knowledge gaps and sheds light on the micro-level dynamics of agricultural development, making new contributions to our understanding.

### **5.3 Conclusion**

This study has yielded crucial knowledge about the trends of agricultural output and food safety in Trans Nzoia East, Kenya, from 2013 to 2022. Through analysis of the impact of County government Agricultural Initiatives on various areas in the development of agriculture, this study has demonstrated how effective these programs are and whether there are any challenges to their sustainability. One of the major findings in this research is that capacity-building efforts have brought tremendous positive variance to agricultural production and reduced food shortages in Trans Nzoia East. Through capacity-building programs, either in the

form of training workshops or extension services, farmers' knowledge and skills were seen to increase, which resulted in better on-farm practices as well as the use of modern agricultural techniques. This highlights the need for investing in human resources development to enhance agricultural systems' resilience and encourage the sustainability of rural citizens. Also, the study showed that input subsidies influenced farmers' crop decision and their farming practices. The subsidized inputs in both the fertilizers and seeds were found to be major determinants of farmers' allocation mechanisms with respect to the increased amount of production, which thus translated into food security. Additionally, the study emphasized that infrastructure development was relevant in improving food security output. Better road networks, storage facilities, and processing centers were identified as necessary components of the agricultural farm value chain that ensures the movement of agricultural produce from farms to markets, reducing post-harvest losses. While insufficient infrastructure was found to be a critical challenge, this implies that investment in rural infrastructures is crucial for maximizing the potential of agricultural growth.

## **5.4 Recommendations**

In line with the results from this study, certain recommendations can be drawn for policymakers and stakeholders engaging in agricultural development and food security initiatives targeted at Trans Nzoia East, Kenya.

### **5.4.1 Policy recommendations**

- The strengthening of extension services by the County government in order to equip the farmers in Trans Nzoia East with timely information, training, and technical assistance. This involves increasing the number of extension officers, improving their training and capacity-building initiatives, and harnessing digital technologies in the remote provision of services.

- County government of Trans Nzoia needs to put in place mechanisms to ensure that farmers in Trans Nzoia East have better access to quality inputs like fertilizer, seeds, and pesticides. This can be done through specific subsidy programs on inputs, some kind of support to input supply chains, and managing partnerships with the selected suppliers for timely availability and affordable commodities.

The participants made practical recommendations and improvements that could help to increase food security in the region on account of experiences gathered from previous encounters.

- Some notable recommendations were an emphasis on the extension services and capacity building of farmers, enhancing staff levels in the agriculture sector, and enhancing processing and storage facilities. Other participants also noted the need for varied farming activities, improved transport infrastructure, and the provision of durable input subsidies to farmers. These recommendations signify a progressive and encompassing strategy to redress the food security challenges that include agricultural, infrastructural as well as institutional interventions.
- Most participants elicited the issue of a need for further research regarding various types of input subsidies and their impacts on agricultural outputs. Respondents stressed the need for further understanding of strengths and weaknesses in input subsidy programs to guide better policy formulations.
- Participants also noted that research should be conducted on the issues concerning emerging challenges such as climate change and appropriate inputs to be subsidized. This call to research further reinforces the emphasis on evidence-based methods within policy formulation and implementation.
- There is a need for the development of infrastructure, such as roads, and the provision of either storage facilities or processing centers in rural areas of Trans Nzoia East to

facilitate easy accessibility and save on post-harvest losses while improving food security.

- Promoting crop diversification and the livelihoods of farmers in Trans Nzoia East would help them build resilience against the vagaries of climate change, market volatility, or other external shocks. This entails training programs, provision of market information, and value-chain development schemes.
- Coordinated action by the public and private entities in Trans Nzoia East to spur agricultural development and agribusinesses or even promote further farming technology. This includes providing an enabling environment for private-public partnerships, promoting investment in the private sector in agriculture, and facilitating the implementation of inclusive business models that benefit smallholders.
- The effective implementation of agricultural programs requires transparency, accountability, and good governance. Putting significant emphasis on institutional reforms, administrative rationalization, and effective monitoring systems to ensure resource allocation effectiveness in support of an emerging development agenda.

#### **5.4.2 Future Research**

For future research, several areas warrant further investigation to build upon the findings of this study and address existing gaps in knowledge.

- Longitudinal studies are necessary for future research on determining the contribution of long-term County government Agricultural Initiatives to agricultural productivity, food security, and livelihoods in Trans Nzoia East. Through this comparative interim analysis, researchers can understand the long-term effects of such policies and practices that are or are not sustainable in different settings.
- Considering the high and rising occurrences of events related to climate change, future studies should investigate approaches that can fortify resilience in Trans Nzoia East's

agricultural systems. These can include an analysis of farmers' adaptation strategies, the success rates and sustainable use of climate-smart practices, as well as understanding policy options to drive resilience.

- Significant research also needs to be done in order to carry out wide-ranging value chain analyses for the leading region's agricultural commodities. Mapping out value chains enables researchers to determine bottlenecks, inefficiencies, and opportunities for value addition, market access, and guaranteed income along the agricultural chain.
- More importantly, gender-sensitive research is required to facilitate the understanding of how different types of agricultural interventions impact men and women farmers differently. Future research needs to focus on gender dynamics in agricultural production, resource accessibility processes, and the allocation of benefits so that interventions are inclusive and fair.
- Research on how to increase the farmer's involvement in decisions made regarding agricultural development. This includes analyzing the function of farmer organizations, participatory strategies for program design and delivery, and processes by which farmers' voice and agency can be increased in policymaking.

By addressing these research priorities and implementing the recommendations outlined above, policymakers, practitioners, and stakeholders can work together to promote sustainable agricultural development, enhance food security, and improve the livelihoods of rural communities in Trans Nzoia East, Kenya and beyond.

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## APPENDICES

### Appendix 1: Interview Guide

My name is (\*\*\*) from (\*\*\*) doing a master's dissertation on the Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East, Kenya, from 2013 to 2022. Kindly help me complete this thesis by providing answers to the questions asked through this interview since it forms an important part of my academic undertaking and can help with future problems or other research.

#### Questionnaire

- 1) Please indicate your role in the agriculture sector in Trans Nzoia East, Kenya.
  - a) Farmer [ ]
  - b) County government official [ ]
  - c) Agricultural or food security expert [ ]
  - d) Other (please specify) [ ]
  
- 2) How have you benefited from any County government Agricultural Initiatives related to food security between 2013 and 2022?

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3) How would you describe the overall food security situation in Trans Nzoia East, Kenya, between 2013 and 2022?

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4) What is your view on the role of the County government in addressing food security issues in Trans Nzoia East?

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5) How sustainable do you believe the effects of input subsidies on agricultural production are after the subsidy period ends?

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6) In your experience, what are some of the ways that input subsidies have influenced the choice of crops or agricultural practices among farmers?

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7) Have you participated in any capacity-building programs or training related to agriculture, either as a farmer or an agricultural professional?

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8) In your opinion, what strategies in capacity building have the most significant impact on improving agricultural productivity?

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9) How do you think the state of infrastructure in Trans Nzoia East, such as roads, storage facilities, and processing centers, affects the accessibility of food for both producers and consumers?

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10) Can you provide examples of how poor road infrastructure has impacted the transportation of agricultural products in Trans Nzoia East?

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11) In your opinion, how have input subsidies influenced the choice of crops or agricultural practices among farmers?

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12) Can you identify any unintended consequences or detrimental effects of the County government's Agricultural Initiatives on food security?

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13) In your opinion, what recommendations or improvements could be made to enhance food security in the region based on your experiences and insights?

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14) In your opinion, do you think there is a need for more research into the specific types of input subsidies and their effects on agricultural production? Why or why not?

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## Appendix 2: Questionnaire

### Questionnaire on the Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East, Kenya, from 2013-2022.

#### Part one: Influence of subsidized input on agricultural production

	a. Strongly agree	b. Agree	c. Don't know	d. Disagree	e. Strongly disagree
12. To what extent do you believe the government provides access to quality fertilizers as subsidized input?					
13. To what extent do you believe the government offers farm financing opportunities?					
14. To what extent do you believe that access to quality fertilizers affects agricultural production?					

15. To what extent do you believe that farm financing opportunities affect agricultural production?					
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**Part two: Influence of County government capacity building of farmers on agricultural production**

	<b>f. Strongly agree</b>	<b>g. Agree</b>	<b>h. Don't know</b>	<b>i. Disagree</b>	<b>j. Strongly disagree</b>
16. To what extent do you believe the county government offers capacity building?					
17. To what extent do you believe that county government capacity-building initiatives influence					

farmer's knowledge and skills?					
18. To what extent do you believe that county government capacity-building initiatives influence the adoption of modern farming practices?					
19. To what extent do you believe that access to resources and technology affects county government capacity-building initiatives?					

**Part three: Effect of infrastructure development on food accessibility and availability**

	<b>f. Strongly agree</b>	<b>g. Agree</b>	<b>h. Don't know</b>	<b>i. Disagree</b>	<b>j. Strongly disagree</b>
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<p>20. To what extent do you agree with the statement that county government development (transport infrastructure) affects food security?</p>					
<p>21. To what extent do you agree with the statement that county government development (market infrastructure) affects food security?</p>					
<p>22. To what extent do you agree with the statement that county government development (storage facilities) affects food security?</p>					

### Appendix 3: Letter of Data Collection Authorization

Telephone: 051- 851141  
Fax: 051-851046  
Email: [ndu-kenya@mod.go.ke](mailto:ndu-kenya@mod.go.ke)  
When Replying Please Quote:  
Ref: NDU - K/AA & R/02



National Defence University-Kenya  
P O Box 3812 – 20100  
Nakuru, Kenya

23 November 2023

**TO WHOM IT MAY CONCERN**

**RE: RESEARCH AUTHORISATION**

**Ms. Flavia Akumu** of National Defence College, a College of National Defence University-Kenya, successfully defended her Master of Arts research proposal and has been allowed to proceed to the field to collect data for her thesis.

The research's topic is, "**Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East Sub County, Kenya, 2013 to 2022**". The Candidate will be conducting the field work with effect from December 2023.

The purpose of this letter, therefore, is to request you to accord her any necessary assistance to successfully conduct the research.

Your continued assistance is highly appreciated.

Yours faithfully,

**Prof Anne W T Muigai**  
Deputy Vice-Chancellor  
National Defence University-Kenya

## Appendix 4: Research Permit from NACOSTI

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 863006	Date of Issue: 22/December/2023
<b>RESEARCH LICENSE</b>	
	
<p>This is to Certify that Ms. Flavia Akumu of National Defence University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Transzoia on the topic: Influence of County Government Agricultural Initiative on Food Security in TransNzoia East Sub County, Kenya, 2013-2022 for the period ending : 22/December/2024.</p>	
License No: NACOSTI/P/23/32081	
863006 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	
See overleaf for conditions	

**Appendix 5: Research Introduction from the Ministry of Interior and National Administration**



**OFFICE OF THE PRESIDENT**

**MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION  
STATE DEPARTMENT FOR INTERNAL SECURITY AND NATIONAL ADMINISTRATION**

Telegrams:  
Telephone:  
E-mail: cctransnzoiacounty@yahoo.com  
When replying please quote our Ref

**COUNTY COMMISSIONER'S OFFICE  
TRANS NZOIA COUNTY  
P.O. BOX 11-30200  
KITALE**

REF: TNZC/CONF/ED.12/2/VOL.V/153

16<sup>th</sup> January, 2024

Deputy County Commissioner  
TRANS NZOIA EAST SUB-COUNTY

**RE: RESEARCH AUTHORIZATION**

This is to inform you that Ms. Flavia Akumu of National Defence University has been authorized by National Commission for Science, Technology and Innovation to carry out research on "Influence of County Government Agricultural Initiative on Food Security" in Trans Nzoia County - Trans Nzoia East Sub-County for a period ending 22<sup>nd</sup> December, 2024.

Kindly accord her the necessary assistance that she may require.

  
SHITOTE HILLARY  
FOR: COUNTY COMMISSIONER  
TRANS NZOIA COUNTY



C.C.

County Director of Education  
TRANS NZOIA COUNTY

**Appendix 6: Letter from the Ministry of Education**



**REPUBLIC OF KENYA  
Ministry of Education  
State Department for Basic Education**

Telegrams: .....  
Telephone: Kitale 054-31653 – 30200  
Fax: 054-31109  
Email: [transnzoiacde@gmail.com](mailto:transnzoiacde@gmail.com)  
When replying please quote:

**County Director of Education  
Trans Nzoia  
P.O. Box 2024 – 30200  
KITALE.**

**Ref. No.** TNZ/CNT/CDE/R.GEN/1/VOL.III/60

**Date:** 16<sup>th</sup> January, 2024

**TO WHOM IT MAY CONCERN**

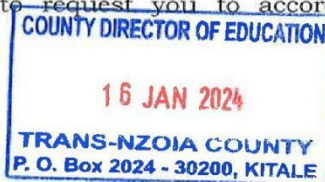
**RE: RESEARCH AUTHORIZATION –MS.FLAVIA AKUMU**

This office acknowledges receipt of Research License No. **NACOSTI/P/23/32081** dated 22<sup>nd</sup> December, 2023 from National Commission for Science Technology & Innovation.

**MS.FLAVIA AKUMU**, of National Defence University has been authorized to carry out research on **“Influence of County Government Agricultural Initiative on Food Security”** in **Trans-Nzoia East Sub-County, Trans-Nzoia County, Kenya** for a period ending **22<sup>nd</sup> December, 2024**.

The purpose of the letter is to request you to accord her the necessary assistance.

  
**PAMELA AKELLO, HSC  
COUNTY DIRECTOR OF EDUCATION  
TRANS-NZOIA COUNTY**



## Appendix 7: Plagiarism Report

### INFLUENCE OF COUNTY GOVERNMENT AGRICULTURAL INITIATIVES ON FOOD SECURITY IN TRANS NZOIA EAST, KENYA (2013 TO 2022) BY: FLAVIA AKUMU

#### ORIGINALITY REPORT

<b>13%</b> SIMILARITY INDEX	<b>12%</b> INTERNET SOURCES	<b>6%</b> PUBLICATIONS	<b>5%</b> STUDENT PAPERS
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#### PRIMARY SOURCES

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<b>6</b>	<b>Submitted to KCA University</b> Student Paper	<b>&lt;1%</b>
<b>7</b>	<b>ir-library.mmust.ac.ke</b> Internet Source	<b>&lt;1%</b>
<b>8</b>	<b>Submitted to Botswana Open University</b> Student Paper	<b>&lt;1%</b>

## **Appendix 8: Consent to Participate in Research Study**

**Study Title:** Influence of County Government Agricultural Initiatives on Food Security in Trans Nzoia East, Kenya

Flavia Akumu, Master's Candidate National Defence University – Kenya, Master of Security and Strategic Studies Program

### Introduction

You are invited to participate in a research study conducted by Flavia Akumu, a master's student at the National Defence University - Kenya. The purpose of this study is to examine the influence of county government agricultural initiatives on food security in Trans Nzoia East, Kenya. Your participation in this study is entirely voluntary. The research findings will contribute to a better understanding of the effectiveness of local government policies and programs in addressing food security challenges.

### Study Procedures

If you agree to participate in this study, you will be asked to:

1. Complete a survey questionnaire about your experiences with county government agricultural initiatives and food security in your area.
2. Potentially participate in a follow-up interview to provide more detailed information.

The estimated time commitment for the survey is approximately 15 minutes. If selected for an interview, it may take an additional 15-25 minutes.

### Risks and Benefits

There are no known risks associated with participating in this study. While there may be no direct benefits to you, your participation will contribute to a better understanding of food security issues in Trans Nzoia East and may inform future policy decisions.

### Confidentiality

All information collected in this study will be kept strictly confidential. Your responses will be coded and will not be linked to your name or other identifying information in any reports or publications resulting from this study.

### Voluntary Participation

Your participation in this study is completely voluntary. You may choose not to participate or to withdraw from the study at any time without any negative consequences.

### Contact Information

If you have any questions or concerns about this study, please contact:

Flavia Akumu Email: [flaviakumu@gmail.com]

If you have questions about your rights as a research participant, please contact the National Defence College: [info@ndc.go.ke]

### Consent

By signing below, you indicate that you have read and understood the information provided above, have had an opportunity to ask questions, and agree to participate in this research study.

Participant's Name (printed): \_\_\_\_\_

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_ Date: \_\_\_\_\_