

**SOCIO-ECONOMIC FACTORS INFLUENCING DEVELOPMENT OF
AGRICULTURE IN MATSANGONI WARD, KILIFI COUNTY
KENYA**

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**A Research Thesis Submitted in Partial Fulfilment of the Requirements for the Award
of the Degree of Master of Arts in Social Transformation with Specialization in
Sustainable Development**

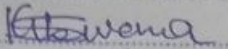
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Declaration

I, the undersigned, hereby declare that this Thesis is my own original work based on my own reading, research, and experience at Tangaza University College. It is submitted in partial fulfilment of the requirements for the Master of Arts in Social Transformation Degree. It has never been submitted for academic credit to any other college or university.


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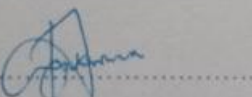
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Dedication

Dedicated to all Kenyan farmers whose hard work ensures that most of us have food on our tables every day.

Acknowledgement

I would like to express my gratitude to my supervisors, Dr. Beatrice Ndiga and Dr. Tiberry Nyakwana, for their dedication, support, and encouragement. I would like to thank the education and administration staff at Tangaza University College's Institute for Social Transformation for their direct and indirect assistance in my quest for knowledge. Special thanks to the participants from the farming community of Matsangoni who sacrificed their time to take part and support this study. Finally, I want to thank my colleagues, classmates, and friends for their moral support, which kept me going even when things got tough. May God abundantly bless you.

Abstract

The goal of this research was to look into the socioeconomic factors that influence agricultural development in the Matsangoni area of Kilifi County, Kenya. The study's objectives were to evaluate, determine, establish, and assess the impact of infrastructure and storage facilities, farmer educational level, cost of production/inputs, and access to credit on agricultural development in the study area. A sample of 201 respondents comprising 200 farmers and 1 Agricultural officer was reached via stratified random sampling and purposive sampling procedures. The study was anchored on the Shultz theory of agricultural development supported by Adam Smith's Theory of development. The data was collected using questionnaires and interview schedules. Descriptive, inferential and thematic analysis have been used to analyze the data presented in the form of tables. The data collected indicate that 132 participants had Agriculture as the main source of income. The highest number of farmers had murram roads access but generally, farmers do not have good road access. The findings further indicated that lack of proper storage facilities is a major challenge, while majority of participants did not have access to any agricultural training or information. There is only one Ward Agriculture officer serving the entire sub county. Only 25% of the participants are able to buy seeds, fertilizers and hire machinery to use on their farms. Only 28.28% of the participants have been able to receive loans and credit to support their farm work. These indicate a difficulty in access to agricultural training, relative high cost of inputs and inability to access credit facilities. The study recommends to relevant authorities to take necessary steps to address the issues of infrastructural (road and Storage) development, agricultural training schools, increase of extension officers, availing of affordable credit facilities. The study aims to act as a discourse of the policy initiatives in addressing rural agricultural management in Kenya and to provide the basis for the identification of key issues on the successful policy formulation of agricultural management. The information from this study will be disseminated to the stakeholders and wider audience through publishing the findings in various academic platforms and agricultural journals.

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Acronyms and Abbreviations

AEC	Africa Economic Commission
AGRA	Alliance for a Green Revolution in Africa
DCED	Directorate Cooperative and Enterprise Development
ECA	East Commission of Africa
ERS	Economic Recovery Strategy
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
GOK	Government of Kenya
IFPRI	International Food Policy Research Institute
KCIDP	Kilifi County Integrated Development Plan
KI	Key Informants
KNBS	Kenya National Bureau of Statistics
LDC	Least Developed Countries
NACOSTI	National Commission for Science Technology and Innovation
NCPB	National Cereals and Produce Board
PPP	Public Private Partnership
SPSS	Statistical Package for Social Sciences
TNAU	Tamil Nadu Agricultural University
USAID	United States Agency for International Development

Operational Definition of Terms

Access to Credit	Producers must borrow money to buy land, equipment, and other items, or to invest in new technology.
Advancement	Technological advances in agriculture that can increase agriculture's productivity and aid in the global fight against poverty.
Agriculture	The study or practice of growing crops on land and raising animals for food and other products.
Cost of Production	The financial value of all inputs for growing a specific crop. These include all costs - seeds, fertilizer, chemicals, labour, machinery and land.
Development	The procedure establishing the prerequisites for realizing agricultural potential. It is knowledge accumulation, technology availability, input and output distribution.
Education	A method of facilitating the learning or acquisition of knowledge, skills, values, beliefs, and habits. It covers both formal and indigenous agricultural education.
Influence	The ability to have an impact on agricultural yield output.
Infrastructure	The foundation of numerous rural and urban transportation networks; the rural transportation that ensures the availability of agricultural supplies and makes it easier to get farm products to market and structures for storing them.
Rural roads	Low traffic volume roads constructed to relatively low standards with a limited budget within the farming areas that are used by farmers to convey their products to market and may lead to diversification of agricultural activities.
Poverty	A situation in which the poor spend the majority of their income on food, making them vulnerable to high food prices, and many poor people earn the majority of their income from farming, making them vulnerable to drops in agricultural output.

Socioeconomic factors	The individual/region/status of; education, agricultural inputs, income, access to roads, storage, land ownership and access to credit.
Storage facility	Place during the post-harvest system phase in which products are kept in such a way that food security is ensured other than during agricultural production periods.

Chapter One

Introduction

Agriculture contributes significantly to the economic well-being of a large proportion of the world's population. Agriculture is also the primary source of income for the majority of Kenyans. The aim of this study was to examine the socioeconomic factors affecting agricultural development in Matsangoni ward, Kilifi district, Kenya. This chapter discusses the study's background, problem statement, research objective, research questions, justification, scope and delineation of the study, hypotheses of the study, limitations of the study, and finally the study's organization.

1.1 Insertion

The research and ultimate writing of this thesis was largely motivated by the writer's personal experience. Growing up in the general area whereby subsistence farming was the norm, it appeared then that the crops yielded were sufficient to cater for food while other forms of income catered for other requirements. It never occurred to the writer that there could be a major underutilisation of the land and other resources. It was astonishing how, over the years, indigenous plants and crops that were doing very well started to decline and subsequently output of crops began to dwindle. It did not help matters that the population was increasing hence the need for more crop output to cater for feeding and to go commercial in order that other socio-economic challenges like paying for education, health care and provision of better housing could be met. The population within the area of research seemed to be either unable to understand the reasons for the decline in crop output, or could not be able to find ways and means to address and improve on the situation.

1.2 Background to the Study

Food security is recognized as one of the most difficult challenges for rural development. Key factors to improve agricultural productivity and ensure food security include; capacity building of farmers to not only grow their food but to produce more, give them access to it and make more effective use of their land in a sustainable manner (Food and Agriculture Organization, 2017).

The contribution of agricultural development in advancing the economy and alleviating poverty has often been glossed over in as much as it is crucial in driving the growth of incomes (Development Studies Network, 1999). Agriculture is not only crucial to the growth of the economy, but it is one of the most powerful tools that can be used to raise incomes, end extreme poverty and boost shared prosperity (World Bank, 2020). The Global Agriculture and Food security Program's publication on Ending poverty and hunger (2018) states that, ' More than 80 percent of food is generated by agricultural small holders, and it has been demonstrated that the growth of agriculture is 2-3 times more successful in alleviating severe poverty than the growth of any other sector.'

The economic growth of most developing countries is pegged on agriculture, which not only supplies food but also provides employment. This, in turn increases the incomes of the people. According to the Food and Agriculture Organization of the United Nations (2000), 67% of the total population is engaged in agriculture, 43% of exports are agricultural products and therefore contributing to 39.4% of GDP. More and more land is being converted to agricultural production, accounting for a quarter of the arable land. To accomplish sustainable development, poverty reduction, and food security., it is imperative to improve agricultural practices and land

use. Many regions of the world have taken a more ingenious approach to increasing yields through the use of fertilizers, pesticides, and organic fertilizers.

On the continent of Africa, agriculture is the most significant economic sector, accounting for around 25% of GDP and providing jobs for 75% of the labor force (Africa Economic Commission, 2014). More than 80% of people reside in rural areas and depend on agriculture for their primary source of income (Billson, 2019). Therefore, the performance of the economy is a representation for the performance of the industry. Unfortunately, food imports still take place in many countries, which shows how far the region has come.

Agriculture in Africa faces a broader economic growth backdrop and a brighter medium-term market outlook in international, regional and national markets than at any point in the 40 to 50 years. Macro-economic and sectoral policies have been more favorable (Olson, 2018). By strengthening the system of the agricultural sector, the opportunities for local governments, communities and the private sector to function have been improved more than ever, and the environment for business prosperity has also improved.

Lisbon (2017), found that smallholder-dominated agricultural sectors in Africa responded with significantly higher growth rates. 90% of rural Africa's revenue comes from agriculture and accounts for the majority of Africa's share of world trade. Traditional and non-traditional agricultural exports have experienced a rise in market opportunities that need to be taken advantage of as domestic and regional markets give way for medium and long term agricultural growth that small farmers can seize. In 2004, sub-Saharan Africa accounted for 60% of the top 20 agricultural product importers. In terms of global agricultural or exports, African nations make up half of the top 20 countries (Okumu, 2017).

Agriculture is facing fundamental changes. However, rapid population growth, shrinking arable land, changing climatic conditions and increasing demand for food and other agricultural products are posing serious challenges for its development, more so as the natural resources which are the bedrock of agriculture are continually depleted. Land and water degradation caused by human activity and pollution threaten the genetic diversity and decrease the potential for high yields. According to Milton (2019), agriculture increases food security in a number of ways, principally by increasing the supply of food and by giving people a means to buy it. Therefore, increased agricultural productivity leads to increased profits and incomes for the poor in rural areas, increasing their ability to buy more and more food, as well as a variety of foods.

The situation is unchanged despite the several East African governments' policies for addressing agricultural and rural development. Poverty and inequality persist, particularly in rural areas. Kenya's Vision 2030 lists agriculture as one of the important reform sectors, but the country's goal of becoming one of the world's powerful economies is threatened by the underdevelopment of many rural areas (Vision 2030). Many (financial) resources have been put into agriculture, but to no avail (Yakubu, 2019). If agriculture is to be transformed in Africa, strategies will need to be devised to address some of the challenges facing the industry. These include; scaling up the investment in agriculture, improvement of road infrastructure, improving productivity, setting aside funds for agricultural research, embracing modern technology aimed at increasing the yields, strengthening linkages between agriculture and the other sectors of the economy and putting in place policies that promote agricultural development (Okumu, 2017).

Agriculture plays an important role in Kenya's economy, as evidenced by its contributions to raw materials for income generation, job creation, food security and industrial development. The agricultural sector contributes significantly to Kenya's gross domestic product,

from which the majority of Kenyans make a living. The Government of Kenya, in its Economic Recovery Strategy (ERS) document, has identified agriculture as an important vehicle for achieving its goals of job creation and poverty eradication (Government of Kenya, 2013). This sector contributes directly to 26% of GDP and 60% of export revenue. In addition, agriculture indirectly contributes 27% to GDP through collaboration with manufacturing, distribution and service industries. Furthermore, 80% of Kenya's population lives in rural areas and derives income from agricultural activities (Selma, 2014).

Agricultural development in Kenya focuses on poverty alleviation. Other vulnerable groups, including herders, self-sufficient farmers, and landless people, who make their living primarily from agriculture. Consequently, compared to other sectors, the expansion of the agriculture sector will significantly affect the bulk of the population. Improved food security, accelerated and intensified productivity, commercialization, and increase in income particularly for smallholders, equity, prominence on irrigation for output stability, participatory policy formulation and environmental sustainability are the primary objectives that agricultural policy is centered on (Future Agricultures, 2006).

Kilifi County is one of Kenya's five coastal districts spanning 109 square kilometers of the Indian Ocean. It covers an area of 12,246 square kilometers with a population of 1,109,735. The county seat is located in the town of Kilifi. More than half of Kilifi's land is suitable for agriculture. The main crops grown for subsistence include maize, cassava, green beans, cowpeas, rice and bananas. Horticultural crops play an important role in improving the socioeconomic well-being of county communities. Cashew, coconut and mango are the main horticultural crops grown. Other horticultural crops grown are pineapple, lemon, passion fruit, lime, papaya,

watermelon, and a variety of vegetables. These play an important role in increasing household income and reducing poverty (Kilifi County Integration Development Plan (KCIDP), 2018-22).

The Matsangoni ward, which is the subject of this survey, is located in the northern part of Kilifi County and has a geographical area of 41.2 square kilometers. According to the 2019 census and housing, the commune has 18806 inhabitants. Matsangoni's climate is tropical, at an altitude of 12 meters above sea level. The main crops cultivated in the area are maize, cassava, coconut, cashew nuts, sisal and citrus, which are industrial crops. Mangoes and melons are also selling well in the area.

The production of crops in the county is plagued with challenges, which include unreliable rainfall patterns leading to low yields and low pricing of products. Post-harvest losses also occur but can be significantly reduced through value addition. Value addition not only improves the quality and shelf life of farm produce but also increases income from outputs and employment opportunities. Farming of food crops is mainly rain fed subsistence farming with low adaptation to new farming techniques, inadequate extension services and limited credit facilities which if availed would see a drastic improvement of agricultural productivity.

1.3 Statement of the problem

More than half of the land in Kilifi is conducive for farming but only 31 per cent of the farmers hold titles to their land (Kilifi County Factsheet, 2021). There are many types of industrial crops grown including citrus fruits, cashews, coconuts and sisal, with cassava and maize being the main subsistence crops. However, there are several factors that negatively affect agricultural productivity in the area. These include poor condition of rural roads connecting farmers to facilities, poor farmer organization, low literacy rates and lack of interest in

agriculture by the youth. High costs of production and poverty further hampers effort to improve agricultural output (Kilifi County Factsheet, 2021).

In Matsangoni, farmers face a multitude of socioeconomic challenges. There is lack of financial support, farmers do not have any machinery; basic soil-crop matching knowledge is lacking and there are not enough extension officers to support the farmers (KCIDP, 2018 – 2022). This is further compounded by lack of water storage facilities for irrigation, lack of genuine title deeds and recurring land ownership disputes. Untarmacked roads, impassable feeder roads and lack of enough clean water, combined with poor education infrastructure and lack of a functioning cooperative society also hamper agricultural activities (KCIDP, 2018 – 2022).

In this study, the research sought to establish socioeconomic factors influencing the development of agriculture in Matsangoni ward which is in Kilifi County, Kenya. The intention of the study was to explore how socio economic factors influence agricultural development in the area.

1.4 Purpose of the study

The purpose of the study was to examine the socioeconomic factors influencing the development of agriculture in Matsangoni Ward in Kilifi County, Kenya.

1.5 Objectives of the study

To establish socioeconomic factors influencing development of agriculture in Matsangoni Ward, Kilifi County, Kenya. The specific objectives of this study were:

1. To evaluate the influence of infrastructure on the development of agriculture in Matsangoni Ward, Kilifi County, Kenya.

2. To determine the influence of the educational level of farmers on the development of agriculture in Matsangoni Ward, Kilifi County, Kenya.
3. To establish the influence of cost of production/inputson development of agriculture in Matsangoni Ward, Kilifi County, Kenya.
4. To assess the influence of access to credit on the development of agriculture in Matsangoni Ward, Kilifi County.

1.6 Research Questions

1. How does infrastructure influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya?
2. How does education levels influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya?
3. How does the cost of production/inputs influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya?
4. How does access to credit influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya?

1.7 Significance of the Study

The study aimed to act as a discourse of the policy initiatives in addressing rural agricultural management in Kenya. It is intended to provide the basis for determining key issues on the successful policy formulation of agricultural management. Both central and county governments will be able to adjust their policies in order to address the factors that are impeding agricultural development. In addition, the local farmers will ultimately be able to learn and

implement ideas and suggestions that will emanate from the research and improve their living standards.

The goal of the study was to add to the body of knowledge already in existence. In addition, the study aims to enhance the scientific and academic literature on the contribution of rural agriculture to sustainable agricultural development for environmental safety. It is also the pillar of President Kenyatta's Big Four Agenda, 2030 Vision, and Sustainable Development Goals, recognizing the important role women play and the right to food in the broader context of achieving food security. It aims to contribute to promoting the realization of smallholders contribution to achieving food and nutritional security.

1.8 Scope and delimitation of the study

The study was delimited to Matsangoni Ward in Kilifi County. It was restricted to farmers who grow cashew nuts, mangoes, coconuts, citrus, melons, cassava and maize. The study concentrated on socioeconomic factors that influence development of agriculture in the Ward.

1.9 Assumptions of the study

The following crucial presumptions served as the foundation for this study:

1. Participants would be willing to answer research questions frankly and honestly.
2. The method used was sufficient to address the problem and purpose of the study.
3. The results of the survey would be relevant to the stakeholders.

1.10 Limitations of the study

The study was carried out on various farms in Kenya's Kilifi County's Matsangoni ward. The research expectations were well achieved. Only four farmers who had nil education were

unable to answer the questions. However, the local ward agricultural staff helped translate and interpret the questionnaires into a local language they properly understood.

1.11 Organization of the study

This study is presented in five chapters. The first chapter contains an explanation of the background of the study, the definition of the problem, the purpose, the goals, the questions, the justification and scope, the prerequisites and limitations of the study and an overview of the research and research organization. Chapter 2 contains literature reviews, theoretical and empirical reviews, conceptual frameworks, critiques of some existing literature related to research and presentation of research gaps identified by researchers. Chapter 3 contains survey methods, including survey design, survey sites, subjects, sampling methods, survey tools, data collection procedures, data analysis, management methods and ethical considerations. Chapter 4 contains analysis and presentation of the data collected, the demographic details and results obtained from the questions and discussion on the findings. Chapter 5 contains the Summary of the study, theological reflection, ministerial implications conclusions and recommendations.

Chapter two

Literature Review

2.1 Introduction

This chapter reviewed related literature drawn from books, journals and government publications. The review included previous works that had been done both locally and internationally to investigate the socioeconomic factors influencing agricultural productivity. Both theoretical and empirical literature were reviewed.

2.2 Agricultural Development

Agricultural development is the process of setting up the circumstances for achieving agricultural potential, according to Laiglesia (2006). These prerequisites include input-output mapping, technological availability, and knowledge accumulation. According to Ogbeide and Ele (2015), 75% of the world's poorest population reside in rural areas and work as farmers in developing countries. 34% of the GDP and 64% of the labor in sub-Saharan Africa are produced by agriculture, the region's primary industry. Thus, poverty reduction in these regions is directly related to agriculture (Jack, 2013).

The primary path out of poverty is to increase smallholder production, profitability, and sustainability through agricultural development. Science and technology innovation is the key and one of the most important tools (World Bank, 2008).

2.2.1 Socioeconomic factors

Population growth, access to resources like land, and availability to agricultural inputs are all socio-economic challenges (Kilonzi, 2011). Local land ownership laws may determine who has access to agricultural land, but access to inputs like certified goods can have an impact on seeds and fertilizers.

2.3 Theoretical Literature Review

2.3.1 Effects of infrastructure on agricultural development

Dethier and Effenberger (2012) attribute agriculture development as critical to the realization of increased economic advancement, food security, accelerated rural earnings and accelerated development of sectors excluded in developing economies. Countries with well-established rural infrastructures registered greater and superior levels of rural development than those that have yet to develop their rural infrastructure (ECA, 2013). According to Llanto's (2012) research, the productivity of agriculture and the eradication of poverty in Africa are negatively impacted by deficiencies in rural infrastructure, including transportation, electricity, and related infrastructure. The availability of good infrastructure enhances investment in under developed regions by facilitating extensive movement of commodities and people and aid in developing and broadening the economy.

Transportation as part of the infrastructure has a direct and indirect impact on agricultural development. According to Adedeji et al. (2014) efficient and effective transportation is one of the means of exchanging goods and services, moving people, disseminating information and accelerating the development of rural economies. Taiwo and Kumi (2013) credit the presence of convenient, satisfactory and structured transport system as a prerequisite for connecting farm areas that are distant from customer markets with the agricultural production service. A good transportation system likewise enhances interconnection amongst geographic and economic

divisions introducing economic focus to undeveloped regions (Tunde & Adeniyi 2012). In addition to promoting connectedness to rural areas, conditions of rural roads affect cropping methods as a result of market access, increasing farm yield by availing farming inputs such as pesticides, seeds and fertilizers, realization of better prices to the farmers for agriculture produce as well as creating opportunities of employment in spheres and services associated with farming (Sangwan, 2010). Aside from connecting the rural regions to expanding markets, rural roads in top condition reduce input costs and buying prices for the producers and consumers. Nkonya *et al.*, (2011) submit that, by the reduction in transaction expenses coupled with connecting farmers to markets and correlated rural services boosts investment returns subsequently and induces the farmers to embrace and capitalize on improved technologies of managing their lands. Roads in the best possible standards are enablers for bolstering marketing agricultural produce and make allowance for better access to extensive markets, lowering wastages and snags in movement of agricultural produce (Ikejiofor & Ali, 2014). Rural road connections are crucial as they link farmers to their farms, inputs and markets for their produce as put across by Gibbons *et al.*, (2019) who opine that farm output escalate as a result of road interconnectivity.

Increased market access provides farmers with profitable opportunities to incentivize costly productivity enhancing investments. Suri (2011) reaffirms this view putting forward that in as much as farmers lay hold of advanced access to knowledge and inputs, they may not take on high-cost investments in progressive inputs and approaches without securing access to markets that justify such investments.

Gollin and Rogerson (2010) assert that the fundamental contributing factor that hampers agricultural productivity is neither inadequate natural resources nor scarcity of technological

advancement but poor road networks that dissuade utilization of advanced technology and transformation.

Road networks that are in poor condition inhibit the capacity of farmers to communicate and travel to distant farming areas, restricting their access to such areas thus doing away with competition for their produce (Gollin & Rodgerson, 2010). Moreover, such roads reduce the potential for smallholders to effectively compete in the agricultural market. This is due to the limitations that these farmers have when it comes to market essential services they require to match the competition in the agricultural markets (ECA, 2013).

Given the integral role that road networks play both directly and indirectly on agricultural production, revamping of roads increases the gains made by farmers on account of the fact that transportation costs are greatly reduced (Kiprono & Matsumoto, 2014). Llanto (2013) concurs with this thought by putting forward that an effective road network eases labor-market engagement hence doing away with an important obstacle in labor-market penetration.

It is important that good storage facilities are available in order to help in preservation of agricultural products. The main purpose of storage can be summarized as follows; balance the supply and demand of produce and stabilize market prices at the food and marketing levels, which allows for postponed (annual and multi-year) use of harvested produce (Food and Agricultural Organization, 1994).

As an important marketing function, the holding and preservation of items from manufacture to consumption takes place in warehouses. Stockpiling of goods from production to consumption guarantees a continuous flow of goods in the market (Tamil Nadu Agricultural University (TNAU), 2015). Preservation protects the quality of fresh and semi-perishable

products. It also stabilizes prices by adjusting supply and demand. Storage creates employment and income through price advantage (TNAU, 2015).

Perry (2018) argues that over the past decade, farmers have been able to increase their investment in on-farm storage solutions. These solutions, in various forms such as steel grain silos and grain sacks, have enabled farmers to wait for the best prices, reduce transportation costs and avoid queues at storage plants during the busy harvest season.

Road infrastructure within the study area is basically poor and this poses a challenge to farmers. The roads are generally untarmacked, and the feeder roads are impassable especially during rainy seasons. There are no water storage facilities for irrigation and no alternative water resources (KCIDP, 2018 – 2022). Within the entire Kilifi County itself, only two main categories of storage amenities exist. These are the traditional facilities commonly known as granaries that are used at Matsangoni and are built using either grass or makuti by smallholder farmers for storing of farm produce. The other category is the modern ones known as go-downs which belong to the National Cereal and Produce Board (NCPB), and are situated in Kilifi town. The facility is used for storage of large quantities of grains (KCIDP, 2018-2022). This means that the storage of agro products is limited to granaries in Matsangoni Ward since the products are not in bulk to warrant use of go-downs within the Ward.

2.3.2 Education level of farmers and agricultural development

Education is defined in so many ways by different scholars, philosophers and educationists. The etymology of the word education according to Western thinkers comes from the words educo. The letter ‘E’ stands for “out of ” and the word ‘Duco’ which means to lead (Farenga, 2008). Based on this, education is the process of a teacher drawing out the inner capabilities of the learner. Education is one of the means identified by the human capital theory

by which the productivity and efficiency of workers can be increased. Human capital, according to Norwak (2014), is crucial to refining the administration and management of land and capital which are factors of production. Human capital is the key component in economic expansion and social transformation making it an indispensable investment (Grishnova, 2014).

The main attributes that deter momentous development in the productivity of the agricultural workforce have been the inferior rural human capital and traditional agricultural inputs (LDC 2015). (Zubovic *et al.*, 2009 as quoted in Riviera 2011) ascribe inferior human capital in the agricultural sector to more than 50% of the countryside population attaining only basic primary learning or less as the impelling cause of minimal productivity and limited competition within the sector. In addition to low education levels of the producers, Clarke *et al.*, (2017) state that human capital is further impacted negatively by deficiencies in extension services and training. In their study to explore the impact that training had on productivity, Colombo and Stanca (2014) established that productiveness was notably impacted by training. Huffman (2014) also came to the conclusion that education strengthened agricultural productivity.

Educated farmers have an edge over their uneducated counterparts on account of the knowledge and skills that they acquire through learning which are integral to increased productivity (Korgitet, 2019). Agricultural productivity increases with the farmer's education level (Canals, 2017). Thus, the more educated a farmer is, the higher his productivity will be. Reimers and Kalsen (2012) attribute this to the fact that an agriculturalist's ability for critical thinking as well as employment of the knowledge acquired is the determinant of agricultural productivity as opposed to the capability to just read and write. Farmers who are literate are purported to get hold of, probe and weigh various markets and inputs promising increased yields

compared to the uneducated ones (Abdurohman, 2018). Educated farmers access to information and their capability to differentiate between innovations that are beneficial and those that are non-beneficial to them, makes them more predisposed to adopting new technology which in turn shapes their efficiency and capacity to innovate (Pierpaoli *et al.*, 2013).

Majority of people equate education with formal learning. Rodgers and street (2012) nonetheless dispute the notion that basic education is a mandatory requirement for the acquisition of technical competency. Agricultural education through the use of extension service if fully utilized can tremendously escalate agricultural productivity. This is due to the fact that it aids famers gain and develop practical skills that can be translated to the field (Oduro, 2015). While recognized as the domineering non-formal education to significantly impact agricultural output, extension services have been significantly underutilized.

The primary role of extension is to promote learning in non-formal set up. Other key roles of extension services is to disseminate information to farmers from researchers, guiding them to figure out their goals and evaluate their prospects, them on approaches to decision making and foster appropriate agricultural progression (Msuya *et al.*, 2017). Extension services hence serve as engines initiating transformation of prevailing practices in broader agricultural and rural sectors (Canley *et al.*, 2015). The benefits of extension services in improving farming output cannot be underscored.

Extension systems act as a bridge between farmers, researchers and legislators in government by disseminating the findings and propositions of agricultural research to farmers and conveying to the researchers and legislators farmers requirement and challenges they face (Todaro, 2015). In addition, extension acts as a link between technologies accessible to the famers and the technology they embrace (Adhikari, 2016). The development and propagation of

advanced technologies to farmers is the only means through which agricultural productivity can be realized (Asfaw *et al.*, 2012). Apart from dissemination of technological advancements, extension services convey to farmers information on improved variations of crops and livestock and related procedures such as use of high yield seeds, use of irrigation, use of fertilizers, good storage practices and the marketing of farm outputs (Suvedi, 2011).

The training that farmers receive from extension services informs them of preferable farming practices leading to improved management and allocation of resources. Furthermore, the knowledge acquired equips the farmers in better decision making and problem solving skills. Through extension, farmers get to interact with each other, share their experiences and exchange skills and insights to boost their productivity and transform their standards of living.

About 13% of Kilifi County inhabitants have a secondary level of education or higher (KNBS, 2013). Kilifi North constituency has the largest number of residents with a primary level of education only at 54% (KNBS, 2013). About 36% of Kilifi County inhabitants do not have any formal education. This statistics mirror the reality of the study area, Matsangoni which suffers from a shortage of teachers, classrooms and a high number of school dropouts (KCIDP, 2018-2022). Formal education is therefore affected and the few numbers of extension officers means that agricultural training is also hindered.

2.3.3 Influence of cost of production/Inputs in the development of agriculture

Costs associated with production are the expenses incurred to produce one unit of a commodity and comprise of fixed or overhead costs and variable or direct costs (Iton, 2012). Fixed costs are the expenses that do not vary with the level of production and include land rates, labour, rent, machinery and often determine long-term decisions. Variable costs on the other hand change depending on the level of production and include seeds, fertilizers, and pesticides.

This often determine short term decisions. Knowledge of costs and returns on output is vital in aiding farmers allocate their resources (Maurice *et al.*, 2014) and is pertinent in assessing the profitability of the farm (Engwall *et al.*, 2017). Fixed costs in agriculture take up 60% of the entire production costs while variable costs take up 40% (Lang, 2015).

Intensified utilization of modern inputs such as quality and certified seeds, insecticides, fungicides, insecticides and fertilizers has been an integral part of sustaining the growth in agriculture that is prerequisite to eradication of poverty and sustainable development (World Bank, 2013). The minimal usage of contemporary farming inputs like quality and certified seeds, irrigation, fertilization and mechanization are among the contributors of Africa's low agricultural productivity (Angyintuon, 2020). Inputs used in agriculture as well as their market price is integral to boosting farm yields, thus the adoption of advanced agricultural technologies coupled with the efficient use of inputs is vital for increased productivity (Dorosh & Rashid, 2013).

The efficient allocation of resources and degree of advanced inputs utilized are key determinants of agricultural productivity (Andaregie *et al.*, 2021). Productivity in agriculture has been boosted by the use of improved agricultural inputs which have maintained returns that surpass expenditure (Briggeman & Mickelson 2013). Full use of agricultural inputs is fundamental to productivity gains, so farmers need to increase their use of modern agricultural inputs to increase productivity and profitability (Venkatesh & Nithyashree, 2014). Inputs would greatly improve productivity within Matsangoni area. However, modern agricultural inputs such as machinery, fertilization, mechanization and even irrigation have not taken root in the area due to poverty levels, hence agricultural productivity remains low(KCIDP, 2018-2022).

Seed is the fundamental input in agriculture and access to quality and certified seeds is essential in sustaining productivity and likewise integral to enhancing livelihoods and food

security (Sperling & McGuire, 2016). Seeds carry the genetic code responsible for maximizing yields, resilience to diseases and infestations and endurance of environmental stresses including land degradation and droughts (Cavatassi *et al.*, 2010). Most plant diseases are dispersed through seeds and using certified seeds prevents this. In addition, utilization of seeds that have been certified also inhibits the spread of the variety of weeds dispersed through seeds which in turn reduces costs incurred through the purchase of herbicides (Bogdanovic *et al.*, 2015). The quality of the seeds used determines the effectiveness of all other farming inputs. Using certified seeds with efficient management of other farm inputs can increase farm productivity by 45% (Chauhan *et al.*, 2015).

There is no evidence of use of any certified or high quality seed in the study area. Farmers, most of who are not well educated, may not only not understand benefits of high quality seeds but may not even have access to them. Agricultural training has not been properly availed to them. Many still practice subsistence farming and just rely on seasonal rains to produce own food.

Irrigation, according to Badiane (2018) is the process of supplying water to the land where water is lacking or inadequate for agricultural purposes. Despite the fact that most countries experience fluctuating or inadequate rains, agricultural production remains heavily reliant on rainfall (Badiane *et al.*, 2018). Irrigation is viewed as a feasible approach to mitigate climate changes and pressure arising from growth in population more so in the continent of Africa with its delicate and irregular food security (Wiltshire *et al.*, 2013). Investment in irrigation can aid in promoting food security and sustain agricultural production in regions that have inadequate and inconsistent rainfall to do so. By ensuring that the soil is moist enough to meet the plant's water needs, irrigation water lessens the impact of water shortage as a barrier to

plant growth. Irrigation also guarantees that soil retains the requisite moisture needed by plants to meet their water needs, eradicating the constraint of water shortage in the growth of plants (Averbeke *et al.*, 2011).

While many irrigation programs have minimal impact on achieving food security and poverty eradication in Africa, smallholders are keenly interested in irrigation due to the unstable weather patterns caused by climate change (Mutambara, 2016). Farmers utilizing irrigation are able to prolong seasons of cultivation, enabling them to boost their returns as well productivity and diverge their activities. Additionally, irrigation is an invaluable means of mitigating the devastating effects of climate alteration and enhances farmers' tenacity when confronted with incessant and intense weather occurrences (Badiane *et al.*, 2018). Efficient irrigation benefits farmers in numerous ways including the usage of less water to cultivate to grow the same quantity of crops, reinforcing the efficiency of inputs and encourage environmental sustainability (Adamopoulos, 2011). In order to intensify and escalate irrigation systems, it is imperative to foster collaboration between farmers, the private sectors, key stakeholders and governments (Badiane, 2018).

The use of organic and inert composts is one of the most effective strategies for increasing agricultural productivity. Fertilizers supply plants with nutrients plants strengthen and enable them grow at a faster rates translating into tremendous outputs (Guierrez, 2012). Fertilizers used in an environmentally appropriate and sustainable manner guarantees that plants have all the nutrients they require at the right time and in approved quantities (Emylia *et al.*, 2017). Organic fertilizers enhance the chemical, microbial and physical components of the soil while nurturing its growth modulating elements (Belay *et al.*, 2001 as quoted in Emylia *et al.*,

2017). The ignorance of farmers on utilization and awareness of markets on fertilizers and extension is the greatest contributor of failure to the adoption of fertilizers (Emylia *et al.*, 2017).

Mechanization is the process of using implements, equipment and machinery for agricultural advancement (Folaranmi, 2014). Mechanization aids in the punctual preparation and cultivation of land during seasons of labor shortage (Kirui, 2019) and reduce the exertion of some farm tasks (Ayodele, 2012). According to Verma and Tripathi (2015), the use of machinery leads to increased outputs due to high cropping intensity, improved standards of work, efficient use of inputs and reduction of workers required proportionate to land required to generate stipulated outputs.

The enhanced efficiency in production alongside the replacement of manual labor with machine reduces labor demand subsequently cutting down operation costs (Sciences *et al.*, 2011). Furthermore, mechanization aids in reducing post-harvest losses by providing efficient storage and processing of fruits and vegetables presenting the farmers with the choice of when to sell their produce and get the best price possible (Economic and Social Commission for Asia and the Pacific [ESCAP], 2020). Access to mechanization at the opportune time enables the farmer to efficiently manage agricultural inputs and productivity resulting into increased incomes that justify the costly expenditure on machinery (Ayodele, 2012). Most smallholder farmers lack resources which makes it challenging for them to generally invest in physical assets and in particular agricultural mechanization (Sims *et al.*, 2016). Giving farmers access to facilities to invest in agricultural machinery empowers them to boost their productivity and fully take part in the market economy. It will additionally stimulate the local manufacturing of machinery meet their requirements (Casao-Junior *et al.*, 2012).

Usage of pesticides such as insecticides, fungicides and herbicides continues to increase annually and is among the primary agricultural inputs in agriculture. Pesticides eradicate and control pests such as, insects, weeds, and plant pathogens and reduce costs associated with fuel, labor, and machinery used for pest management resulting in increased outputs and higher returns for farmers (Jorge *et al.*, 2014). While pesticides use eradicates pests and diseases from plants, its continual use is detrimental to the environment and humans as well and cannot be justified economically due to other environmental factors like so degradation and water scarcity that impede farm productivity (Popp and Hantos, 2011).

The continual rise in price of agricultural inputs specifically prices of certified seed, fertilizers and pesticides frustrate the inclination of farmers' adoption of inputs. There is a great disconcert regarding the financial inability of many smallholders to acquire inputs necessary to improve their productivity (Wiggins and Brooks, 2010). It is imperative to develop strategies to widen the scope of access of certified seeds, fertilizers and pesticides at affordable rates to actualize acceleration of agricultural profitability and productivity (Alemu *et al.*, 2018). Quality and certified seeds, agrochemicals and fertilizers are crucial to boosting productivity and should be availed at reasonable prices and accessible to all smallholder farmers to accelerate agricultural productivity development (Alliance for the Green Revolution in Africa, 2013). It is important to note that adopting mechanization is not adequate in itself to accelerate growth in productivity but it is the technical efficiency to effectively operate mechanization in the farm operations that is important, if not more to improve far outputs (Mwangi, 2014).

It is noteworthy that farmers use of contemporary inputs like higher-quality seeds, fertilizer, and more insecticides, machinery and irrigation is not common in the study area. Accurate data on the use of modern inputs is not readily available. Many modern inputs like

inorganic fertilizer, improved seeds and irrigation perform best when used together on the same piece of land. Household socioeconomic status plays a big part in ensuring that proper agricultural inputs are utilized. Due to effects of poverty in Matsangoni, the use of inputs appears to be very low.

2.3.4 Effects of poverty/Access to credit on agricultural development

Agriculture is the main driving force of the economy in many African countries. It is practiced majorly by low income subsistence farmers (Quartey *et al.*, 2012). Of the entire working population, over 60% population in the region engage in agriculture with the poor who rely on agriculture for their sustenance surpassing 75% (Mulubrhan & Shiferaw, 2017). Low agricultural productivity has been pinpointed as one of the mainsprings of poverty among the rural population (Kiresur *et al.*, 2010). In contrast, agricultural expansion triggered by accelerated productivity is considered as one of the fundamental approaches to sustained economic development (Collier & Dercon, 2014). Increased agricultural productivity lowers poverty levels attributable to improved health and nutrition, boosted farm and non-farm earnings, increasing opportunities for employment and reduction of food prices (Schneider & Gugerty, 2011).

The majority of poor farmers engage in low scale subsistence farming using low inputs and lack access to credit facilities and sufficient labor resulting in crop yields and outputs below international barometers (Chauvin, *et al.*, 2012). Their production of farm yields which are usually of poor quality and in low quantities are often discarded by output markets due to scarcity of production including land, machinery, capital assets and water (Directorate Co-operative and Enterprise Development(DCED), 2012). The inability of poor farmers to adhere to quality and reliability guidelines often sees them grappling to capitalize on lucrative opportunities to supply

their produce to larger markets like supermarket chains and other formal sector retailers (Reardon *et al.*, 2012). Moreover, the lack of guaranteed markets has been established as one of the main impediments challenging poor farmers which force them to sell their produce at their farms or their neighborhood markets at a low price (DCED, 2012).

The greatest challenge to poor farmers however, has been the lack of financial capacity to invest in their farms and scale up production. This is because it is hard for poor farmers to acquire the capital necessary to heighten their agricultural productivity (Mulubrhan and Shiferaw, 2017). Finance is an essential requirement that empowers poor farmers to not only increase their production but to also diversify and market their produce (FAO,2013; World Bank ,2013). One of the approaches by which poor farmers can intensify their production and ultimately boost their returns to a great extent revolves around their ability to obtain credit (Hussein & Thapa, 2012). Credit not only eliminates financial impediments touching on financial inputs but also enhances the technological capability of poor farmers and improve their appropriation of resources and profitability (Sial *et al.*, 2011). Furthermore, easy access to credit facilities enables poor farmers to exploit different economic pursuits, expand their capital reserves and tackle the issues they encounter (Ahma, 2010). The inability of poor farmers to easily access credit facilities hinders them from adopting advanced machinery and fully exploit market opportunities (Jack, 2013).

Notwithstanding the fact that 86 per cent of the rural inhabitants in third world countries depend on farming for their livelihoods, agricultural financing remains wanting even for leading financiers (International Finance Corporation, 2013). Formal institutions such as banks are disinclined to offer credit facilities to poor farmers due to scanty details as well as lack of collateral (Rapsomanikis, 2015). The banks unwillingness to accommodate the frequent risks

such as floods, droughts, diseases and pests that are common place in the agricultural sector further limits poor farmers' access to credit (Mach, 2015). The additional costs incurred in the course of dispensing credit which include validation of security, establishing creditability and tracking of loan repayments not warranting the amount disbursed is another reasons for banks reluctance to offer poor farmers credit (Baiyegunhi & Fraser, 2014).

For poor farmers to improve their agricultural output it is important to develop strategic plans aimed at raising the resources and welfare of poor farmers' and increase their farm yields (Tirivayi *et al.*, 2016). Valdes and Foster (2010) acknowledge that such targeted interventions are likely to trigger substantial improvement in living standards by increasing their productivity and consequently reduce the levels of poverty among poor farmers. The farmers can also be urged to join Agricultural cooperatives which will avail them with opportunities they would have not attained on their own particularly financing, input for agricultural production at fair prices and connections to better marketing prospects (DCED, 2012).

2.4 Empirical Literature Review

Several studies have been done in relation to agricultural development in other areas. These studies came up with a variety of findings and suggestions on what needs to be done concerning development of agriculture in the specific areas of study.

Ran (2021) conducted a study on the effect of agricultural infrastructure investment on economic growth using the National Bureau of Statistics of China's provincial panel data for the years 2010 to 2019. It concluded that Infrastructure is an important support for economic and social development. He opined that economic growth had not been aided by better irrigation practices for farming, but spending money on field water conservation facilities can enhance irrigation capabilities and agricultural output in rural areas. It demonstrated that in order to

achieve economic growth in agriculture, a greater emphasis on innovative science and technology should be made. Current information science and technology can provide efficient development space for agricultural and economic growth. When rural power supply, transportation, machinery and communication conditions are improved, the impact of information infrastructure investment on economic growth is significant. Agricultural infrastructure is significant to economic growth overall.

In Ghana, a research by Oduro (2015) was done to study the relationship between education and productivity in the municipality of Offinso. A sample size of 100 farmers was selected to be interviewed in eight communities across the municipality. Purposive selection of farmers from the eight communities was made, and farmers from the various communities were chosen using the simple random sample technique (Oduro, 2015). The research found that Formal education did not have as much impact on education as compared to Non-formal. Most farmers appeared to understand much from learning from extension officers.

How inputs are used was incredibly important for the distributive impact of Non-formal education. Approximately 32% of farmers used inputs based on what they had learned from extension officers, 12% used what they had learned from other farmers, 34% used inputs based on their own knowledge, 10% asked a chemical store, and 1% followed the directions on the bottle. This demonstrated that when farmers are provided with information on the proper ways of input utilization, they will decide how to mix the inputs in order to enhance output.

Farmers who received extension services preserved around 72% of their income, compared to 58% of farmers who did not. The value of saving money and how to find credit are two things that extension officers taught their students. This suggested that farmers who receive

extension services are more likely to save money, have access to loan options, and have reinvestment opportunities.

In a different study, Abah (2015) discovered that a farming community with a strong educational and cultural foundation in Nigeria's lower Benue River had the best chance of achieving equitable agricultural development. The delivery of efficient consulting services and suitable government support at all levels can greatly enhance the region's agricultural value chains. Members of farmers' cooperative organizations were randomly questioned during concentrated group talks that included both structured and semi-structured questions. 281 out of 300 responded and Factor analysis showed that communities with the greatest potential for adequate agricultural development are those with the most established educational systems and agricultural literacy. The agricultural value chain of the study area would be improved through the provision of efficient agricultural extension services and sufficient support by the government at all levels.

In Kenya, a research was conducted in Lower Eastern area on the difficulties small landowner farmers have in making decisions related to innovative agricultural growth (Kavoi *et.al*). Five focus group discussions and 34 Key Informants (KI) were involved. SPSS was used to analyze the data, which were gathered using a check list, a semi-structured questionnaire, and a self-administered questionnaire. According to the findings, farmers had a difficult time selecting how to increase their farm productivity. The majority of KI respondents; roughly 76% observed that some of the touted technologies did not answer farmers' urgent requirements; 65% thought that farmers' current conditions were not taken into account when promoting the technologies.

The researchers concluded that past Public Private Partnership (PPP) joint initiatives had been carried to promote improved technologies in the target area. Although several improved technologies had been promoted in the target area, uptake of the same has been low. Food insecurity in the semi-arid lower Eastern Kenya still persists among the inhabitants in the region. Promotion of technologies with limited utilization options seemed to have greatly contributed to low adoption of the same among resource-poor farmers in the region. Resource-poor farmers opted to grow food crops with wider range of utilization options. Thus, technologies and innovations with a wider range of utilization options stood a better chance of adoption among the resource poor farmers in the target area. Improved farm-gate and market prices, reduced farmer exploitation by middlemen, and trust among development partners can all help resource-poor farmers in the semi-arid lower Eastern Kenya adopt new technologies and innovations.

A study by Muraya (2017) showed that a 1% percent increase in labour force causes an increase in agricultural productivity by 0.1984402%. This can be attributed to the fact that agricultural sector is a significant source of employment in Kenya, thus increase in labour force will result in an increase in agricultural productivity. A 1% increase in annual rainfall resulted in a 0.0917103% increase in agricultural productivity. This is because, despite government efforts to invest in irrigation schemes, agriculture in Kenya remains largely dependent on rain, with only a small percentage of land under irrigation. This is to be expected, as an increase in rainfall was predicted to increase agricultural productivity.

In the Siaya district of Kenya, the socioeconomic factors surveyed explained about 92% of the spatial variation in land use intensity between farms (Kodiwo, 2012). The study's primary data source were field interviews, which were conducted on 257 homesteads selected at random using multistage sampling. Both straightforward mathematical computations and automated

multivariate methods, such as stepwise analysis, were used to analyze data. It concluded that the availability of loans and expanded extension services are essential for Siaya District's plan to intensify agricultural land usage. The expansion of agricultural extension services and the accessibility of finance are both necessary for the county's increase in agricultural land use.

A research on factors influencing agricultural development in Nyathuna ward, Kiambu County, established that mixed labour and technology intensive methods were the most preferred by the locals (Nyakoi, 2016). The study used a descriptive survey research design to identify the variables affecting Kenyan agricultural productivity. A sample size of 200 respondents was chosen from a list of 7794. According to the findings, a combination of both family and hired labor is heavily used when conducting all farm activities, implying that removing family labor from the equation will increase production costs. Agriculture technology need to be embraced and encouraged. Using fully tested and recommended inputs is a sure way to go because it provides a farmer with quality and higher yields. The delivery of extension services ought to be improved and strengthened. Farm visits were also the farmers' preferred training method. The Participatory Approach method was the most preferred by farmers in the section of agricultural message dissemination.

Mbugua (2013), researched on Factors affecting farmers' access to credit facilities in Trans-Nzoia County's Cherangany Constituency. For the study, a descriptive survey was conducted using 50 farmers as the target group. The response rate for farmers was 64 percent, or 32 out of the 50 people who were targeted. He found that the majority of farmers in Trans-Nzoia County's Cherangany Constituency could not use credit facilities due to their strict lending policy. This included the requirement that each applicant have a guarantor that must be at least as valuable as the cash they plan to borrow. Collateral for a credit is another main impediment as

borrowers are obligated to attach their possessions like land and machinery. These conditions are replicated within Matsangoni area and the outcomes are the same.

Commercial banks within Cherangany were also found to have no definite products intended for farmers and above all, most of the loan conditions are too tough for farmers to meet. Interest rates charged by the banks and security requirements basically restricted them from pursuing loans from these sources. These outcomes indicated that farmers have challenges in gaining access to credit and other financial facilities (Mbugua, 2012).

2.5 Research Gaps

Very little literature is available on the state of agriculture within the County of Kilifi. Over the years, there has been a sharp decline of agricultural produce from the area but it is not easy to come across detailed information explaining how and why this is so. The continuous decline in production and lack of improvement point to an area that is yet to be seriously explored.

A research by Kenya Forest Research Institute on smallholder farming systems in coastal Kenya was carried out in 2017. It showed that the role of agriculture as a primary source of income diminished from 2003 to 2012 due to reduced productivity caused by climate change, such as long-term droughts and an increase in pests (Wekesa *et al*, 2017).

2.6 Theoretical Framework

According to Stam (2007), a theory is a methodical structuring of knowledge that may be used to solve problems. A structure that contains or can support research theory is known as a theoretical framework. The theory that explains why the research problem under study occurs is introduced and explained via the theoretical framework. This research was guided by Schultz's

theory of traditional agricultural transformation and reinforced by Adam Smith's theory of development.

2.6.1 The Schultz Theory

The proponent of the Schultz theory was Theodore Schultz, an American agricultural economist (Timmer, 1998). The Schultz theory alluded on shifting from traditional agriculture passed down through the generations through inculcation of nontraditional inputs; arguing that traditional agriculture is incapable of producing abundant food notwithstanding the richness of the land (Dandekar, 2013). The theory essentially puts across that transformation of traditional agriculture is the way to establish agriculture as a driver of the economy (Alston & Pardey). It illustrates how efficient appropriation of production factors can raise the productivity of low income agricultural communities, ways in which these factors of production account for the disparity in production levels between agricultural sectors in different countries and the conditions that pay off to invest in agriculture (Lundhi, 1987).

Basing this study on this theory, the need for the shift from traditional agriculture which is mainly practiced in the study area to a modernized way of agriculture is vital if there is going to be an improvement in the agricultural productivity in the area. This can be done through embracing technology, shifting from reliance of rain fed to irrigation fed agriculture, commercialization of agriculture and through the use of agricultural extension officers. The role of extension officers is crucial when it comes to transitioning from traditional to modern agriculture. These officers are the intermediaries between research and the farmers and their role is to essentially help farmers make decisions to increase agricultural productivity. They train the farmers on how to best to utilize farm lands, encourage them on the use of latest farming

methods, propagation of new farming methods, how to save cost of farming equipment and procedures among others (Msuya *et al.*, 2017).

When farmers are poor, they are not able to afford requisite inputs like fertilizers that would enable them implement modern farming methods in order to achieve much higher yields. Farm machinery, good quality seeds and pesticides are often unaffordable hence restricts farmers to the traditional way of using extensive farming with only local knowledge and implements Indigenous tools such as axes, hoes, and sticks, along with slash-and-burn farming, are not enough to transform agriculture. The cost of production is prohibitive to poor farmers and hence hampers development of their farming activities. Hiring of labor is beyond their means due state of their incomes.

Formal education opens the minds of farmers to information, as education is essential to the development of agricultural production. Better farming techniques and hands-on training are provided to farmers through non-formal education, while informal education keeps farmers engaged in line with changing technological trends and the effects of climate change.

2.6.1.1 Strength of Shultz theory

Schultz's agricultural development theory correctly assumes that a new and different factor of production is needed, as the traditional agricultural sector can only be developed at a very high cost with the help of traditional factors of production. This is itself proven wherever modern cultivation methods are used. The theory further hints that farmers in poor countries maximize yields from their resources. Schultz argues that the governments of these countries are reluctant to innovate because they have repeatedly artificially imposed low prices and high taxes. The constant theme of Schultz's book is that rural poverty continues in poor countries, as government policies in poor countries tend to favor urban dwellers (Henderson 2008). This is

true considering that there are no sector specific policies that address issues of agricultural development by the governments.

2.6.1.2 Weaknesses of Schultz Theory

The theory focuses on land as a factor of production and does not mention other factors necessary for agricultural development. Despite attributing underdevelopment to government policies it does not explicitly connect infrastructural support and communication/education which are inherent in modern agricultural development. Land overuse/use of chemicals which at times have been reported to erode quality of soil are also ignored.

2.6.2 Adam Smith's Theory of Development

According to Adam Smith, the natural flow of development is agriculture first, then industry, and finally commerce. Agriculture creates surpluses and increases people's purchasing power, which in turn creates demand for products. It also provides industrial raw materials. He believed that growth in production and living standards depended primarily on investment and capital accumulation. The investment depends on the degree of savings from industrial and agricultural profits and the degree of labor specialization (Thirwall, 2011).

2.6.2.1 Strengths of Adam Smith's Theory

In the theory he developed, both agriculture and industry play important roles, but agricultural surpluses have a particularly important impact on growth. The investment in infrastructural, educational, financial and technological area, are key prerequisites for agricultural and industrial take off, in addition to favorable political environment. Smith agreed that agriculture had the potential to generate a much higher economic surplus than industry, but he believed that industry did in fact offer some excess.

2.6.2.2 Weaknesses of Adam Smith's Theory

Smith was a staunch advocate of free trade and the laissez-faire economic theory. He believed that state laws are inferior to natural laws. Smith valued natural law because it is just and moral, and believed man made rules can never be flawless and helpful to society. He thought that nature is where man learns the importance of morals and honesty. These have favorable effects on the progress of the economy in society. He believed that the state should not impose any limitations on an individual's freedom.

2.7 Conceptual Framework

The conceptual framework as defined by Ravitch and Rigan (2012, p. 6) is a discussion of why the subject for study is important and why the proposed means for the study are appropriate and rigorous. This can be done graphically or in a narrative. Figure 1 shows how different independent variables affect the studied dependent variable.

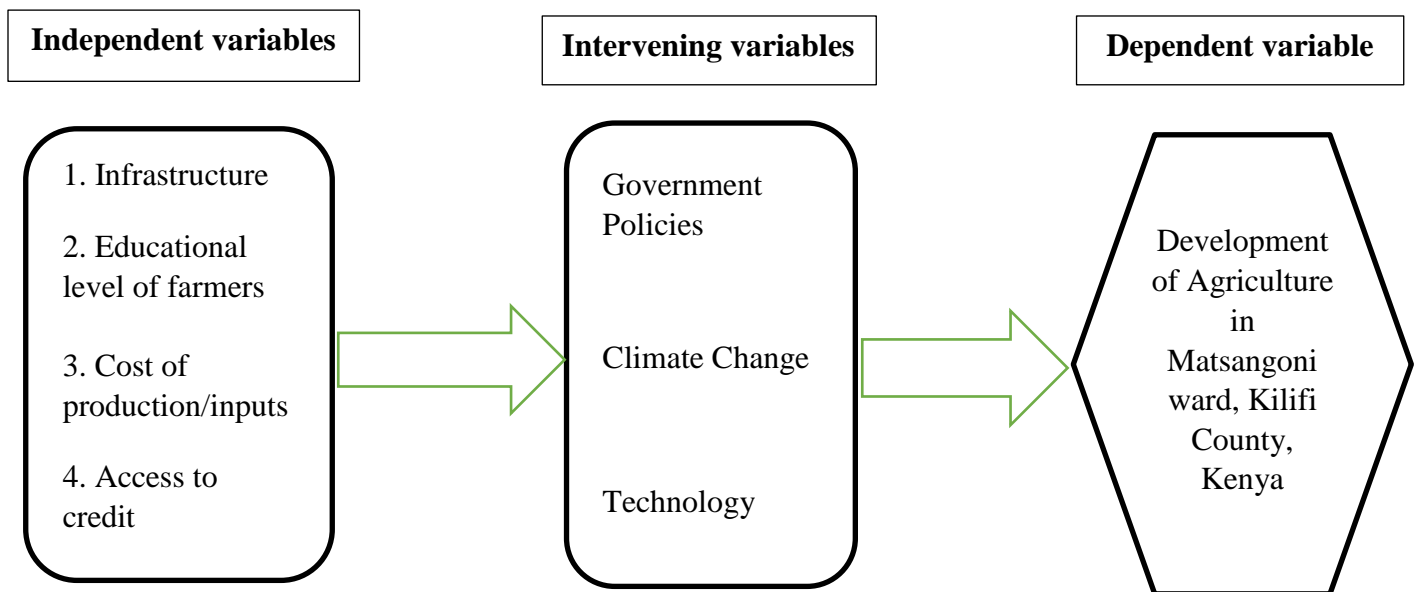


Figure 1. Conceptual framework.

Source: Researcher, 2021

Fundamentally, the conceptual framework of this study focuses on four independent variables; condition of road infrastructure and storage, education level, costs associated with production/inputs and access to credit. Rural roads connect farmers to markets and facilitate the movement farm inputs. Depending on their condition, rural roads and storage facilities can either positively or negatively affect agricultural development. Education increases efficiency and productivity and influences decision making and the likelihood of adopting technology. Quality and sufficient inputs are integral to the development of agriculture. The price of inputs needed for production affect the quality and quantity of yields. Poverty is the main impediment to progress in farming as it hinders small holder farmers from accessing quality inputs and locks them from credit facilities that would aid them bolster their production.

Government policies, climate change and technology are the intervening variables. Governments through policies boost agricultural development through price control, regulation of markets, offering subsidies and through research and development. Extreme events due to climate change such as floods and droughts, desertification and reducing water resources impact the development of agriculture. Technology promotes efficiency and increased yields as well as increased trading and business through Ecommerce and online trading. Both independent and intervening variables affect the dependent variables in this study, which is development of agriculture in Matsangoni Ward, Kilifi County, Kenya.

As presented in figure 1, all the variables are crucial to the development of agriculture. The literature reviews presented establish a direct relationship between independent variables and agricultural development.

2.8 Critique of Existing Literature Relevant to the Study

The available agricultural development literature does not seem to deal much with indigenous agricultural practices. Rather, ‘development’ insinuates modern agricultural practices which involve use of huge machinery, genetically modified seeds and overuse of land which has its own consequences on the quality of the soil. Traditional methods of farming were long used to ensure there is always preservation of land fertility and the quality of crops was always good.

2.9 Summary of the Chapter

This chapter examined relevant literature from books, journals, and government publications. It carefully reviewed works related to the variables being considered and looked at the theories that this study is anchored on. The literature reviewed included previous studies conducted locally and internationally to examine socioeconomic factors influencing agricultural productivity. Both theoretical and empirical literature were reviewed. A critical examination of the literature revealed the gaps in the area of study and the relationship between the Independent, intervening and dependent variables was demonstrated in the conceptual framework.

Chapter Three

Research Method

3.1 Introduction

This chapter explains the methodology used for the study. It clearly shows research plans, sampling methods and sample sizes, equipment, methods for gathering data and analyzing it, as well as ethical issues.

3.2 Research Design

Ogula (2005) defines research design as a study plan, structure, and strategy for answering research questions and controlling variance. This study employed mixed methods research design as it effectively captured the reality on the ground since it provided a chance for an exhaustive investigation of the study. The act of gathering, analyzing, and combining quantitative and qualitative studies and techniques inside a study to comprehend the research problem is known as "mixed method study design." Quantitative descriptive survey and qualitative approach were both used.

3.3 Location of the Study

The location of the survey was the Matsangoni ward in northern Kilifi County. It covers a geographical area of 93 square kilometres with 90 square kilometres being arable. The population of Matsangoni is 33,563 with the youths making up 75% of the population according to the records at the County Office. The climate in Matsangoni is tropical and the terrain is elevated 12m above sea level. The subsistence crops grown in this area are maize and cassava. Coconut, cashew, sisal and citrus are cash crops. Mangoes and melons also do well in the area. Other economic activities undertaken in the area include agroforestry, animal husbandry, fishing, coral block making, sand mining, burning of charcoal and sale of firewood.

3.4 Target Population

The target population is “the entire aggregation of participants that meet the designated set of criteria” (Burns & Grove 1997). According to records in the Kilifi County office, 60% of the adults in Matsangoni Ward are farmers which accounted for the study’s target population of 5035 farmers. Table 1 presents the farmers in Matsangoni ward.

Table 1:

Number of farmers in Matsangoni

Ward Name	Number of farmers	Area in Km2	Villages
Matsangoni	5035	93km2	Mkangani, Misageni, Mida-Majaoni, Mkongani, Katana Ngala

Source: Kilifi County Office, 2020

3.5 Sampling Techniques and Sample Size

Samples are small groups or subgroups extracted from an accessible population (Mugenda & Mugenda 1999). Sampling, on the other hand, selects a specific number of participants from a defined population to represent the entire population under investigation. Samples allow researchers to generalize the results of their research.

3.5.1 Sampling Frame and Sample size

A sampling framework makes it possible to select participants of the target population to interview in a study. The sample size measures the number of individual measurements or observed samples used in an experiment or survey. This is an important part of any study as it

helps to draw inferences about the population from the sample. This survey interviewed 200 participants from five villages in the Matsangoni Ward.

Since the population is finite, the research used Yamane's formula (1967) to determine the sample size for each strata. The sample size was calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{5035}{1 + 5035(0.07)^2}$$

$$n = 204 \quad (\text{The sample size is 200}).$$

Table 2 shows how the participants were distributed in each village and number sampled.

Table 2:

Participants' distribution in each village.

Strata of villages	No. of farmers	Sample population	Percentage
Mkangani	1370	49	24.5
Mida-Majaoni	667	36	18
Misageni	1200	41	20.5
Katana Ngala	931	44	22
Mkongani	867	30	15
Total	5035	200	100

3.5.2 Sampling Techniques

A stratified random sample was used to choose study participants. Stratified random sampling is a technique that first divides a population into subgroups or strata, all of which share common characteristics (Goel, 2014). The study sample is obtained by taking random sample

sizes from each stratum. In this case the strata was the different villages within Matsangoni ward from which randomized samples were obtained. This ensured that all the villages were fairly represented resulting in accuracy of the results by reducing representation biasness. Purposive sampling was also used to pick the only agricultural officer in the Ward for the study.

3.6 Research Instruments

Survey tools are useful instruments for any research. These include questionnaires and interview guides meant to measure many characteristics, such as behavioral or psychological qualities or information of interest (Pierce, 229). This research used a questionnaires and interview guide to collect data.

3.6.1 Questionnaires

Questionnaires are survey tools that consist of a series of questions aimed at gathering information from participants. The questionnaire can be understood as a type of written interview. The questionnaire consisted of structured, open and closed questions. It included two parts. The first section sought to collect general information about respondents' characteristics. The second part was devoted to the socio-economic factors affecting development of agriculture in Matsangoni. The questionnaire helped in collecting as much information as possible.

The main advantage of using both questionnaires and interview guides is the study could quite readily and cheaply reach a huge number of people. Standard surveys offer measurable responses to research questions. The analysis of these responses is not too difficult (Kothari, 2014). The self-administered questionnaire consisted of structured, open, and closed questions. Self-administered questionnaires were preferred because participants could answer at their convenience; there was no need to set up interview appointments. This type of questionnaire

used closed-ended questions, which have predetermined answers and usually collect quantitative data.

3.6.2 Interview guide

A list of topics served as the interview guide. The list was covered in the interview with questions to be answered on each topic. It was limited to one page for easy reference and to ensure that it was not too low. When conducting the interview, a fresh copy of the guide was availed so that questions that were already covered could be crossed. Some questions could be answered during the course of conversation with the interviewee, hence using the guide made it easier to check off questions on the guide in order to avoid repetition.

3.6.3 Pilot Testing

This involved the testing of the correctness of the questionnaires and interview guide. According to Mugenda and Mugenda (2003), a relatively small sample of 10-20 participants from the population can be selected during the pilot. This was not included in the samples selected for the study. In this study, the pilot group was attained by random sampling. The pre-testing allowed the researcher to verify whether the variables collected could easily be processed and analyzed. Hence, 20 participants were picked from the neighbouring Watamu Ward.

3.7 Validity

To ensure validity, a questionnaire was created based on the study goals and questions. The questionnaire was also discussed with the supervisors, colleagues and experts. The researcher pre-tested some sample questionnaires with a selected number of farmers who were outside of the main study area. The answers from this pilot survey were used to measure the internal reliability of the questionnaire as well as the construct and content validity of the questionnaire. Any question that was not understood as appropriately as possible was

restructured so as to give the appropriate meaning which would improve the instrument's validity and reliability.

3.8 Reliability

An internal consistency method using Cronbach's alpha was used to assess the reliability of the data. A reliability coefficient must not be below 0.90, less than this would have indicated inadequate reliability (Biology online, 2021).

3.9 Data collection procedures

The data collection process began with an application to Tangaza University College for a clearance letter. This was granted (Appendix G). Application for a research license to the National Committee for Science, Technology and Innovation (NACOSTI) was done and the License was subsequently given (Appendix H). This allowed the researcher to proceed to the Kilifi County Headquarters for clearance. Authority was given (Appendix I) and eventually collection of data was conducted in the ward.

In case studies, the data collected is usually qualitative, but it can also be quantitative. In this survey, data was collected primarily using interviews and interview guide. The interviews consisted of asking questions and receiving answers from the study participants. These were mainly personal face-to-face interviews.

3.10 Data Analysis

The collected data was analyzed mainly using inferential statistics, descriptive analysis, document analysis and thematic analysis based on the new topics under investigation.

Quantitative data were analyzed with SPSS and descriptive statistics and presented in tables, frequencies, means and standard deviation. To analyze qualitative data, content analysis was used. It has also been used to analyze responses from interviewee farmers.

3.11 Ethical Considerations

The survey incorporated well known survey methods. The research developed early familiarity with the culture of the participating farmer groups, participation in debrief sessions with survey leaders, enabled peer review of the survey and promoted openness of the participants. Proper data management was ensured by using tactics to guarantee honesty from the beginning.

The study followed reasonable investigative procedures and all sources were acknowledged as far as possible. Consent from participants was obtained and approved prior to completing the questionnaire. Participants were informed that they could decline to participate in the survey if they did not wish to.

Participants information was kept completely confidential, especially when responding to the questionnaire. Participants' identities were kept secret unless they agreed to disclose their identities. To ensure the confidentiality of the participants, no personal information was used. Instead, a number was assigned to each respondent to keep track of the questionnaires. All information collected was for research purposes and will not be shared with other sources. All research materials contain precautions to ensure the confidentiality of information and the anonymity of participants.

3.12 Summary of the Chapter

The chapter highlighted the research design employed in the study, which is mixed methods approach and how it effectively captured the reality of the ground. It defined the location of the study, which was Matsangoni ward in northern Kilifi County, and the target population, which was 60% of the adult population. The chapter also explained the population

sampling technique and sample size, how the sample size was arrived at and how pilot testing was conducted. Data collection procedures, from the initial stage of application at the institution, to the NACOSTI, the County Headquarters up to the ward level. All the procedures followed were properly described and all the measures to protect the confidentiality of the participants have been clearly explained.

Chapter Four

Results and Discussion

4.1 Introduction

The outcomes of the gathered data are displayed in this chapter. It focuses on response rates and factors that affect agricultural development in the study area. Matsangoni district. Kilifi County. It is structured according to the research questions. The findings from the data are discussed and the chapter also provides data interpretation of research related literature

4.2 Questionnaire Response Rate

Of the 200 questionnaires distributed, 152 were returned while correctly filled. The research also interviewed an agricultural officer. This corresponds to a response rate of 76%. Mugenda and Mugenda (2003) consider that a 50% response rate is reasonable, a 60% response rate is good, and a 70% response rate is very good. Therefore, the 76% response rate reported in this survey is an acceptable basis for drawing conclusions.

4.3 Demographic Characteristics of the Participants

Varied demographic details were solicited from the participants in order to build their demographic profile. This section focused on the age, gender, participants' level of education, years practiced as a farmer, number of members in the participants' household, participants' source of income and the type of farming used by the participants.

4.3.1. Distribution of the participants by Gender

Participants' gender was inquired. The survey found that the majority of participants were men. Table 3 shows the participants by gender.

Table 3:***Distribution of the participants by Gender***

Gender	Frequency	Percentage
Male	82.0	54.67
Female	70.0	45.33
Total	152.00	100.00

As shown in Table 3, the study found that 54.67% of the participants were male and 45.33% of the participants were female.

4.3.2. Distribution of the participants by Age

On the question of the participants' age range, the study revealed that majority of the participants represented by 69.74 % were over 40 years. 11.84% of the participants' age variance was between 36-40 years. 9.86% of the participants were between the age of 31-35 years while the other percentage (8.54%) was shared between 26-30 age range and those between 18- 25 years 4.60% and 3.94% respectively. Table 4 displays the participants' age distribution.

Table 4:***Age range distribution***

Age Range	Frequency	Percentage
18-25 years old	6	3.94
26-30 years old	7	4.60
31-35 years old	15	9.86
36-40 years old	18	11.84
Over 40 years old	106	69.74
Total	152	100.0

4.3.3 Distribution of the participants by the Education Level

Education levels were sought to understand the literacy levels of the participants. This could affect their understanding of the research topic. Table 5 shows the results on the educational levels of the participants.

Table 5:
Education level distribution of the participants.

Education Level	Frequency	Percentage
Never been to school	4	2.63
Primary	18	11.84
Secondary	96	63.16
College/University	34	22.37
Total	152	100.00

According to the survey results, the majority of participants (63.16%) had Secondary level of education while 22.37% had College/University education and a small percentage of 11.84% had primary level. This showed that the majority of participants had a high school certificate or college / university degree, therefore in a position to give the intended information.

4.3.4 Distribution of the participants by the number of years practiced in Farming

Regarding the number of years participants practiced agriculture, the study indicated that majority of the participants, accounting for 78.95%, had practiced agriculture for more than 15 years. 13.16% of the participants had practiced farming for a period of 11-15 years while 7.89% had practiced farming for 5-10 years. This suggests that the participants were better positioned to provide information on the topic under study. The distribution of participants by number of years of agricultural practice is shown in Table 6.

Table 6:***Distribution of the participants by the number of years practiced in farming***

Years Worked	Frequency	Percentage
5-10 years	12	7.89
11 - 15 years	20	13.16
Over 15 years	120	78.95
Total	152	100.0

4.3.5 Number of Members in the Participants' Household

Information was sought on the number of members that the participants had in their households. The study revealed that 46.05% of the participants had 10-15 members in their households. The study also shows that 38.16% of the households had between 5-10 members while 15.79 households had less than 5 members in their households. Table 7 shows the number of household members of the participants.

Table 7:***Number of members in the participants' household***

Range No of members	Frequency	Percentage
Less than 5 members	24	15.79
5-10 members	58	38.16
10-15 members	70	46.05
Total	152	100.0

4.3.6. Main source of income

Participants were asked if agriculture was the region's main source of income. According

to the survey, 132 people, or 86.84 percent, considered agriculture to be their primary source of income. Twelve participants were employed in local facilities and received salaries as their primary source of income. The remaining 13.16 percent is accounted for by the other eight participants who have businesses as their primary source of income. According to Table 8, the survey found that agriculture was the primary source of income for the majority of participants.

Table 8:

Source of Income

Occupation	Frequency	Percentage
Agriculture	132	86.84
Salary	12	7.90
Business	8	5.26
Total	152	100.0

4.3.7 Description of the type of farming.

Information was sought on the type of farming the participants were practicing. As shown in Table 4, the vast majority of survey participants, accounting for 78.94% practice subsistence farming. 21.06% of the participants indicated that they practiced cash-crop farming. Table 9 shows the type of farming practiced by the participants.

Table 9:

Type of farming

Type of farming	Frequency	Percentage
Subsistence	120	78.94
Cash-crop	32	21.06
Total	152	100.0

4.3.8 Infrastructure

The study questioned the participants seeking to document the state of road infrastructure and storage facilities. On the question determine the state of the road infrastructure, the participants were asked to state the distance from their farms to the nearest road and the condition of the roads. The findings were captured in table 10.

Table 10:

Condition of rural roads

Statement	Response	Frequency	Percentage (%)
How far is the nearest road to your farm?	Less than 1 km	78	51.32
	1 to 2 km	54	35.52
	3 to 4 km	18	11.84
	5 and above	2	1.32
Is the road above	Tarmacked	30	19.74
	Murram	80	52.63
	Gravel	42	27.63
How would you describe the condition of roads in your area?	Very good	24	15.79
	Good	46	30.26
	Poor	74	48.68
	Very poor	8	5.27
Total		152	100

According to the results in Table 10, 51.32% of the participants were within 1 km of the nearest road, 35.52% of the participants were at a distance of 1-2 km from each other, 11.84% were 3-4 km apart while only 1.32% were located more than 5 km apart from the nearest road. 19.74% of the participants had their roads tarmacked, 52.63% had murram roads while 27.63%

had their roads with gravel. On the description of the conditions of the road 15.79% of the participants noted that their roads were in a very good condition, 30.26% of the participants noted that the roads were in a good condition. 48.68% of the participants noted that their roads were in a poor condition while 5.27% noted that their roads were in a very poor condition. Further, on the question of the storage facilities, the participants were asked to state the type of storage facilities they used to store their products after harvest and how their modes of storage affected their farming.

Participants provided multiple responses, with results indicating that the majority (72%) of participants used gunny bags and granaries, while a small percentage (15%) use sisal bags for storage. *“The main challenge we have been having as farmers in Matsangoni has been the lack of proper storage facilities. Our main system of storage in gunny bags has been causing heavy losses caused by rats and other pests,”* one of the participants noted.

Very few participants used maize storage bags and improved maize storage (7%). It was also stated that 6% of the participants used other forms of storage, primarily drums. Other participants stated that they had never used the storage system because they produce and sale or consumed the yields immediately. According to the study's findings, the majority of farmers in Matsangoni continue to use traditional methods to preserve agricultural products.

One male respondent said: *“We use a section of our house as our stores after drying our produce. This is because we lack resources to purchase other means of storage and we lack space to build granaries and use modern methods of storage.”*

4.4. Levels of agricultural education and training available

To understand the level of education and training in agriculture, participants were asked to answer a number of questions focusing on the availability of agricultural training and

information on improving agricultural productivity. The participants were to indicate whether they had received any agricultural training or information to improve their productivity. Table 11 captures the findings.

Table 11:
Agricultural training and productivity.

Statement	Response	Frequency	Percentage (%)
Do you receive Agricultural training or information to improve your productivity?	Yes	40	26.32
	No	112	73.68
Total		152	100.0

From table 11, 73.68% of the participants did not have access to any agricultural training or information that would improve their agricultural productivity. Only 26.32% of the participants had access to agricultural training and information. This may be due to the lack of agricultural training facilities for smallholders in the study area and the high training costs that most smallholders cannot afford. From the interview, it is shown that most of the smallholders are not in a position to pay for agricultural training. Further examination of the findings revealed that most farmers with access to farm information and training were well equipped to improve farm production. Most of the farmers cannot afford technical training.

4.5. Technical Support towards Improvement of Agricultural Production by Small Holder Farmers.

The aim of this study was to determine the impact of technical assistance on improving agricultural production through training and information for smallholders. The participants were asked how often they received agricultural training or information. The findings are presented in Table 12.

Table 12:
Technical support towards improvement of Agricultural production by smallholder Farmers

Statement	Never	Seldom	Sometimes	Always	Total
How often do you receive Agricultural training or information to improve productivity?	12	8	108	24	152
Percentage (%)	7.90	5.26	71.05	15.79	100

From Table 12, 15.79 % of the participants always received Agricultural training and information, 71.05% would sometimes receive the training and information, 5.26% indicated seldom while 7.90% did not receive any training or information at all. This suggests that access to agricultural information and training for smallholder farmers in the region is on-demand and not automatically available to all smallholder farmers. This is indicated by 7.90% of farmers who have no training or information on agriculture. Only one agricultural officer serves the entire Sub County, hence he cannot cover the area fully.

From these results, it is confirmed that smallholder farmers cannot be adequately trained and informed about agriculture to improve their productivity. This therefore means that adequate information and training is an important factor in improving agricultural production.

4.6 Individual advanced knowledge on practices and technology.

The study was designed to assess whether participants are always up to date on agricultural practices and techniques. To profile the results, participants were asked to show whether they were always up to date on agricultural practices and techniques. Farmers needed to provide answers based on technical information and access to training. Table 13 summarizes the results.

Table 13:***Individual advanced knowledge on practices and technology.***

Statement	Response	Frequency	Percentage (%)
Do you keep yourself up to date with the latest information on Agricultural practices and technology?	Yes	127	83.55
	No	25	16.45
Total		152	100

4.8. Mode of Accessing Agricultural Information

This study investigated how the farmers acquire agricultural information to improve agricultural production. To determine this, this study looked at the ways smallholders access agricultural information. Table 14 summarizes the findings from the study.

Table 14:***Mode of Access to Agricultural information***

Statement	Through training and visits by the extension officers	From friends and neighbors	Media (Television, radio, newspaper, internet)	Other sources	Total
How are you able to access Agricultural information?	24	96	18	14	152
Percentage %	15.79	63.16	11.84	9.21	100

It was noted that 15.79% of the participants accessed agricultural knowledge through training and visits by the extension officers. Most of the participants (63.16%) accessed the information from friends and neighbors. 11.84% accessed the agricultural information through

the media, which is Television, radio, newspaper and the internet while 14% noted that they accessed the Agricultural information through other sources.

4.9 Cost of production and poverty.

This research aimed to determine if participants own land for agriculture. The study also sought to determine whether land title ownership makes a difference in their agricultural activities. The participants were asked to state whether they own land and the effects of owning a title deed. The findings are presented in Table 15.

Table 15:
Availability of land, cost of production and poverty

Statement	Response	Frequency	Percentage (%)
Do you own the land you use for farming?	Yes	120	78.95
	No	32	21.05
Does owning a title to your land make a difference to your agricultural activities	Yes	114	75
	No	38	25
Total		152	100

According to the study results shown in Table 15. 78.95% of the participants owned a piece of land that they used for farming while 21.05% did not own the land they used for farming. Additionally, most participants who owned land had less than 1 acre. The main reason for the small parcels was the increase in population in the study area, which led to the division of parcels among the main beneficiaries of the family land. According to Anderson (2007), the lack of land, an economic resource, limits agricultural production for smallholders. Further interviews revealed that family inheritance was the main source of land for smallholders in the study area. Buying and leasing land was the least common way to get farmland by smallholders in the area.

On the question of whether owning a piece of land made any differences in the

agricultural activities, 75% of the participants felt that there were benefits in owning a title to the land. Some of the participants noted that owning a title to a piece of land had advantages such as facilitating them in acquiring loans from banks since it served as a form of security. However, 25% of the participants did not observe any differences in the agricultural activities in owning a title to a piece of land.

4.10. Cost of production.

The study interrogated the participants seeking to know the modes and cost of transport used by the smallholder farmers to transport their farm produce, the labor they use in the farm and their ability to purchase farm inputs. The findings are captured in Table 16.

Table 16:
Cost of production: Transport, Labor and farm inputs.

Statement	Response	Frequency	Percentage (%)
How do you transport your farm produce to the market?	Does not require transport	36	23.68
	Have my own transport	24	15.80
	Use hired transport	92	60.52
What type of workers do you employ?	Family labor	76	50
	Hired labor	24	15.8
	Family and Hired labor	52	34.2
Are you able to buy seeds, fertilizers, or hire machinery like tractors to use on your farm?	Yes	38	25
	No	114	75
Have you ever received loans or credits to support your farm work?	Yes	43	28.28
	No	109	71.72
What, in your view is the biggest cost you incur during production?	Labor	18	11.84
	Transport	56	36.84
	Buying inputs (seeds, fertilizers, machinery)	78	51.32
	Others		
Total		152	100

According to the study results in Table 16, 23.68% of participants did not need transportation to bring their produce to market. 15.80% had their own means of transport while most of them (60.52%) hired some means of transport. On the type of labour used in the farm, 50% of the participants used family labor, 15.8% had to hire for labor while 34.2% used both family and hired labor. Only 25% of the participants indicated that they are able to buy seeds, fertilizers and hire machinery to use on their farm while 75% could not.

4.11. Access to credit

On the question of receiving loans or credit, 28.28% of the participants noted that they had received loans and credit to support their farm work while 71.72% said that they have never received any loans or credit to support their farm work. The participants were also requested to share their views on the biggest cost they incur during production. 11.84% of the participants noted that labor is the biggest cost they incur, 36.84% noted transport while the most (51.32%) noted that purchasing inputs such as seeds, fertilizers and machinery is the costliest in production. Based on this, it is clear that participants may not have considered the need for credit, hence the need to make credit facilities available.

4.12. Summary of the Chapter

According to the data collected, 132 participants, 86.84% of the participants, use agriculture as their primary source of income, with 51.32% of the participants less than 1 km from the nearest road, while only 1.32% were located more than 5 km apart from the nearest road. The highest number of farmers (52.63%) had murrum roads while 27.63% had their roads with gravel. While 48.68% of the participants noted that their roads were in a poor condition, 5.27% noted that their roads were in a very poor condition, meaning majority of the farmers don't have good road access. The results also showed that the majority of participants

(72) used gunny bags and granaries, and only 15% utilized sisal bags as a means of storage.. Most farmers in the Matsangoni area still use traditional systems to store their produce, as the lack of proper storage facilities is a major challenge. Majority (73.68%) of the participants did not have access to any agricultural training or information. Only 26.32% of the participants had access to agricultural training. Only one Agriculture officer serves the entire sub county hence very difficult for him to cover the area adequately. Only 25% of the participants are able to buy seeds, fertilizers and hire machinery to use on their farm while 75% could not. Only 28.28% of the participants had been able to receive loans and credit to support their farm work while 71.72% have never received any loans or credit to support their farm work. All these indicate a deficiency in access to agricultural training, relative high cost of inputs, inability to access credit facilities.

Chapter Five

Summary Conclusions and Recommendations

5.1 Introduction

This chapter gives a summary of the study, conclusions and recommendations. It further provides the theological reflection on the outcome of the research, ministerial implications and suggests future directions for further research.

5.2 Summary of Findings

This study sought to find out how infrastructure influences the development of agriculture in Matsangoni Ward; how education levels influence the development of agriculture in Matsangoni Ward; how the cost of production/inputs influence the development of agriculture in Matsangoni Ward and how access to credit influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya.

Four independent variables formed the study's conceptual foundation. These were; condition of infrastructure, education level, costs associated with production/inputs and access to credit. Rural roads connect farmers to markets and facilitate the movement farm inputs. Depending on their condition, rural roads and storage facilities can either positively or negatively affect agricultural development. Education increases efficiency and productivity and influences decision making and the likelihood of adopting technology. Quality and sufficient inputs are integral to the development of agriculture. The price of inputs needed for production affect the quality and quantity of yields. Poverty is a huge impediment to development of agriculture since it hinders small holder farmers from accessing quality inputs and locks them from credit facilities that would aid them bolster their production.

Government policies, climate change and technology are the intervening variables. Governments through policies boost agricultural development through price control, regulation of markets, offering subsidies and through research and development. Policies that make education more affordable are essential in inculcating requisite basic ability to understand new technologies. Extreme events due to climatic changes, like floods and droughts, desertification and reducing water resources impact the development of agriculture. Technology promotes efficiency and increased yields as well as increased trading and business through Ecommerce and online trading. The dependent variable in this study, which is development of agriculture in Matsangoni Ward, Kilifi County, Kenya, is influenced by both the independent and intervening variables.

5.2.1 Infrastructure

To understand how infrastructure influences the development of agriculture in Matsangoni Ward it is imperative to highlight the result of the data which indicates that slightly more than half of the roads(52.63%) had murrum. This would indicate a roughly 50/50 degree of motorability. Despite 48.68% of the participants indicating that their roads were in a poor condition and 5.27% noting that their roads were in a very poor condition, the roads can still be used. Road networks that are in poor condition inhibit the capacity of farmers to communicate and travel to distant farming areas, restricting their access to such areas thus doing away with competition for their produce (Gollin and Rodgerson, 2010). In the case of Matsangoni, the distances to the main tarmacked roads are not vast, hence there is no relationship between infrastructure and storage facilities and development of agriculture in Matsangoni Ward.

Majority of the participants (72%) used gunny bags and traditional granaries while a smaller percentage (15%) preferred to utilize sisal sacks for their storage needs. Lack of proper

storage facilities is a challenge that farmers in Matsangoni are forced to contend with. This partly discourages farming of higher scales due to fear of post harvest losses and also losses caused by rats and other pests. Some participants had not utilized any type of storage methods because they consume their products or sell them. The continued use by farmers in Matsangoni ward of the traditional systems of storing farm produce means that growth of large scale farming is inhibited and hence restricted to subsistence level of agriculture. Expansion to larger storage facilities is a big challenge due to lack of funds and space to construct barns and use contemporary methods of storage. Since there are no water storage facilities for irrigation and no alternative water resources (KCIDP, 2018 – 2022), it has not helped the farmers at Matsangoni to try irrigation in order to boost their produce output hence this is also preventing agriculture of higher scale to be practiced.

5.2.2 Education Levels

On education levels, majority of the participants (63.16%) had Secondary level of education while 22.37% had College/University education and a small percentage of 11.84% had primary level. This was a big improvement from 2013 when statistics indicated that in Kilifi North constituency the largest number of residents had a primary level education at 54% (KNBS, 2013) and about 36% of Kilifi County inhabitants did not have any formal education. This was an indication that most of the participants had achieved secondary education or college/university education. However, since only 26.32% of the participants had access to agricultural training and information, it can be argued that the level of understanding of modern agricultural practices by the community is relatively low, though experience counts a lot (Table 11). This may be due to the lack of agricultural training institutions for smallholders in the study area and the high cost of education that most smallholders cannot afford due to poverty.

Education increases efficiency and productivity and influences decision making and the likelihood of adopting technology. It is also worth noting that sometimes practical experience may substitute education level, and more experience, leads to greater agricultural productivity. It is noteworthy that while the levels of formal education are relatively good, specific training in agriculture is still low thereby inhibiting development of same.

5.2.3 Cost of Production and Inputs

Just how does the cost of production/inputs influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya? The price of inputs needed for production affect the quality and quantity of yields. The study interviewed participants wanting to know the mode of transport used by smallholders to transport their produce, the workforce used on the farm, and the options for purchasing inputs. The findings captured indicate that for the 23.68% (Table16) of the participants, no transportation was required to take produce to market, 15.80% had their own means of transport while most of them (60.52%) hired some means of transport. On the type of labor used in the farm, 50% of the participants used family labor, 15.8% had to hire for labor while 34.2% used both family and hired labor. Only 25% of the participants indicated that they are able to buy seeds, fertilizers and hire machinery to use on their farm while 75% could not. ,

The efficient allocation of resources and degree of advanced inputs utilized are key determinants of agricultural productivity (Andaregie *et al.*, 2021). Productivity in agriculture has been boosted by the use of improved agricultural inputs which have maintained returns that surpass expenditure (Briggeman & Mickelson 2013). Farmers need to increase their use of the latest agricultural inputs to increase their productivity and profitability, as maximizing the use of farmers' inputs is fundamental to improving productivity. (Venkatesh & Nithyashree, 2014). Inputs would greatly improve productivity within Matsangoni area. However, modern

agricultural inputs such as machinery, fertilization, mechanization and even irrigation have not taken root in the area due to poverty levels, hence agricultural productivity remains low (KCIDP, 2018-2022).

5.2.4 Access to Credit

How does accessing of credit influence the development of agriculture in Matsangoni Ward, Kilifi County, Kenya? Poverty is a major impediment to agricultural development as it hinders small holder farmers from accessing quality inputs and locks them from credit facilities that would aid them bolster their production.

According to the Food and Agricultural Organisation and the World Bank, finance is an essential requirement that empowers poor farmers to not only increase their production but to also diversify and market their produce (FAO and World Bank , 2013). Credit not only eliminates financial impediments touching on financial inputs but also enhances the technological capability of poor farmers and improve their appropriation of resources and profitability (Sial *et al.*, 2011).

For the Matsangoni farmers, 28.28% of the participants said that they had received loans and credit to support their farm work while 71.72% said that they have never received any loans or credit to support their farm work. The participants were also requested to share their views on the biggest cost they incur during production. 11.84% of the participants noted that labor is the biggest cost they incur, 36.84% noted transport while the most (51.32%) noted that purchasing inputs such as seeds, fertilizers and machinery is the most costly in production.

It is therefore apparent that there is greater potential that is yet to be explored by the participants within Matsangoni, hence the need for the government to consider supporting the small holders by availing financial support. This will enable the farmers to acquire land, afford

labor cost, afford transportation and purchase farm inputs. This would guarantee more profitability, improved production and better output to boost food security for the residents and allow for higher incomes from selling the surplus yields.

5.3 Theological Reflection

Religion is a powerful force that enables humans to understand reality. This includes understanding farming and other activities in many rural communities. Faith can change mindsets and allow for adoption of farming methods that are deemed to be consistent with that faith. Belief in supernatural powers, apparently is still prevalent, not only within the area under study but in many other, far and wide. In Genesis 1:11 God said, "Let the land produce vegetation: seed-bearing plants and trees on the land that bear fruit with seed in it, according to their various kinds." And it was so.

The farmers of Matsangoni are not different from other farmers in other areas of their Country. Challenges that they are facing are somewhat similar to what many other farmers in other areas of the third world. Apparently, the inability to change their lives for the better is partly due to lack of knowledge seeking that may assist their situations. Provision of good infrastructure would help the farming communities with their activities and enable them improve their lives. Perhaps nothing matters more than to be empowered in what one does by being trained and educated in their specific areas. By addressing the cost of production, even the need for credit facilities might not be of paramount importance.

5.4 Ministerial Implications

Although the county / central government is expected to play a significant role in supporting Matsangoni's agricultural community, it is imperative that a ministerial approach is

looked into in the way some initiatives from the community itself can be used to tackle some of their socioeconomic challenges which have an impact on their lives as a community of farmers.

Educated youth particularly those who embrace agribusiness should be assisted in establishing agricultural clinics and production centers to outsource work inside and outside the community. In order to attract young people to the agricultural sector, it may be necessary to raise awareness of young people and create training courses in various areas of other agricultural activities such as value addition and processing of agricultural products. The area faith groups ought to come together and jointly hold seminars and workshops that are geared towards organising the community so that it is able to work towards this goal.

Women have to be particularly encouraged to take part in such group activities. The smallholder farmers should also be encouraged to jointly petition their local leaders to collectively forward their challenges to the county government in order that they may be addressed. The issue of utilization of family land which is normally a sensitive one can be addressed through such forums.

5.5 Conclusions

The following are Conclusions of the study:

1. Socio economic factors can influence the development of agriculture in both positive and negative way. This will depend on their standing. From the study, farmers in Matsangoni are conducting their activities with the factors weighing against them. Transport is normally hired. Things would be different if majority owned the means of conveyance.
2. Family labor is used together with hired labor during farming activities. If family labour is withdrawn, the cost of production will automatically increase. Modern agricultural technology

can also aid in production. Improvement on storage facilities would go a long way towards helping to alleviate any post-harvest losses.

3. Training on modern methods of farming should be encouraged. Dissemination of the latest agricultural information and technology is of paramount importance.
4. Availability of credit facilities does and can really enhance the farmers' ability to improve and produce much better yields from their farming activities. If conditions and terms are right, this might make a great helpful effect on the development of agriculture in Matsangoni.

In conclusion, it is imperative that more effort in all aspects should be geared towards improving the conditions that inhibit development of agriculture in the Ward.

5.6 Recommendations

The following are recommendations of the study:

1. Both the Central and County governments should consider increasing more funding for infrastructural (road and Storage) development so that the farmers of Matsangoni can be able to properly store their produce and transport it easily when necessary.
2. The government has to come out with measures to invest in field training schools whereby agriculturalists can compare and receive knowledge, facts, training and demonstrations on better farming methods. The government should also provide support to the farmers by creating agro-training centers equipped with experienced technical staff who will adequately address the need of the farmers in technical and local knowledge in farming.
3. More agricultural extension officers are required hence the Government ought to capacitate the farmers by increasing the reach of the extension services to the ward farmers
4. The government should provide support to the small holders by availing financial backing so that they may be able to acquire land, afford labour cost, transportation and purchase

farm inputs. This would guarantee more profitability, improved production and additional output to for enhancement of food security and better income after sale of the surplus.

5. Financial institutions should be encouraged to come up with attractive terms of lending to the poor farmers so that they are able to develop their capacity by building better storage granaries and purchase modern farming inputs that will ensure better yields and hence improve the standards of living of the farmers.

6. The County government should invest in creating awareness of climate change and its effect on agricultural activities in the area of study.

5.7 Suggestions for Further Research

Having come up with findings on the socioeconomic factors influencing development of agriculture in Matsangoni, it is imperative to note that other factors may be at play when it comes to agricultural growth, many of which can not be covered in one study. It is therefore suggested that the following area be considered for further research:

How to mitigate the effects of weather fluctuations on the farm outputs in the area.

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Appendices

Appendix A: Letter of Introduction

Dear Respondent,

My name is Suleiman Miraji Kibwana, a student undertaking a Master's degree in Social Transformation specializing in Sustainable Development at Tangaza University College. I am conducting a research study as a requirement for my course. The research aims at finding out the socioeconomic factors that influence agricultural Development in Matsangoni Ward in Kilifi County.

I engage you as the agricultural officer in charge of the area through a set of questions with the aim of understanding your ideas, opinion and perceptions on several issues regarding the topic under study and kindly request your input in filling out the questionnaires. Your answers are strictly confidential and will only be used for educational purposes in this research process.

Thank you for your time and willingness to participate in this study.

Suleiman Miraji Kibwana.

Appendix B: Consent Form

Socioeconomic Factors Influencing Development of Agriculture in Matsangoni Ward, Kilifi County, Kenya

Consent to take part in study

Participant's code number.....

1. Participation in this survey is voluntary and I recognize that I cannot answer questions by force and can withdraw at any time without explaining why.
2. I understand the purpose and nature of this survey.
3. I appreciate that I will not benefit directly from this study in terms of monetary compensation.
4. I understand that I am not required to give any personal information and that my identity will remain confidential.
5. I know that my info will be handled in a confidential manner.
6. By signing this form, I give my consent for the information I give to be included in the study.

Signature of participant

Date

I acknowledge that the participant has consented to participate in the study.

Signature of researcher

Date

Appendix C: Interview Guide to the Agriculture Officer

Instructions

Please fill in the blanks and check the appropriate box ().

1. For how long have you been working in the area?
Less than five years 5-10 years 11-15 years over 15 years

2. In your assessment, how would you describe agricultural productivity in Matsangoni?

.....
.....
.....

3. According to you, what are some of the challenges affecting farmers in Matsangoni?

.....
.....
.....
.....

4. The issue of ownership of land titles has been a major challenge to farmers. What is the government doing to ensure land owners get title deeds?

.....
.....
.....

5. What channels do you use to ensure farmers receive training and information to improve their productivity?

.....
.....
.....

6. Who are involved in disseminating information and training to farmers?

.....
.....
.....

7. What measures is the ministry taking to increase agricultural productivity in the region?

.....

-
.....
.....
8. To what extent have farmers embraced the use of technology in the area?
9. Does the ministry assist farmers to get good seeds and fertilizers that would ensure increased productivity?
10. How would you describe the condition of roads in your area and how they impact productivity?
11. Are the markets easily accessible to the farmers and what determines market prices?
12. What is the ministry doing in terms of incentives and value addition to ensure farmers get maximum benefits for their produce?

•
Thanks for taking part in this survey

Appendix D: Questions to farmers in Matsangoni.

Instructions

Fill in the blanks and select the appropriate check box ().

PART A: Demography of farmers

1. How old are you?
18-25 years 26-30 years 31-35 years 36-40 years over 40 years
2. Gender: Male Female
3. What is your highest educational attainment ever.....
4. How many years have you practiced farming?
Less than five years 5-10 years 11-15 years over 15 years
5. How many members are in your household?
6. Is agriculture your main source of income? Yes No
7. If no, what is your source of income?
Salary Business Pension Other
8. How would you describe your type of farming?
Subsistence farming Cash crop farming

PART B: Road infrastructure and storage facilities

9. How far is your farm from the nearest road?
10. Is the road: a) tarmacked b) murram c) gravel
11. How would you describe the condition of roads in your area?
Very good good poor very poor
12. In view of your answer above, does this have any effect on how you get your produce to the market?
13. How do you normally store your products?
14. How does the way you store affect your farming?.....

PART C: Level of education and training

15. Does your level of education influence how your take-up training to improve your productivity?
 Yes No
16. Do you receive agricultural training or information to improve your productivity?
 Yes No
17. How often do you receive agricultural training or information to improve productivity?
 Always Sometimes Seldom Never
18. Do you keep yourself updated with the current information on agricultural practices and technology?
 Yes No
19. How are you able to access this information? (Tick the one most appropriate to you.)
1. Through training and visits by the extension officers.
 2. From friends and neighbors
 3. Media (Television, radio, newspaper, internet)
 4. Other (specify)

PART D: Cost of production /Inputs

5. Do you own the land you use for farming? Yes No
6. Does owning a title to your land make a difference to your agricultural activities?
 Yes No
7. Please explain the reason for the above answer
-
8. scale of 1-5 tick the one that most reflects the situation in Matsangoni Ward.

Land ownership and pricing	1	2	3	4	5
It is easy to own land in Matsangoni.					
Land Prices in Matsangoni are fair					
The government is doing enough to ensure farm holders get title deeds of their lands					

9. How do you normally convey your produce to the market?
a) Do not require transport b) have my own transport c) use hired transport

10. What kind of workers does your farm use?
Family hired mixed (family and hired)

11. What in your view is the biggest cost you incur during production?

1. Labor
2. Transport
3. Buying inputs (seeds, fertilizers, machinery)
4. Others (specify)

PART E: Access to credit

5. Are you able to buy seeds, fertilizers, or hire machinery like tractors to use on your farm?
Yes No

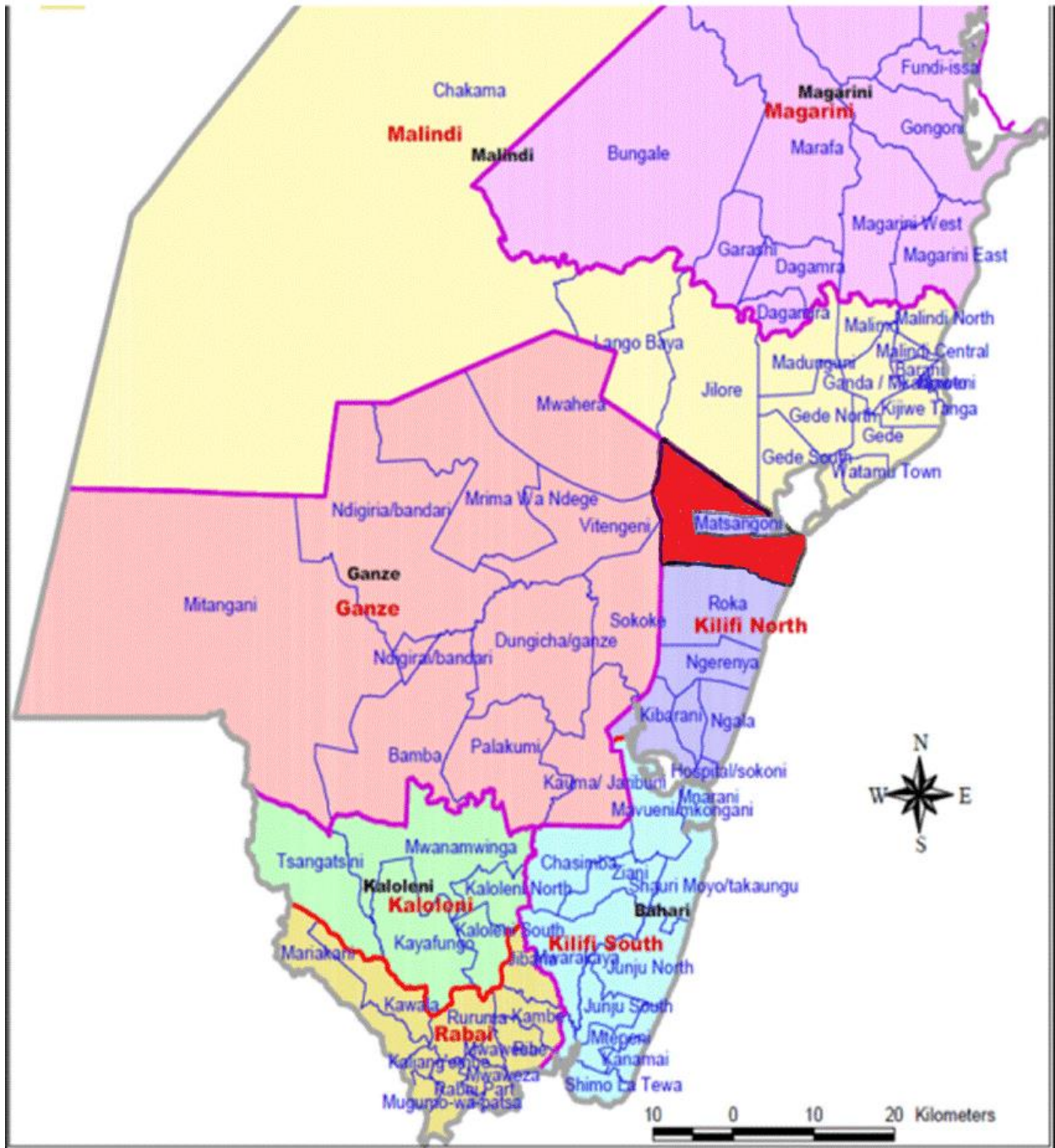
6. Have you ever received loans or credits to support your farm work? Yes No

7. If no, what has stopped you from getting one?
.....
.....

Thank you for your cooperation in the survey

Appendix E: Map of the Area under Study


Figure 2: Map highlighting the area of study



Appendix F: Work Plan for the Study

Activity	2021									2022	
	4	5	6	7	8	9	10	11	12	1	2
Developing Proposal											
Presenting of the Proposal											
Collecting the Data											
Analysing the Data											
Writing of report											
Project defence											
Final Submission											

Appendix G: Tangaza University College Clearance



TANGAZA UNIVERSITY COLLEGE
The Catholic University of Eastern Africa
OFFICE OF THE DIRECTOR OF POST-GRADUATE STUDIES
E-mail: dir.pgsr@tangaza.ac.ke Website: www.tangaza.ac.ke

OUR Ref: DPGSR/ER/02/2022 Date: 7th February 2022

Miraj Kibwana Suleiman
Institute for Social Transformation
School of Arts and Social Sciences
Tangaza University College

Dear Miraj,

RE: ETHICS CLEARANCE FOR MIRAJ KIBWANA SULEIMAN, REG. NO. 18/00640


Reference is made to your letter dated 28th January 2022 requesting for ethical clearance of your research proposal to carry out a study on "*Socio-economic factors influencing development of agriculture in Matsangoni Ward, Kilifi County, Kenya*".

I am pleased to inform you that, your research proposal has been reviewed and you can now apply for research permit. You are advised to submit your proposal to the National Commission for Science, Technology and Innovation (NACOSTI) in Kenya, for the issuance of a research permit and further guidance before commencing the data collection exercise for your study. You are also advised to adhere to the code of ethics of protection of human subjects during the entire process of your study.

This approval is valid for one year from 7th February 2022.

Please, ensure that after the data analysis and final write up, you submit a soft copy of the thesis to the Director of Post-Graduate Studies – Tangaza University College for records purposes.

Yours sincerely,





DANIEL M. KITONGA (Ph.D.)
Director, Post-Graduate Studies
Tangaza University College

CC: Dr. Aloys O. Ojore – Programme Leader, MA in Social Transformation (IST)

P.O. Box 15055 - 00509 Langata, Nairobi Kenya
Tel: +254 20 8097667 / 0732 897 000 / 0733 685 059 / 0722 204 724 / 0714 610 777
Email: inquiries@tangaza.ac.ke
Website: www.tangaza.ac.ke


Appendix H: NACOSTI License


REPUBLIC OF KENYA


NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 935893 Date of Issue: 25/February/2022

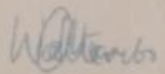
RESEARCH LICENSE




This is to Certify that Mr.. MIRAJI KIBWANA SULEIMAN of Tangaza University College, has been licensed to conduct research in Kilifi on the topic: Socio Economic Factors Influencing Development of Agriculture in Matsangoni Ward, Kilifi County, Kenya for the period ending : 25/February/2023.

License No: NACOSTI/P/22/15732

935893
Applicant Identification Number


Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code



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Scan the QR Code using QR scanner application.

Appendix I: Authority Letter from County Headquarters



OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

Telephone:
Fax:
Email cckilificoordination@gmail.com
When replying please quote
Ref: **EDUC.12/7/VOL.6 /81**

County Commissioner's Office
Kilifi County
P. O. Box 29 - 80108
KILIFI

And Date: 7th March, 2022

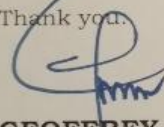
Deputy County Commissioner
KILIFI NORTH SUB-COUNTY

RE: RESEARCH AUTHORIZATION
MR. MIRAJI KIBWANA SULEIMAN

The above named student from Tangaza University College has been authorized to carry out research on "***Socio Economic Factors Influencing Development of Agriculture***". The research study will be conducted in Matsangoni Ward, Kilifi North Sub-County for a period ending **25th February, 2023**.

Any assistance accorded to her will be highly appreciated.

Thank you.


GEOFFREY TANUI
FOR: COUNTY COMMISSIONER
KILIFI COUNTY

COUNTY COMMISSIONER
KILIFI COUNTY
P. O. Box 29 - 80108
KILIFI

c.c.

County Director of Education
KILIFI COUNTY

The Program Leader
Institute Of Social Transformation
NAIROBI

Mr. Miraji Kibwana Suleiman ✓
Tangaza University College
NAIROBI