

**YOUTH PARTICIPATION IN AGRICULTURE AND ITS EFFECT ON
WELFARE: THE CASE OF YOUTH IN BOMET COUNTY, KENYA**

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K102/27351/2019

**A RESEARCH PROJECT SUBMITTED TO DEPARTMENT OF
ECONOMETRICS AND STATISTICS IN THE SCHOOL OF BUSINESS,
ECONOMICS AND TOURISM IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF
ECONOMICS (ECONOMETRICS) OF KENYATTA UNIVERSITY.**

MARCH, 2024

DECLARATION

This research project is my original work and has not been presented in any other university.

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DEDICATION

This research project is dedicated to my mum Rhoda Mitei

ACKNOWLEDGEMENT

Special thanks and acknowledgments are extended to my supervisor Dr. Jennifer Njaramba, for providing vital guidance and knowledge for successful preparation of this research project. Acknowledgments are also extended to all the lecturers at Kenyatta University, School of Economics, for providing the opportunity and foundational knowledge which made this research project a success.

ABBREVIATIONS AND ACRONYMS

AGRA -Alliance for a Green Revolution in Africa

CTA- Technical Centre for Agricultural and Rural Cooperation

ASDS - Agricultural Sector Development Support

FAO-Food and Agriculture Organization

FSPs - Financial Service Providers

GDP - Gross Domestic Product

GoK - Government of Kenya

ICT- Information Communication technology

ILO - International Labor Organization

KNBS - Kenya National Bureau of Statistics

MoA - Ministry of Agriculture

OPERATIONAL DEFINATION OF TERMS

Agriculture - Activities associated with production of food; crop production, aquaculture, apiculture and livestock production.

Access to land - The right to use land either through ownership, inheritance or leasing (Collins, 2014). The same was used for this research study.

Access to finance - Ability of a youth to obtain financial services including credit and insurance.

Access to ICT- ICTs are considered as any digital technology that facilitates access to processing and dissemination of information. This includes the mobile phone, the computer, software including basic editing tools, the internet, satellites, digital radio, digital video, social media platforms such as Facebook and twitter, etc. Access to ICT was strictly limited to internet access in the study

Effect- welfare change as a result of participating in agriculture.

Participation – The act of engaging in agriculture for own benefit

Welfare- Living standards of an individual youth as a result of participating in agriculture; the study considered income levels before and after participating in agriculture

Youth – In line with Kenyan constitution (2010) youth is defined as persons aged between 18 and 35 years.

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ABSTRACT

Kenya's youth unemployment rate stands at 39 percent, forming the largest group of the unemployed in the country. The cohort possesses innovative behavior, minimal risk aversion, less fear of failure, less conservativeness, greater physical strength and greater knowledge acquisition propensity. The agriculture sector offers a huge opportunity for the creation of employment for the youth in the country. Despite the vital role the agricultural sector plays in the economy of Kenya, youth are yet to fully exploit its potential. Like in other countries, literature posits that youth participation in agriculture is low and major determinants of participation in agriculture are; education level, access to land, access to finance, household size and access to market. Youth perceive agriculture as a career of last resort that has low monetary benefits. The study sought to establish the determinants of youth participation in agriculture and its effects on the welfare of the youth in Bomet County. The County of Bomet was specifically chosen because of its' vast agricultural land as well as large number of youths who remain unemployed and not participating in agriculture. A sample of 399 youths were picked as a representative sample. The study employed frequencies and percentages in analyzing the descriptive statistics of the study. Logistic and multiple regression were adopted in estimating the study models. The study undertook various diagnostic tests before estimating the models to ensure that the model is fit in determining the relationship of study variables. From the descriptive statistics 61.3 percent of the youth participated in agriculture with majority being males. The results from the study also showed that participating in agriculture improved welfare majorly through increased income and food. Logistic regression model established that marital status, university education, land size, financial access, access to ICT infrastructure, market distance, household size and agricultural training are the determinants of agricultural participation. Model results also established that marital status, university education, land size, financial access, access to ICT infrastructure, market distance, household size and agricultural training significantly influenced welfare of youth practicing agriculture. The study recommends that the government creates financial credit specifically tailored for majority of the youth who do not have the required collateral. There is also a need for the government to build more agricultural training institutes so that youth can learn diverse agricultural productions.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture remains the backbone of Kenya's economy directly contributing 30 percent of the annual GDP and another 27 percent indirect contribution (ASDS, 2010 – 2020). The sector has also proved to be saving grace for the unemployed in the country contributing more than 18 percent of formal employment and 70 percent of informal employment (FAO, 2019). The Agricultural sector in Kenya compose of food crops, industrial crops, horticulture, livestock and fisheries, and uses such factors of production as land, labor and capital (MoALF, 2020). In Kenya, the sector establishes the industrialization framework through supplying raw materials to industries and offering ready market for industrial goods, thereby ensuring increased employment in the country. Agriculture also supply food constantly thus, saves the country funds that would have otherwise been used in the importation of food from other countries. The sector as such ensures surplus money to invest in other areas of the economy such as social amenities, roads, hospitals, and schools. Through all this multiplier effects agriculture is perceived to be an engine of Kenyan economy.

Kenya's Vision 2030 points agriculture as one of the key sectors in achievement of 10 percent annual economic growth rate, part of this growth will be achieved through transformation of small scale agriculture from subsistence to innovative, commercial and modern agriculture. Emphasizing agricultural growth and smallholder productivity however as a gateway out of poverty raises serious concerns, especially given the ageing farmer population that is averaged at 60 years (KNBS, 2019) on whether Kenyan youth sufficiently participate in agriculture. Agriculture is faced by a lot of challenges

with main ones including low productivity, lack of access to reasonable capital, lack of market access; low fertilizer usage; inadequate storage facilities and climate change. However, serious as these challenges may look, they are insignificant when juxtaposed against these two intertwined issues: -Non participation of Kenyan youths in agriculture and the ageing population of Kenyan farmers.

1.1.1 Challenges to Effective Youth Participation in Agriculture

In most African countries, inheritance is still the common system with which youths get to own land. World bank (2019) projects world population to reach 9.3 billion by 2050, the vigorously growing population will put pressure on land and as a result land will be subdivided into small unproductive units, the problem is even more serious for youths with many siblings. Decisions to use land in places where land is owned by community lies squarely on elders, adding more hurdle for youth to participate in agriculture. Tradition in most countries in North Africa and, Middle East view division of inherited land as a taboo leading to joint farming where individuals work with their coheirs, (Cotula, 2011). Access to land especially through inheritance by female is even harder. Report by FAO, (2017) showing state gender disparities in land ownership showed that less than 20 percent of available land in the world is owned by women. The report further confirmed that land rights in many communities are managed by customary and statutory laws. Customary laws in Kenya disadvantage women when it comes to land ownership. Women gain land user rights from their husbands (FAO, 2017).

Inadequate finance in most African countries is also a major hindrance to youth participation in agriculture. The problem is further complicated by financial institution who classify youths as risky clientele (Young professionals for agricultural

Development, 2018). Majority of youths in Latin America and Africa lacks knowledge on how to draft business plan making it difficult for them to sell their business idea for funding (FAO.2017). In Kenya lack of capital has been cited by some youth as the main reason for their non-participation in agriculture (Muthomi, 2017). Youth turn to informal source of funding which are actually insufficient. Kenya Agribusiness Strategy 2017-2021 admits that youths lack required collaterals such as title deeds required in acquiring meaningful funds for agriculture from bank, the report further confirms that banks only extends credit to established businesses making it difficult for the youth who mostly haven't started any business to get credit.

Youth perception about agriculture also has a bearing on their participation. Despite the immense contribution of agriculture compounded by increased government support, the current trend of youths seems not to be interested in the activity as they perceive it as a sector of intense labor, not profitable and unable to support their livelihood compared to what white collar jobs offer (Youth in Farming, 2016). Agriculture is seen as a less worthwhile subject or as a last resort for under-achievers hence influencing rural youth aspirations in a negative way; while urban students see agriculture as a 'dirty job' (Njeru et al., 2015).

Despite the ever expanding local and international markets for agricultural produce in most parts of Kenya. Youths are yet to tap this markets (Leavy & Hossain 2014). The marketing chains are long, non-transparent, inefficient, slow and unresponsive to the needs of producers who are predominantly youth. They are often characterized by low value addition, which translates to low prices, fewer job opportunities and low incomes (World Bank, 2019). The situation is worse for perishable products such as milk and horticultural products. Common problems in the value chains include lack of direct market access by producers, low farm gate prices and high transportation and other

transaction costs, fragmented, value chain for smallholders that are mainly based on contract farming and often skewed against small scale producers (Purvis, 2014).

1.1.2 Role of agriculture in Economy

Agricultural sector is critical in creating employment and uplifting the living standards of the Kenyan people. It's against this context that Agriculture has been identified as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged in the economic pillar of the Kenya Vision 2030. This growth can be achieved through transforming small-scale agriculture from subsistence to innovative, commercially oriented and modern agriculture. Considering high rate of youth unemployment and underemployment in Kenya, the agricultural sector offers multiple livelihood and employment opportunities by reducing food insecurity and provision of income respectively.

Positive effect of agriculture in contributing to income and rural development is dependent on active participation of youths. This cohort possesses minimal risk aversion, innovative behavior, greater physical strength and greater knowledge acquisition propensity (Umeh and Odom 2011)

1.1.3 The State of Youth in Kenya

Article 260 of Kenya constitution (2010) defines youth as a person aged between 18 and 35 years. Youth empowerment is anchored in The Constitution of Kenya, Article 55 requires the government to take measures which include affirmative action programs, to ensure that the youth access relevant training and education; have opportunities to associate, be represented and participate in social, political, economic and other spheres of life; access employment; and are protected from harmful cultural practices and exploitation.

The population of youth aged 18 to 34 years is 13.7 million, (KNBS, 2019). The report further indicates that Kenya youth unemployment is higher than the overall national unemployment rate. While the latter is around 10percent it goes as high as 39 percent for youth. With majority of population being youth it implies that Kenya is experiencing youth bulge which is often seen in terms of challenges it poses rather than opportunities it presents. Increase in youth population ushers in a period during which a country's working age population makes up a growing share of the overall population creating an opportunity for demographic dividend wherein the relative abundance of the working age people can lead to increased savings, higher productivity and more rapid economic growth. The demographic dividend earned by Kenya will depend on the amount of human capital it invests in youth whose productivity, entrepreneurship and innovation will drive future economic growth.

Increasing urbanization in Kenya fueled by mass rural urban migration mainly by youth who go to urban areas in search of jobs has resulted in an increasing gap between food production and consumption that has threatened food security in the country. This mass migration by youth has also resulted in increased crimes, overstretched social amenities and development of informal urban settlements since majority of this youth cannot be absorbed by limited job opportunities in the urban areas. (Kenya Youth Agribusiness Strategy, 2017-2021). Njeru and Gichuru (2014) also found that many youths in Kenya struggle to find employment or are lowly remunerated. This extends their dependency on their parents and increases frustrations which increases the likelihood of crimes and conflicts.

The ministry of Youth, Sports and Gender in Partnership with Ministry of Agriculture is responsible for finding better ways to support and improve level of youth participation in agriculture. The partnership has yielded programs and projects tailored

to address youth unemployment issue, youth participation in agriculture being the central focus area in addressing the issue. Kenya's government through this inter-ministry partnership supports youth participation in agriculture through coming up with funding tools such as Youth Enterprise Development Fund (YEDF) and Uwezo fund which describes itself as "flagship program for vision 2030 aimed at enabling women, youth and persons living with disability in gaining access to finances to promote businesses and enterprises at constituency level". The main goal of YEDF in Kenya is to promote the idea of self-employment for young people through entrepreneurship activities thereby shunning the idea of job seeking which has proved to be a killer of many young people's success dreams. It does this through provision of cheap and easy credit services to youth who are keen on expanding or starting business ventures including agriculture.

1.1.4 Status of Youth Participation in Agriculture in Kenya

The Agriculture sector development strategy (2010-2020) recognizes the strengths and potential of the youths to be pivotal in developing agriculture. Youth offer a dynamic work force that is innovative; have a high uptake of technological know-how and the ability to take on significant levels of risk. The Agriculture sector presents a huge opportunity for the creation of employment to absorb the youth and ensure achievement of food security for future generations. This great income generating activity has however not been adopted by the Kenyan youth who perceives agriculture as an occupation of the old, illiterate and poor rural people (FAO, 2017). Approximately 10 percent of the youth in the country directly participates in agriculture (Kenya Youth Agriculture strategy 2017-2021). The report further observes that the negative perception of Agriculture has continued over the years with universities and middle level colleges hit by a declining enrolment to agricultural courses due to paradigm shift

towards other courses perceived to have higher demand in the labor market. The low number of youth participating in farming as a business is a national signal of distress in the agricultural sector as well as the economy in general

1.1.5 Policies Targeting Kenyan Youth

United Nation Sustainable Development Goal Fund (SDG-F) stresses on rekindling youth's interest on farming in order to achieve Sustainable Development Goals one and two (end poverty and improve global food security). To achieve this goal, SDG-F launched up to 14 different programs in Latin America, Asia and sub-Saharan Africa which focusses on equal access to land, technology and markets especially for youth. The SDG-F is leading the course in ensuring agricultural production can be sustained and expanded over time.

Agriculture Sector Development Strategy (ASDS) 2010-2020 sought to sensitize youth on profitable enterprises. The Strategy also suggests collaboration between the Ministry of Public Service Youth and Gender Affairs and the agricultural sector be established to offer incentives to the youth in farming either through the YEDF, CDF, Innovation Fund for Agriculture and Agribusiness. The strategy underscores the need to develop and prudently manage our factors of production such as land, water, inputs, and financial resources so that the cost of production is within international standards

Bomet County Integrated Development Plan (CIDPs) 2018-2022 have prioritized Agricultural sector and youth empowerment issues. The CIDPs emphasize on employment creation, capacity building and promotion of agribusiness for the youth through provision of finance and agricultural training for youth to effectively participate in agriculture.

The Ministry's Strategic Plan (2013-2017) in tackling low youth participation in agriculture encourage youth to take up agriculture as a business and a form of gainful

employment. Specific measures have been taken to empower youth through: Capacity building under technical and vocational training and farming including Agriculture Technical Vocational Education and Training Program (AVET) aims at integrating agriculture education and training in vocational and tertiary institutions; introduction of new farming technologies (Green houses, drip kits, fish ponds and water harvesting facilities) that reduce drudgery; increase productivity and returns to labor; and facilitating access to modern technology information through demonstration sites, print media, periodicals and electronic media targeting the youth.

Kenya Youth Agribusiness Strategy 2017 -2021 developed eleven strategic objectives that will address agriculture; To transform the mindset and perceptions of the youth towards agribusiness; To equip youth with appropriate agribusiness skills, knowledge and information; To enhance access to affordable and youth friendly financial services for agripreneurship; Enhance access and sustainable use of land for the youth in agribusiness; To engage youth in research, development and utilization of innovative agricultural technologies; Enhance access to factors of production, utilization of modern technologies and utilization of Good Agricultural Practices (GAP) to increase efficiency; To increase utilization of agricultural products through value addition; Improved access to affordable suitable output markets for the youth; Support implementation, reviews and development of policies that create an enabling environment for youth in agripreneurship; Promote youth-inclusive climate smart agricultural technologies and create green jobs for environmental sustainability; Promote an integrated approach to address cross-cutting challenges including gender disparities, cultural barriers, alcohol and substance abuse, HIV & AIDS, weak governance and value systems amongst others.

1.1.6 Youth and agriculture in Bomet County

The department of youth gender, sports and culture is in charge of youth affairs in the County, the department support youths mainly by funding their ideas. The population of youth in the Bomet is 279220 constituting a third of the population in the county (KNBS, 2019). Majority of these youth are not engaging in any meaningful income source. This means that the County is sitting on a ticking time bomb as these youths may cause mayhem in the near future. The County is characterized by fertile vast agricultural land with mean holding size of 1.55ha and evenly distributed rainfall all throughout the year (Bomet County Integrated Development plan, 2018-2022). According to international center for tropical agriculture, (2015). The County has 1,716.6 km² of arable land (over 80 percent of the county's total land area). The higher altitude areas in the northeast of the county are specifically suited for tea plantations and dairy farming while the middle and southern part is appropriate for food crops and livestock production. Horticulture is also practiced in the county. Despite all this factors favoring the youth to participate in agriculture in Bomet County, majority of the youth still consider other economic activities such as *bodaboda* business and brick making lucrative than agriculture with widespread cases of youth selling their inherited portion of land to join ventures like motorcycle business (*bodaboda*). (National Adolescent and Youth Survey, 2015). Bomet County also has 36.2 percent of households categorized to be food insecure which is high considering that the county has abundance of resources for agriculture (International Center for Tropical Agriculture, 2015). This could be attributed to youth who are endowed but do not choose to participate in agriculture.

1.2 Statement of the Problem

Agriculture is an important sector in the economy, it contributes up to 30 percent of the total Gross Domestic Product and make up to 65 percent of Kenya's total exports. The sector provides food as well as contributing more than 18 percent of formal employment and 70 percent of informal employment in the rural areas(FAO,2017), Therefore, greater percentage of youth participation in agriculture will translate to reduced unemployment rate and food secure society not just in Bomet County but in the whole country

Despite the contribution of agriculture and major investment by both County and National government in provision of funds and capacity building support services to youth in Kenya, the number of youth participating in Agriculture is quite low, approximately 10 percent (Kenya Youth Agribusiness Strategy, 2017-2021). There are numerous cases in Bomet County where youth have not been able to effectively utilize their land to earn income and to some, the land is sold or leased in order to join other ventures (National Adolescent and Youth Survey, 2015).

Empirical literature has identified several determinants of youth participation in agriculture as well as effect of agriculture on welfare (Nnadi & Akwiwu, 2008; Kimaro, 2015; Adesina & Eforuoku, 2016; Mwendwa, 2016; Ankrah, 2019; Teka & Lee, 2020). Given the political, economic and geographical disparities from study areas above, it is important to establish the specific determinants of youth participation as well as effect of participation in agriculture on youth welfare in Kenya and specifically Bomet County. From the foregoing, the study used random sample of youth in Bomet County to establish the specific determinants of youth participation in agriculture and evaluate the effect of participation on youth welfare.

1.3 Research Questions

- i) What are the determinants of youth participation in agriculture in Bomet County, Kenya?
- ii) What is the effect of agriculture on youth welfare in Bomet County, Kenya?

1.4 Objectives of the Study

Generally, this study assessed youth participation in agriculture and its effect on Youth welfare in Bomet County, Kenya. The specific objectives of the study are:

- i) Establish the determinants of youth participation in agriculture in Bomet County, Kenya.
- ii) Determine the effect of participation in agriculture on youth welfare in Bomet County, Kenya.

1.5 Significance of the Study

The study may be of great importance to the County and National government policy makers, development partners and youth agribusiness financiers as it enlightens them on the determinants of youth participation in agriculture as well as effect of agriculture on youth in Bomet County, Kenya. The findings of this study added to the body of knowledge and therefore provide basis and literature for future research.

1.6 Scope of the Study

The study used a sample of youths who are residents of Bomet County and between the age of 18 and 35 years.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents theoretical framework, empirical literature and overview of literature on youth participation in agriculture.

2.2 Theoretical Literature

2.2.1 Schultz Theory of Traditional Agriculture

The theory was advanced by William Schultz in 1953. It considers traditional agriculture as a situation where the agriculture sector performs under some equilibrium level. The theory argues that it is a prerequisite for less developed countries to meet their basic needs such as food security for them to develop into modern economies. The theory further delves on the issue of “high food drain”, where a country spends much of its income on food. For a country to overcome “high food drain” the theory proposes that the economy must first produce the bulk of their own food to meet their subsistence needs. Developing countries should transform their agricultural sector into a highly productive sector by determining the form and type of agricultural investment needed. According to Schultz excess abundance is a prerequisite condition for a country’s development process. Assumptions of this theory are high costs for importation of food; large amounts of labor and resources are needed in food production; limited goods and resources to exchange for food. Transforming the agricultural sector into highly productive sector to curb high food drain calls for government to invest in youths who possess innovative behavior, minimal risk aversion, less fear of failure, less conservativeness, greater physical strength and greater knowledge acquisition propensity to participate in agriculture.

2.2.2 Johnston Mellor Theory

This theory was developed in 1961 by Bruce Johnston and John Mellor. They highlighted five set of general impacts that arise from participation in agriculture. Firstly, increased incomes, resulting to improved living standards of those participating in agriculture. Secondly, reduced food prices-as a result of abundant food - benefit locals. Hence, increases disposable income. Thirdly, increased savings leading to more investments, hence economic growth. Fourthly, provide ready market for agro-industries and lastly, increase foreign exchange inflows resulting from exports expansion. In a nutshell agricultural productivity and growth builds on three dimensions of human development-living standards, education and health- resulting to better wellbeing of participants. Assumptions of this theory are dominance of agriculture in the economy and food consumption is subject to minimum consumption requirement. Enhancing youth participation in agriculture will translate to better wellbeing not only for the youth but for the country as a whole.

2.2.3 Utility Maximization Theory

The theory was developed in 19th century by utilitarian philosophers such as Jeremy Bentham and Neo-classical economists such as Adam Smith. Economists were working on refining an economic system based on self-interest while utilitarian philosophers were seeking scientific explanations on policies that obtain the greater good through utility index. The utility maximization theory states that a rational consumer want to maximize utility derived from consumption of a good or service. In 1987 Stigler integrated this theory in rational maximization hypothesis and came up with three characteristics of a rational consumer namely; rational consumer taste is consistent, rational consumer make choices that maximizes their own utility and that his cost

calculations are correct. The theory assumes that all consumers are rational and they always strive to get the highest value in commodities they choose to consume. Since resources are limited the theory assumes that consumers are faced with budget constraint and hence consumer have to choose commodities that maximizes their utility at highest point of budget constraint. The theory also assumes that consumers have a clear preference on commodities they want to consume. This preference has consistence and transitivity properties.

The theory however is limited in scenarios where individuals suffer from spend thriftiness. Expenditure of such consumers is not guided by principle of rationality, budget constraint and utility maximization. These individuals make random choices and sometimes spend on a good or service with less utility

In relation to this study, assuming two choices to participate or not to participate in agriculture, Choice A and B respectively. If utility derived from A (U_A) is greater than utility of B (U_B) then the youth chooses alternative A which is to participate. The youths in this study will be assumed to be rational and perhaps choose to either participate or not to participate in agriculture depending on the choice that maximizes utility. Youth choice to either participate or not to participate in agriculture was examined and probability of utilizing one of the alternatives as influenced by a number of characteristics estimated

2.3 Empirical literature

Nnadi and Akwiwu (2008) examined the Determinants of youths' participation in agriculture in Imo state, Nigeria. Data was generated from 230 randomly selected youths from the three agricultural zones of the state using questionnaires and interviews. The data was analyzed with the aid of frequency tables, simple percentage

counts and logit regression model at 0.05 level of significance. The results indicated 84 percent level of participation in agriculture. The determinants of participation were found to be age, sex, education, distance from school or any other place of engagement, marital status, parent's farm income, parent's occupation, household size and youths' dependence status. The study recommended that institutional support services for agriculture should be extended to the youths and interventions strategies for youth's agricultural activities should be guided and guarded by their ages, education, marital status, parents' income, parents' occupation, family size and youth's dependence status. This study borrowed the concept of binary choice model from this literature review for analysis of data.

Urooj (2015) conducted a study on Impact of ICTs on Agricultural productivity in Kapiri Mposhi district of Central Province in Zambia. The study used multiple stage random sampling technique to select the sample farmers. The results of the study revealed that there was a positive impact of ICTs on agricultural productivity. The impact of television on productivity was positive and statistically significant. The study also found that productivity of farmers in the age group of 25-40 years was higher due to use of more ICTs. Analysis was done by use of Ordinary Least Square Regression Techniques. The study recommended that the Government should create an integrated agricultural information system on agro-technologies and techniques, pricing and market information so that strategic information could be provided to farmers and other stakeholders at national, provincial and district levels. The study also suggested for development of ICT skills among agricultural extension workers and farmers. The literature review benefited the study by giving insight on how ICT can influence the participation and perception of youth in/about agriculture.

Kimaro (2015) examined the determinants of rural youth's participation in agricultural activities in Kahe East Ward, Moshi Rural District, Tanzania. The study used case study research design. Both primary and secondary data was used. For primary data questionnaires was used to collect data where random sampling was used to draw a total of 90 respondents. SPSS was used for data analysis to generate frequencies percentages and tables. Descriptive statistics was also used to analyses qualitative data. Results from the analysis indicated 73.33 percent level of participation. Age, perception, sex, marital status, education level lack of job alternatives, credit, land and agricultural knowledge were significant determinants of youth's participation in agricultural activities. The study also revealed that the respondents are provided their socio economic needs through participation in agriculture. This socio-economic needs are food, health services and education. The literature review benefited the study as it has given a clue on the benefits of agriculture on socio-economic needs of youth as well as determinants of youth participation in agriculture.

Adesina and Eforuoku (2016) examined the determinants in participation in Youth-in-Agriculture program (YIAP) in Ondo State, Nigeria. Multistage sampling procedures was used to draw 128 youths as study sample. Questionnaire was used to get information from respondents. Data was analyzed using descriptive and inferential statistical tools: Inadequate training facilities was the most severe constraint to participation and participation in YIAP was above average(57.0percent) Predictors significantly related to YIAP participation were household size, farm size, years of farming experience, attitude and constraints. The study recommended that relevant agencies should increase provision of extension and education in agriculture, encourage female youth participation and harness youth involvement in agriculture program as a remedy to rural urban drift.

Kising'u (2016) examined the factors influencing youth participation in agricultural value chain projects in Kathiani Sub-County, Kenya. The study employed descriptive survey design. Stratified proportionate sampling was used to select 24 members in each of the four locations of Kathiani Sub County where semi-structured questionnaire was administered to this respondent. Descriptive and inferential statistics were used to analyze the quantitative data. The results of the study were that economic factors land and capital limited youth participation in agricultural value chain projects Access to social capital network did not have significant effect on youth participation in agricultural value chain projects. The study however failed to investigate the effect of agriculture on socio-economic needs of youth. This study borrowed from this literature review on examination of socio economic factors influencing youth participation in agriculture.

Mwendwa (2016) assessed the influence of Social economic factors on Youth engagement in agricultural project activities in Yatta Sub-County, Kenya The study used descriptive survey design and targeted youth between the ages of 15 and 34 years. Purposive sampling technique was used to select the respondents and data collection was done using survey questionnaires. Data was analyzed and presented using tables, frequencies simple percentage counts The study found that access to land was most limiting factor as 66 percent reported to be having difficulty in accessing land. financial services were found to be highly accessible to youth, however the uptake of this finances were low (37 percent) since majority of youth did not know the loan application procedures. Market access was also found to be a significant factor influencing youth engagement in agriculture projects as 80 percent of the youth were not aware of external markets. The study also reported that information access was not

an issue since they accessed information from ICT infrastructure such as radios and internet.

Muthomi (2017) studied challenges and opportunities for youth engaged in agribusiness in Kenya using explanatory research design. The population of interest were youth between ages 22 and 29 years drawn from Thika and Kiambu sub-counties respectively. A sample of 50 youth were selected using stratified random sampling technique then a questionnaire was used to collect data. Inferential and descriptive statistics were used for data analysis. The results from the study indicated that youth perceived agriculture to be cool. The analysis of challenges facing youths in agribusiness indicated that access to agricultural inputs, access to market, access to extension services and Access to information had a significant impact on youth participation in agribusiness projects. The literature review may be of great help in achievement of objective one of this study. Ankrah et al (2019) conducted a study on the determinant of agriculture participation among tertiary institution youths in Ghana. The study examined the factors that influences youth decision to participate in agriculture activities and the intensity of participation of those youths who are participating in agriculture. A multi-stage sampling procedure was used to select respondents for the study. Data collected were analyzed with the aid of descriptive and double hurdle model (DHM). The results of the study revealed that majority of the youth, 315 compared to their counterparts 135, decided not to engage in farming. The findings from this study also noted that, youth perception of farm inputs price, youth level of education, access to credit, access to land, youth course of study at the tertiary institution, gender composition of the youth and youth perception of farm income significantly affects the decision and the intensity to participate in farming. The study recommended provision of subsidies on major farm

inputs and putting up measures to curtail credit and land constraints, so that sufficient capital and access to land could be acquired by youths to participate in farming.

Buyisile et al, (2019) did a study on youth perceptions of agriculture; influence of cognitive processes on participation in agripreneurship in Nkomazi municipality, South Africa. The study targeted youth of ages between 15 and 39. A sample of 120 youth was selected using stratified sampling method, the data was then collected using a questionnaire. Logit model was used for data analysis. The results from the study showed that marital status, parental financial level, study of agriculture significantly affected youth perception toward agriculture. This study borrowed the concept of binary choice model from this literature review.

Teka and Lee, (2020) did a study on whether Agricultural Package Programs Improve the

Welfare of Rural small holder farmers in Ethiopia. The study used a three-round balanced panel, collected and organized by Adigrat University, the Regional Government of Tigray Bureau of Plan and Finance, Bureau of Agriculture and Rural Development and Dedit Credit and Saving Institution (DECSI) using both stratified and random sampling to select households to respond to questionnaires. The results of the study indicated that consumption expenditure, income, and asset per capita of the households increased across the survey years

Tiri et al., (2020) did a study on The Impact of Agricultural Productivity on Welfare Growth of Farmhouse holds in Nigeria: Integrated Surveys on Agriculture (LSMS-ISA) panel datasets from Nigeria, merged with detailed novel climate and bio-physical information was used. The results show that agricultural productivity is positively associated with labor and farm inputs. The study also found that the welfare of participating households improved greatly through increased incomes.

2.4 Overview of the Literature

Utility maximization theory posits that each individual youth makes a choice either to participate in agriculture or not. The choice made depends on individuals' attributes and preferences. Youths have different attributes which vary across gender. These attributes include education level, age, sex, etc. Schultz and Johnston Mellor theory argues that participation in agriculture by youth improves wellbeing of participants through increased income and food provision and thus economic growth in the country. Empirical literature that has been reviewed has used different methods to analyze data [mostly descriptive] and the most probable variables associated with coefficients are; education level, access to land, access to finance, household size and access to market. However, most of these studies again do not reflect most upcountry areas due to diversity of factors that vary from political, economic and sociocultural realities and geographical disparities between study areas. So these few literatures cannot be substantially reliable, be entirely reflective or based upon for policy decision and implementation in County government of Bomet, therefore a need to study Determinants of youth participation in agriculture and its effect on youth welfare in Bomet County, Kenya

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The chapter presents the methodology utilized in the study. It gives the description of research design, theoretical framework and model specification, variables under study, sampling techniques as well as data collection and analysis procedures.

3.2 Research Design

The study used non-experimental study design. Unlike experimental study design, this design does not enable the researcher to manipulate collected data. Data source is primary and was collected by use of structured questionnaires

3.3 Theoretical Framework

Youth participation in agriculture is modeled within the theory of Utility maximization framework, in this framework youths choose to either participate or not to participate in agriculture, meaning that participation is binary. The decision maker is assumed to be rational and when faced with alternatives he/she chooses alternative that maximize utility (Greene, 2018). The decision of youth to participate in agriculture is made when perceived utility from participating greatly outweighs the utility of choosing not to participate. Though utility cannot be directly observed, the actions of youths are observable through choices they make.

This can be captured by utility function expressed as:

$$U = f(X,Z) \dots\dots\dots \text{Equation (3.1)}$$

Where: X and Z represents observable and non-observable individual youth attributes respectively.

Equation 3.1 can also be represented as:

$$U_{ij}(X_{ij}; Z_{ij}) = V_j(X_{ij}; \beta), \quad i = 1, 2, \dots, N, \quad j = 1, 2, \dots, M \dots \dots \dots$$

Equation (3.2)

Where: i represents individuals while j represents participation in agriculture choice, U_{ij} represents the utility derived by individual i from choice of alternative j , X_{ij} represents the observed characteristics of individual i and alternative j chosen, Z_{ij} represents the unobserved characteristics of individual i and alternative j chosen, and V_j denotes the deterministic component of the utility function.

This shows that the choice made by youth i is determined by the utility derived from alternative j such that an individual chooses alternative A if U_A is greater than U_B .

3.4 Empirical model

The following related studies aided achieve the goals of the study; Sanchez (2005), Nnadi and Akwiwu (2008) and Musyoka (2018). Simple percentage count was used in determining level of participation.

To achieve objective one on determinants of youth participation in agriculture, individual youth is assumed to maximize utility upon making a choice represented by j in equation (3.2) above. Assuming the youth is faced with two choices of participating or not participating in agriculture (choice A and B respectively). if a youth chooses alternative A over B , it implies that utility derived from A is greater than the one derived from alternative B . Taking the error term to be independent across alternatives, then A is chosen if:

$$V_A(X_{iA}; \beta) + \varepsilon_{iA} > V_B(X_{iB}; \beta) + \varepsilon_{iB} \dots \dots \dots \text{Equation (3.3).}$$

Where; V_j is the deterministic component of the utility estimated; $j = A, B$ and ϵ_i is the unknown utility and β represents the estimated coefficients of the explanatory variables.

Rearranging equation (3.3) gives; net known utility: $K(X_i; \beta) = V_A(X_{iA}; \beta) - V_B(X_{iB}; \beta)$ and net unknown utility: $\mu = \epsilon_{iA} - \epsilon_{iB}$;

This can also be shown as;

$$K(X_i; \beta) + \mu > 0 \dots \dots \dots \text{Equation (3.4)}$$

Equation 3.4 can further be transformed using latent variable (Y^*) as shown below;

$$Y^* = K(X_i; \beta) + \mu \dots \dots \dots \text{Equation (3.5)}$$

$$Y^* > 0$$

$Y=1$ if $Y^* > 0$ implies that utility derived from participating (Alternative A) is greater than utility derived from non-participation hence youth chooses to participate in agriculture

$Y=0$ if $Y^* < 0$ indicates non participation

Where; Y^* is a latent variable, $K(x_i; \beta)$ is the observable functional index as a result of choosing alternative A or B, μ is the error term, $Y=1$ implies that a youth chooses alternative A(participate) and $Y=0$ indicates non participation(alternative B).

Probability that a youth chosen to participate in agriculture is therefore given as;

$$\text{Probability}(Y=1 | X) = \text{Probability}(U_A > U_B) = \text{Probability}(Y^* > 0 | X) \dots \dots \dots$$

Equation (3.6)

X denotes set of independent variables.

Equation 3.6 is modified to aid in the achievement of objective one. Given socioeconomic characteristics (age, gender, marital status, education, knowledge about agriculture, access to land, access to ICT, access to market and access to finance) we can model objective one. Functional relationship is expressed as;

$$Y=F(\text{AGE,GDR,MAR,ED,ALD,AFC,AIT,AMT,KWA,HH})\dots\text{Equation (3.7)}$$

$$P(Y=1 | X)=\beta_0+\beta_1\text{AGE}+\beta_2\text{GDR}+\beta_3\text{MAR}+\beta_4\text{ED}+\beta_5\text{ALD}+\beta_6\text{AFC}+\beta_7\text{AIT}+\beta_8\text{AMT}+\beta_9\text{KWA}+\beta_{10}\text{HH}+\epsilon_i\dots\dots\dots\text{Equation (3.8)}$$

$P(Y=1/X)$; the probability that a youth participates in agriculture; β_0 to β_{13} are the parameters to be estimated and ϵ_i is the error term of the model.

To achieve the second objective, to establish the effect of participation in agriculture on welfare, the study employed two step Heckman estimation method. The procedure first estimates the binary equation (3.8) using Maximum likelihood estimation and then proceeds to estimate equation 3.9 with predicted probabilities from 3.8

$$\text{Welfare}=F(\text{AGE,GDR,MAR, ED,ALD,AFC,AIT,AMT,KWA,HH, PRD}) \text{ (3.9)}$$

Linear model with the predicted values can be expressed as;

$$\text{Welfare}=\beta_0+\beta_1\text{AGE}+\beta_2\text{GDR}+\beta_3\text{MAR}+\beta_4\text{ED}+\beta_5\text{ALD}+\beta_6\text{AFC}+\beta_7\text{AIT}+\beta_8\text{AMT}+\beta_9\text{KWA}+\beta_{10}\text{HH} + \epsilon_i\dots\dots\dots\text{Equation (3.10)}$$

Welfare- is a continuous variable indicating difference in income levels before and after participating in agriculture; β_0 =constant; β_1 - β_{10} =Regression coefficients; AGE=Age (years); =GDR; MAR= Marital status; ED= education; HH-Household size; KWA=Agricultural training; GPR=General perception about agriculture; ALD=access to land; AFC= access to finance; AIT=access to ICT infrastructure for youth participation, PRD=predicted probabilities for youth participation equation.

3.5 Description and measurement of variables

Table 3.1 Showing Variables to be used on the study

Dependent Variable	Description	Unit of measurement
Youth participation	Participation in agriculture	Binary Dummy variable (if participant=1; otherwise=0)
Youth Welfare	difference in income levels before and after participating in agriculture	Value in Ksh.
Explanatory variables		
Age	Age of an individual in years	Number of years from date of birth
Gender	Gender of the respondent	Categorical variable; 1-male 0-female
Marital status	State of having or not having a spouse.	Categorical variable 1-married 0-single
Education	Highest level of basic education attained	Categorical variable 4-University 3-Secondary 2-Primary 1-No education
Land	Size of land which youth can access in acres	Acres
Finance	Amount of credit a youth can access	Categorical(Ksh) 50000 and above-5 40001-50000-4 30001-40000-3 20001-30000-2 Below 20000-1
Access to ICT infrastructure	Difficulty in accessing internet	Dummy (if yes=1, otherwise=0)
market	Distance from the agricultural produce market in kilometers	Kilometers
Agricultural training	If the youth has any agricultural training.	Dummy (if yes=1, otherwise=0)
Household size	Number of persons sharing the same roof	Number of persons
Predicted probabilities	Predicted probabilities from youth participation in estimated equation	Probabilities

3.6 Study Area

Bomet County lies between latitudes 0° 29' and 1° 03' south and between longitudes 35° 05' and 35° 35' east. It is bordered by four counties, namely: Kericho to the north,

Nyamira to the west, Narok to the south and Nakuru to the north-east covering an area of 2,037.4 Km². The county is the source of major rivers such as Mara and Itare which flow into Lake Victoria. Bomet County is divided into five (5) Sub-Counties (Constituencies), 25 wards, 66 locations, 177 sub-locations. The locations and sub-locations are Administrative units of the national government. The Bomet County Government Coordination Act, 2014 established Sub-County, Ward, Community and Village administration.

Chepalungu sub-county is the largest in area covering 535.8 Km², followed by Sotik (479.2Km²), Konoin (445.1 Km²) and Bomet East (311.3 Km²). Bomet Central is the smallest with an area of 266 Km². The county has a population of 875689(KNBS, 2019). Majority of the population in the county are the young people (below age of 35) who constituting two third of the total population, (Bomet county, 2018). Majority of this youth remain formally unemployed and the county government has taken the initiative to empower them in productive activities through setting up three empowerment centers in the county located in Konoin, Sotik and Bomet East Sub-counties with over 2229 registered youths.

The county experience an average rainfall of 1200mm, which is evenly distributed except for the short dry spell in January and February. The wettest months are April and May. Overall, there is little break between the long and short rains in the whole county. The temperature levels range from 16⁰C to 24⁰C with the coldest months being between February and April, while the hot seasons falls between December and January. There are abundant water sources in the county and even distribution of rainfall almost throughout the year with 90 percent of the total land being agricultural. Agriculture is the backbone of Bomet County with tea farming and dairy farming constituting a greater proportion. Main food crops grown in the area are maize being

the staple food, beans, Irish potato, millet, cabbages and pineapples. The crops are grown for both consumption and sales. The top revenue earner for the county are tea and dairy respectively.

3.7 Target Population

The study population consist of youth between the ages of 18 and 35 residing in Bomet County. The sample size was obtained by considering a population of 279220 persons who are residents and youth of Bomet County, sampling error of 5 percent at 95 percent confidence level and using the formula proposed by Yamane (1967);

$$n = \frac{N}{1+N[e^2]}$$

N=sample size, N=target population and e is the sampling error

$$n = \frac{279220}{1+279220[0.05^2]}=399$$

Probability sampling method was used in this study. Random sampling was utilized to pick 399 youths to act as respondents for the study. Data was collected by use of questionnaires comprising of both open ended and closed ended questions.

3.8 Pilot Study

Pilot study preceded the actual research to pre-test and validate the questionnaire. A pre-test sample of forty youths with homogenous characteristics was considered appropriate for carrying out a pilot study. The selected sample was given the questionnaires already Prepared.

3.9 Data collection Procedure

Before starting to collect data, the researcher sought permission from relevant authorities to carry out the study. The research team comprised of the researcher and two research assistant, who before the beginning of interview briefed the respondents

concerning the study objectives and assure them of utmost confidentiality. The researcher coordinated the data collection exercise of filling the questionnaires. The valid questionnaires were administered by the research assistants to avoid misinterpretation of questions.

3.10 Data Analysis

The analyses involved the use of descriptive statistics that include percentages, frequencies, means and standard deviations. The study also employed inferential statistics that included multivariate binary logistic regressions. The results from multivariate binary logistic regressions were interpreted at 0.05 level of significance.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATIONS AND DISCUSSION

4.1 Introduction

The chapter presents analysis and interpretation of study findings. The descriptive section examined; response rate, background information, youth participation in agriculture, determinants of youth participation in agriculture and effect of agricultural participation on welfare. The inferential section concludes the chapter by establishing determinants of youth participation in agriculture as well as effect of agricultural participation to welfare of youths using logistic regression and robust regression model respectively.

4.2 Summary Statistics

The section gives the response rate, youth demographic information, participation level, determinants for participation in agriculture as well as effect of participation on welfare.

4.2.1 Response Rate

The study distributed 399 questionnaires to the resident youth in Bomet county out of which 284 were filled and returned. This represented a response rate of 71.2% which was adequate for analysis. Response rate of above 50% is considered adequate for analysis, (Mugenda, 2003).

4.2.2 Background information of the Youth

The study examined various demographic features of the study population that include gender, age, and marital status, level of education, occupation and household size and the finding is presented in Table 4.1.

Table 4.1 Background Information of Study Population

Variable	Features	Frequency	Percentage (%)
Gender	Male	192	67.6
	Female	92	32.4
Age	Yes (Within 18-35years)	280	98.6
	No	4	1.4
Specify age in years	Maximum	35 years	
	Minimum	19 Years	
	Average	29.72	
Marital Status	Married	144	50.7
	Single	106	37.3
	Others	34	12
Education	No Education	22	7.7
	Primary	82	28.9
	Secondary	106	37.3
	University	74	26.1
Occupation	Formally Employed	56	19.7
	Self-Employed	228	80.3
Household Size	Maximum	4	
	Minimum	1	
	Average	3.02	

Source: Authors computation from survey data (July, 2023)

The results of the study noted that 67.6% of the population were male while 32.4% are female. This signifies that majority of the youth practicing farming are male. Many males could be practicing agriculture because they are allowed by the parents to undertake farming within family land unlike female counterparts who could be restricted by cultural ties that is associated with property ownership. In most African communities, women especially in rural areas have limited inheritance property rights thus jeopardize their engagement in farming.

Age is vital in classifying respondents as youth. 98.6% of the respondents were within the age bracket while 1.4% were outside the age bracket. 98.6% of the respondents translate to 284 people who qualified to be interviewed. Upon further interrogation about the age, the study deduced that the oldest respondent aged 35 years while the youngest aged 19 years. Further the average age of the respondent interviewed were 29.72 years.

Regarding marital status, 50.7% of respondents interviewed are married while 37.3% of the respondents are single. Additionally, 12% of the respondents were neither married nor single. This imply that majority of the respondents likely practicing agriculture are married. Marriage entail financial responsibilities and one of the main source of income is venturing in agriculture.

Education is essential in disseminating information that can improve farming. The study results indicated that 37.3% of the respondents had secondary education, 28.9% are primary certificate holders while 26.1% of the respondents are degree holders. Likewise, 7.7% of the respondents had no education history. It can be deduced from the finding of the study that majority of those practicing agriculture are secondary certificate holders. This imply that secondary education is vital in understanding agricultural techniques and proper farming methods.

Agriculture is main employer in rural areas in many of the developing economies. When respondents were enquired about their occupation, 80.3% of the respondents were self-employed while 19.7% are formally employed. This showed that majority of the respondents are self-employed. Agriculture is still informal and many of the players are classified as self-employed.

The finding of the study established that household can share one roof with a maximum of 4 people and a minimum of one person. The average number of people that many households share one roof are 3 people. This implied that many households share roof with 3 people. Sharing of a roof by household with others heads is considered a burden that is likely to diminish household welfare and increase participation in agriculture.

4.2.3 Youth Participation in Agriculture

Kenya has witnessed increased urbanization in the recent years as more youthful population migrate from rural areas that are known for huge agricultural potential in search of white collar jobs deemed more rewarding. This has reduced the level of youth participation in agriculture and the study examined what percentage of youth participating in agricultural activities in earning livelihoods. The finding is presented in figure 4.1.

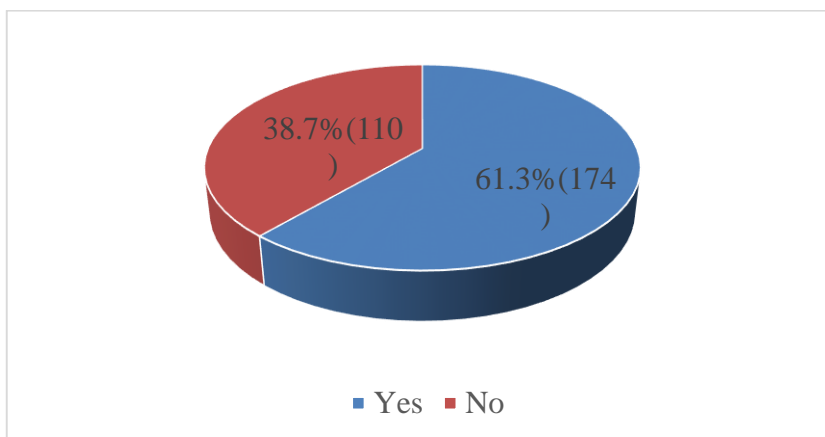


Figure 4.1 Youth Participation in Agriculture

The finding of the study revealed that 61.3% of the youth are directly involved in agriculture activities while 38.7% of the respondents are involved in non- agricultural activities in Bomet County. Agriculture is main source of employment in many parts of rural areas thus making majority of the youth to venture in the activity so as to sustain

their basic needs. Bomet County has vast arable land intertwined with favorable agricultural conditions making it possible for many youths to practice agriculture as the means of earning a living in the County.

Youth not participating in agriculture cited several challenges encountered when commencing agricultural activities. Modern agriculture is driven by adequate financing because many components of modern farming have been commercialized. Majority of the youth lack the financial capacity to develop a modern farm that can sustain their livelihoods in the long run. Access to financing is characterized by several credit conditions that are impediment to financial access. Credit requirements only favor the established ventures, unlike youth who lack these credit requirements. In some areas some youth could not find adequate land to practice agriculture while others feared losses associated with price volatility associated with agricultural product markets.

Agricultural activities which youth actively participated was assessed using frequencies in percentages and results are presented in figure 4.2.

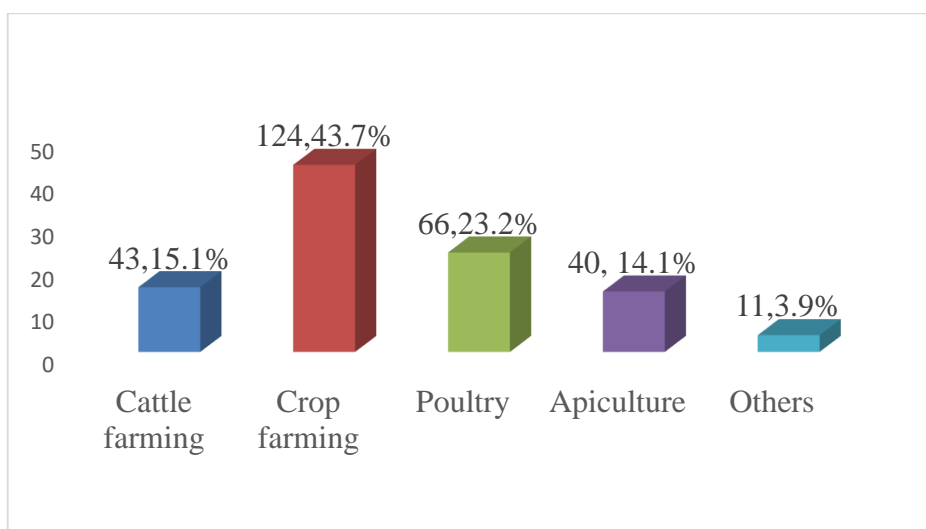


Figure 4.2 Main Agricultural Activities Being Undertaken by the Youth

The outcome of the study deduced that 43.7% of respondents are engaged in crop farming while 23.2% of the respondents practice poultry farming. Moreover, 15.1% of the youth are engaged in cattle farming while 14.1% of the respondents practice apiculture as a source of livelihoods. Additionally, the finding of the study revealed that 3.9% of the respondents are involved in other agricultural activities not classified in this study such as aquaculture among others. This signify that main agricultural activity engaged by youth is crop farming in Bomet County. Crop farming in many areas especially rural places is easier to start. It does not require a huge a startup capital as long as availability of land question does not emerge. Crop farming enjoy readily available market. Increased population coupled with increased food insecurity has created readily market for youth who are involved in crop farming. Reasonable number of youth have also resorted to poultry farming, in the recent years capital startup for poultry is modest making some cluster of youth afford. Poultry products have been experiencing high demand fetching high farm gate prices motivating more youth to practice poultry.

One of the key challenge facing youth in agriculture is availability of adequate land ideal for agricultural activities. Land size has been diminishing with population growing over years making youth venturing into agriculture embrace alternative strategies in maximizing output in the existing land. The study sought to establish size of land in acreage owned by youth practicing agriculture and the finding is presented in table 4.2.

Table 4.2 Land Size in acres

Landholders	Land size (in acreage)
Minimum	0.25
Maximum	8.5
Average	1.98

Source: Authors computation from survey data (July,2023)

The results of the study established that 8.5 acres of land is the maximum acreage under agricultural practices while 0.25 acres is the minimum acreage that is put under agricultural activities by the youthful population. Further, 1.98 acres was the average size of land under agricultural activities steered by the youth. This imply that majority of the youth engage in small scale agriculture to sustain their daily livelihoods. This is also a clear indication that availability of adequate land that can support large scale agriculture is not certain or cannot be guaranteed. Meaningful agriculture practices require a large scale where a farmer can enjoy economies of scale as they maximize profits. Small scale agriculture can only be a short term solution to the rising cases of unemployment among youth but may not be a viable solution in the long run. Diminishing marginal returns in small scale farming in the long run is likely to consume all the profits generated by a small scale farmer thus making it uncompetitive. Competitiveness is critical for any player to survive in a modern market where liberalization of prices across the globe is a cornerstone to any form of production and agriculture is not an exception.

Sustainability and commercialization of agricultural activities require certain drastic measures to be undertaken in order to enjoy success. Information has proven to be power in every aspect of economic sphere and agriculture is also part of it. Sharing of information regarding the best practices that can be undertaken in agricultural activities is mostly disseminated in various capacity building programs that include training

among others. The study sought opinion of youthful farmers regarding their exposure on various training programs geared towards increasing agricultural yields/earnings on aggregate and finding is examined in figure 4.3.

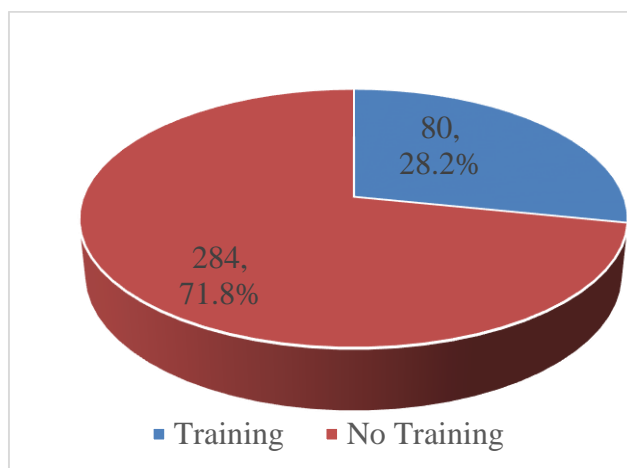


Figure 4.3 Training on Farming

When respondents were asked about exposure to training programs tailored on farming, 71.8% of the respondents were of the view that there are no training programs tailored towards helping youth to embrace best farming practices. On the other hand, 28.2% of the respondents agreed that there are training programs relating to agricultural best practices targeting farmers in improving their yields turnover. This signify that training opportunities available are inadequate for the youthful population that are in dire need for these training services to foster their agricultural activities. Inadequate training is evident by significant chunk of youth who have not embraced agriculture.

Training is essential in building capacity among youth through employing modern practices to maximize agricultural yields and enhancing livelihoods. Training is also vital by allowing youth venturing in agricultural practices to embrace agricultural methods and techniques that are productive in the long term unlike those ones which can generate favorable results in short term but have adverse effects on agricultural

yields in the long run. Youth who underwent training were sponsored by county government, non-governmental organizations and few decided finance their trainings. Some of the training were virtual while others were physical. Physical training involved farmers commuting to a central training place where extension agricultural officer rendered training services. Trainings of farmers by respective experts have been occasional and many farmers are targeted during the eve of planting season. Training farmers before planting is considered ideal because when a farmer get it right during planting there is likelihood that rest of the operations can be easily be managed.

4.2.4 Determinants of Youth Participation in Agriculture

Policy framework on agricultural activities form the foundation of various determinants of youth engagement in farming. Some of the policies are geared towards sensitizing youth in practicing profitable agricultural activities. Application of innovative farming methods are among the ingredients that accelerate agricultural activities among youth. The study sought respondents’ opinions on whether it is difficult to access land or not and the finding is presented in figure 4.3.

Table 4.3 Descriptive Results of Land as determinant of youth participation in agriculture

Variable	Category	Frequency in Percentage
Access Land (Challenges)	Yes	75.4
	No	24.6
	Total	100
Land Acquisition	Inherited land	22.5
	Lease	63.4
	Others	14.1
	Total	100
Land Utilization	lease it out	20.8
	Sell it	21.5
	Agriculture	35.9
	Build rentals	13.7
	Others	8.1
	Total	100

Source: Authors computation from survey data (July,2023)

The study outcome revealed that 75.4% of the respondents have experienced challenges in accessing land for agriculture especially the youthful population. On the other hand, 24.6% of the respondents have not experienced any difficulty in accessing land. This showed that majority of the youth have experienced difficulty in accessing land. Accessing family land among youth to undertake agricultural activities in many of the households is difficult, this is partly attributed to the parental perception on educated youth.

The society perceive educated youth as people who are supposed to migrate to urban areas and secure well-paying white collar jobs. If educated youth are allowed to participate in agricultural activities, then many households view that as more strain to the already scarce resources. There is a common notion among various households that educated youth have already taken their share through education investment and the only way they can recoup that investment back is looking for opportunities elsewhere. Engaging in agricultural activities by educated youth is seen as straining limited land that would have benefited others who never went to school. The other reason that is making it difficult for many of the youth to access land is the unavailability of adequate land for farming. The only way that this availability problem is solved through incurring leasing cost which is still a challenge to many of the youth who have no income after completing tertiary education.

It was established that 63.4% of the respondents accessed land through leasing while 22.5% of those accessed land through inheritance. Moreover, 14.1% of the respondents accessed land through other means such as donations among others. This finding imply that majority of the youth accessed land through leasing. The leasing of land is becoming a common practice among Kenyan youthful population. Leasing is essential when an individual want to achieve a certain target within a given timeline. Leasing is

also convenient because the beneficiary of the lease can utilize the land in his/her preference unlike the inherited that land that come with a package of conditions that are likely to impede farming. There is also a tendency among large land owners of getting incentives through leasing out an idle land in many rural areas especially households that only have land as the only factor of production and they have to meet other regular expenditure.

On utilization of land the study noted that 35.9% of the respondents would engage in agricultural activities on their inherited land while 21.5% those respondents will sell their inherited land. Moreover, 20.8% of the respondents would lease their inherited land and 13.7% of the respondents would utilize inherited land through building rentals. Further, 8.1% of respondents will put the inherited land on other use like tree nursery, apiculture among others. The finding signified that many of youth that access land through inheritance practice agriculture. Agriculture is the main employer of youth in rural areas, thus venturing into farming is the only way youthful population in these areas can earn livelihoods and eradicate poverty that is rampant. The demographic numbers of youth selling or leasing inherited land combined is a concern (42.3 percent). This is occasioned by the general perception of many youths on agriculture segmented on the aged population and their opportunities are elsewhere in digital space and practicing agriculture as the main socioeconomic activity is a mirage.

Access to information has been a critical tool in enriching farmers with new ideas on how to undertake farming. Internet is one of the key enabler in disseminating the needed information by farmers. Farmers can access recorded training materials in various forms that are convenient to them through internet.

Table 4.4 Descriptive Statistics of Determinant of Youth Participation in Agriculture

Variable	Category	Frequency in Percentage
Level of Internet Accessibility	Yes	59.9
	No	40.1
	Total	100
Ownership of Internet Access Phones	Yes	70.4
	No	29.6
	Total	100
Internet Usage	Loan application	29.2
	Agricultural relates training	36.6
	Accessing marketing	34.2
	Total	100
Importance of Training by Internet	Yes	66.2
	No	33.8
	Total	100
Financing (Challenges)	Yes	45.8
	No	54.2
	Total	100
Credit Financing (application)	Yes	47.2
	No	52.8
	Total	100
Credit application reservations	I don't know the application process	25.7
	they asked for collateral which I don't have	44.4
	Credit is too expensive	29.9
	Total	100

Source: Authors computation from survey data (July,2023)

The increased access to internet is attributed to the culture of many youth embracing modern technology. It is rare to find a youth not owning a smart phone. The integration of financial services and government services into digital platform has made smart phones a basic need among the youthful population. The increased usage of social media by youth in addressing array of social economic activities that include agriculture

has made internet one of the basic need. The disruption occasioned by COVID-19 pandemic opened up of many opportunities internet offered for instance learning and education activities migrated to digital platforms only accessible through internet connections. High cost of internet services and weak infrastructural set up is still considered some of the impediments of internet services.

The study finding deduced that 70.4% of the respondents owned phones that can access internet while 29.6% of the respondents owned phones that lacked internet access. This implied that majority of the respondents owned phones that have internet access. Smarts phones have becoming essential gadgets in running daily activities on every household. Nearly all basic services from services providers are accessed online thus making ownership of a smartphone more essential. Smart phones are resourceful in availing information that can shape farming in terms of adopting best practices.

Access to internet and its usage may vary from one youth to another, this is because internet offers several services that are appealing to many youth depending on their needs. Internet can be an ideal place where youth can participate in agricultural trainings organized by various stakeholders or even attend conferences that are resourceful.

The study noted that 36.6% of the respondents used internet to gain training related activities on the agricultural activities while 34.2% used internet in checking available produce markets. Additionally, the study also noted that 29.2% of the youthful farmers made use of internet by accessing digital credit facilities targeting young entrepreneurs. This indicated many of the youth used internet services to acquire further training on agricultural related activities. Training is vital in getting the appropriate procedures and techniques necessary for venturing into successful agricultural activities.

Information acquired through training is expected improve agricultural processes. Training is supposed to sensitize farmers on the new farming practices that increase yields in a given piece of land. The study finding revealed that 66.2% of the respondents agreed that information acquired through internet helped them to improve their farming activities while 33.8% of the respondents were of contrary view. This signify that majority of the respondents were helped by information acquired through internet. Internet is an essential platform in building capacity of farmers through imparting new skills and techniques that is required enhancing more yields in agriculture. Agricultural activities are becoming dynamic now and then, there is need for farming stakeholders to adopt strategies that are adaptive to the ever changing farming environment. Strategies are best informed by examining existing information from point of fact.

Commercial agriculture heavily relies on adequate financing to sustain its activities. Agricultural inputs and extension services require financing. The outcome of the study revealed that 54.2% of the respondents experienced challenges in accessing financing while 45.8% of the respondents did not experienced any difficulty in accessing financing. This signify that majority of the respondents experienced some difficulty in accessing financing. Accessing credit is one of the most known way of getting financing but is packaged with conditions. Some of the conditions require a credit security that is beyond the reach of many youths. Lack of credit security is one of the greatest impediment of accessing financing among youth in agricultural sector.

Securing financing through credit is procedural and require certain conditions to be satisfied. Ordinarily, conditions are heavily determined by the level of vulnerability of the farmer which in most cases are strictly tied to the level of risk.

When respondents were asked if they apply credit to support their agricultural activities, 52.8% have not applied for credit while 47.2% have applied for credit to secure loans in financing their farming activities. This signifies that majority of the youth have not applied credit to finance their agricultural activities. This could be partly attributed to the perception about impediments associated with accessing financing through credit or lack of information on how and where to get agricultural financing through credit. Credit is considered a significant enabler for any business grow and youth participating in agricultural activities are not exceptional.

Credit financing give farmers' incentives to work extra hard so as to repay the loan and recoup investment from farming. Accessing credit financing is considered a critical component of profitable farming. The study sought to understand why some of the farmers have not applied credit despite all indicators showing that the only way to grow gradually in farming is securing financing through credit given that resources are scarce and mobilization of these resources are attached to costs.

After the study explored why many of the respondents have not applied credit to finance their agricultural activities, it was noted that 44.4% of respondents were not able to apply for credit financing as a result of being asked to produce collateral instruments while 29.9% cited the cost of servicing credit as too high. Moreover, 25.7% of the respondents failed to apply credit financing because they did not have sufficient knowledge on application process. This signified that many of the respondents were not able to apply credit because of collateral instruments that acted as an impediment as they attempted to access credit financing. Financial institutions have set up elaborate process that guide credit financing regime. One of the most common credit condition is the establishment of collateral instrument that act as a security in case of loan defaulting. Agricultural sector is faced with myriad of challenges ranging from high

price fluctuations to unpredictable weather conditions. When all these are summed up it pose a huge risk to any willing financier, these vulnerabilities leave financiers with limited options on how they are going to recoup their investment back. One of the most viable option available is the instigation of collateral system that is marked with certainty so that just in case defaulting happen then they can easily recoup their capital back. Youth have just completed school lack this collateral instruments and end up not applying for credit financing.

Credit financing is always based on a grading system that is normally determined by the level of risk a borrower is likely to encounter. Agricultural activities are considered risk given the risk that is posed by unpredictable weather conditions and price volatility. The study investigated how grading of credit enabled farmers to have adequate financing and the finding is presented in Table 4.5.

Table 4.5 Amount of Financing Farmer qualify to Access as Credit

Variable	Category	Percent
Amount in (kshs) Famer qualify to access as credit	Below 20000	42.6
	20001-30000	25.7
	30001-40000	18.3
	Above 50000	13.4
	Total	100
Channels of Selling Agricultural Products	Online	38.4
	face to face	28.2
	Group marketing	33.5
	Total	100

Source: Authors computation from survey data (July,2023)

The finding in Table 4.5 indicated that 42.6% of the respondents' access credit below kshs. 20,000 while 25.7% of the respondents' access loan ranging kshs. 20001-30000. Additionally, 18.3% of the respondents qualify to access loan ranging kshs.30001-

40000. Moreover, only 13.4% of the respondents can access a loan above kshs. 50000. This signified that majority of the respondents accessed loan below kshs. 20000. This is the lowest classification of credit access, thus many of the youth who have access to credit financing may not be in a position to do a meaningful agricultural activity. This is attributed to the credit impediments put in place by financial institutions due to risk associated with agricultural sector that is exposed to so many vulnerabilities. Access to market is essential in farming, farmers are expected to have timely and accurate information on what is happening in the market.

Once agricultural yields are ready marketing remains to be the only hurdle between earning money and preparation for the subsequent harvest. Marketing of agricultural products are done in various platforms. It is through aggressive marketing strategy that farmers reap fully from their harvest. In modern day innovations have changed marketing structure and many of the youth can sell their products directly to consumers without making direct contact and not involving middlemen.

Upon the study exploring channels used by youth in selling their agricultural produce, 38.4% of the respondents sell their products through online platform while 33.5% of the respondents sell their produce through group marketing. The study noted that 28.2% of the respondents sell their products directly to consumers face to face. This signified that many of the youth have embraced innovation and sell their agricultural produce through online processes. Innovation has made marketing easier and lowered cost. Many people have embraced innovation because it eases cost of doing business.

Table 4.6 Market Distance and Awareness

Statistic	Market Distance (km)	Market Awareness	Percent
Maximum	20	Yes	87.5
Minimum	1	No	12.5
Average	10.16197		

Source: Authors computation from survey data (July,2023)

The average distance from farms to market for many of the youth practicing agriculture is 10.2KM while farthest youth lived 20KM away from the market. The nearest youth lived within a kilometer to the market. This finding indicated that majority of the youth relied on the local market within the county. There is need to expand the market for more youth to venture into agriculture. Overdependence on the local market might get saturated and this cause demand decline that might have adverse effect on pricing. Saturated markets tend to fetch low prices which discourage more youth from engaging in agricultural activities.

It was further deduced that 87.5% of the respondents were aware of existing agricultural markets while 12.5% of the respondents were not aware for the existing agricultural markets. This implied that majority of the respondents are aware of the existing agricultural markets. Given the fact that the study finding revealed that more of the agricultural products are sold locally hence the level of awareness of marketing is likely to be high. Market awareness is important for farmers in planning their farming schedule. Adequate information on the market is essential for farmers in making crucial decisions.

4.2.5 Agricultural and Welfare

Agricultural sector is vital in enhancing livelihoods and improving living standards. Agriculture has been identified as the key pillar of creating employment in rural areas where industrialization is still low. Sustained agricultural activity is achieved through

mechanization. Mechanization of agriculture and application of modern innovation is essential in creating sustained jobs for youthful population. The study assessed various welfare individuals derive from agricultural activities.

Table 4.7 Descriptive Statistics of Agricultural and Welfare

Variable	Category	Frequency in Percentage
Perception of Agriculture	Low status activity	53.5
	Profitable and descent activity	46.5
	Total	100
Welfare Improvement	Strongly agree	19.4
	Somewhat agree	43.3
	Neither agree nor disagree	9.5
	Don't agree	17.3
	Strongly disagree	10.6
	Total	100
	Benefits of Agriculture	Income
	Food	47.2
	Health	10.6
	Others	8.8
	Total	100

Source: Authors computation from survey data (July,2023)

The study established that 53.5% of the respondents considered agriculture as low status activity while 46.5 percent of the respondents considered agriculture as profitable and descent activity. This signified that majority of the respondents perceive agriculture as a low status activity. Youth consider agriculture as the job for the old and prefer white collar jobs. The nature of the country education is tailored to getting employment in industries and not in agricultural firms. The society still consider agriculture as the job for less educated people while view white collar jobs as reserved for highly educated people.

Agriculture is source of livelihoods to many people in the informal sector especially rural areas. Agriculture is complex chain that offer employment direct and indirect to various households. Agriculture is considered a major source of raw material to developing countries industrialization agenda. All these processes are done in order to improve welfare and eradicate poverty in low income households.

The finding of the study revealed that 43.3% of the respondents somewhat agreed that agriculture improved their welfare while 19.4% agreed that agriculture strongly improved their welfare. Additionally, study noted that 17.3% of the respondents did not agree that venturing agriculture improved their welfare while 10.6% of the respondents opined that agriculture did not improve their welfare in totality. This signified that agriculture improved welfare of many of the youth. Agriculture is a direct source of food to many farmers thus enhances that nutrition level which directly improve their welfare. Agriculture earn direct income to youth which can be used to improve their welfare through getting better shelter and other basic needs that bring decency in individual lives.

Participation in agriculture has direct benefits for instance growing crops is a direct source of food, poultry keeping is a direct source of meat and eggs. Agriculture is also essential in generating descent incomes when commercialized. In general agriculture is a source of livelihoods in different aspects.

When respondents were asked about benefit they derive from participating in agriculture, 47.2% of the respondent cited food as the main benefit while 33.5% cited income as main benefit they derive from agriculture. The study deduced that 10.6% of the respondents cited health as main benefit derive from practicing agriculture and 8.8% of the respondents derived other benefits from agriculture. This showed that many of

the youth who practiced agriculture were able to get food as the main benefit thus youth are engaged in small scale agriculture where food is the main objective and surplus is sold to earn income.

Practicing agriculture offers direct employment to so many people living in rural areas. Modern agriculture is considered main source of livelihoods to many young people in developing economies. The study investigated how welfare of people practicing agriculture improved. The study noted that an average income for people who have practiced in agriculture in last three months was kshs. 9754.20, while an average income for people who have not participated in agriculture was kshs. 6428.75. This showed that practicing agriculture made people better than those not involved. Engaging in farming is rewarding because it is a source of income and livelihoods. Farming is a pillar to enhancing food security and eradicating poverty. Continuous engagement in farming remain the only sustainable of improving welfare of households in rural areas that lack alternative options of sustaining their livelihoods.

The study assessed how venturing into agriculture affected expenditure on food, energy and housing, clothing, health insurance and other expenditures and the finding is presented in Table 4.8.

Table 4.8 Household Expenditure

Recurrent Household Expenditure	Monthly Expenditure Participating In Agriculture(Ksh.)	Average Before In	Monthly Expenditure Participating In Agriculture(Ksh.)	Average After In
Food	3485		5895	
Energy and housing	1254.30		1856.80	
Clothing	4520.24		6520.45	
Health insurance	385.60		758.40	
Others(Transport)	520.40		850.60	

Source: Authors computation from survey data (July,2023)

The study established that household expenditure on food increased from Kshs. 3485 to kshs. 5895 after participating in agriculture. Expenditure on energy and housing rose from kshs. 1254.30 to kshs. 1856.80 upon engagement in farming. Additionally, household expenditure on clothing registered an increase from kshs. 4520.24 to kshs. 6520.45 after practicing agriculture. The expenditure on health insurance registered an increase from kshs. 385.60 to kshs. 758.40 upon engaging in farming. Expenditure on transport across household increased from kshs. 520.40 to kshs. 850.60 after households enrolling in farming practices. This implied that expenditure on food, energy and housing, clothing, health insurance and transport expenditures increased after households practiced agriculture. Practicing agriculture enabled individuals to earn more money that increased their purchasing power. Farmers had more income at disposal and were able to consume more food among other products.

One of the motivation that sustain production/continuity of an activity is the benefited that users derive from its consumption. Agriculture has proved over time has the reliable tool which enhance household welfare and eradicate poverty. The study sought to establish the implication of practicing agriculture on the value of their households' assets and the finding is presented in figure in 4.4.

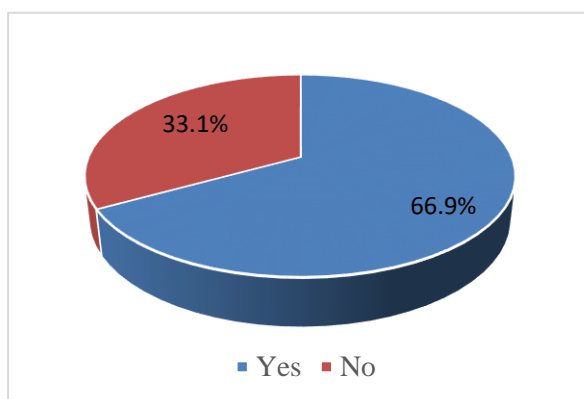


Figure 4.4 Implication of Agriculture on Household

When respondents were asked if their households' asset increased after participating in agriculture. 66.9% of the respondents affirmed that their assets gained value after venturing in agriculture while 33.1% of the respondents did not acknowledge agriculture as the driver of asset value in their household assets. This implied that majority of the respondents practicing agriculture have had their assets in their household gain value.

4.3 Diagnostic Test

The diagnostic tests are conducted before estimating the regression model. The diagnostic tests estimated in the research included endogeneity, multicollinearity test and Heteroscedasticity.

4.3.1 Test of endogeneity

Durbin-Wu-Hausman was employed to tests. The null hypothesis was that;

H_0 : Variables are exogenous

The calculated p-value >0.05 mean data does not suffer from endogeneity problems while p-value <0.05 means data is suffering from endogeneity problems. The endogeneity test results is shown in Table 4.9.

Table 4.9: Test of endogeneity

Test of endogeneity	
Durbin (score) $\chi^2(1)=$	1.911 (p = 0.167)
Wu-Hausman $F(1,283) =$	1.899 (p = 0.169)

The test for test of endogeneity using Durbin (score) of $p = 0.167 > 0.05$. Likewise, the test for test of endogeneity using Wu-Hausman was $0.169 > 0.05$. Thus, the data did not suffer from endogeneity problems. The data was fit for regression modelling.

4.3.2 Heteroscedasticity test

Heteroscedasticity indicates of the tests on whether the variance of the errors in the regressors is dependent on the outcome variable. To check for Heteroscedasticity, the Breusch-Pagan test was adopted. Huge Chi square values is an indication of Heteroscedasticity. Table 4.10 presents the heteroscedasticity output.

Table 4.10: Heteroscedasticity test results.

Heteroscedasticity Results	
Ho: Constant variance	
Variables: fitted values of Welfare	
chi2(1)	= 3.87
Prob > chi2	= 0.0613

Source: Authors computation from survey data (July,2023)

From the results presented in Table 4.10, with a Chi square of 1.84, then the results imply that heteroscedasticity is not present. We fail to reject the null hypothesis of constant variance. The null hypothesis was accepted justifying the absence of heteroscedasticity in the data as indicated by Poi and Wiggins (2001).

4.3.3 Multicollinearity

Severer Multicollinearity magnifies standard errors of the model resulting to incorrect model coefficients (Belsley *et al.*, 1980). Variance inflation factors was adopted to check of collinearity in dataset. To test multicollinearity of this study, the study employed VIF. Values greater than 5 indicates the presence of Multicollinearity (Field, 2009). Table 4.11 presents the multicollinearity results of the study.

Table 4.11 Multicollinearity Results

Variable	VIF	1/VIF	
Age	1.86		0.536822
Gender	1.84		0.542963
Marital Status	1.69		0.593158
Education	1.48	0.675666	
Land	1.39	0.718791	
Finance	1.05	0.952053	
Access to ICT infrastructure	1.65		0.606061
Market	1.42		0.704225
Agricultural training	1.85		0.540541
Household Size	1.94		0.515464
Mean VIF	1.61		

Source: Authors computation from survey data (July,2023)

The results presented in Table 4.11 show the absence of multicollinearity within the study variables. The variance inflation factor figures are less than 10 (1.86 < 10, 1.84 < 10, 1.69 < 10, 1.48 < 10, 1.39 < 10, 1.05 < 10, 1.65 < 10, 1.42 < 10, 1.85 < 10, 1.94 < 10, 1.61 < 10).

4.4 Analysis of Determinants of Youth Participation in Agriculture

The first objective of the study was to establish the determinants of youth participation in agriculture in Bomet County, Kenya. The study used logistic model that measured determinants using marginal effects and results is presented in Table 4.12.

Table 4.12 Determinants of Youth Participants Agriculture

Variable	Coefficients	Marginal effects	Std.err	t	P> t
Gender	0.331			1.19	0.23
Male		0.077	0.065	0	5
Marital Status	0.635			2.19	0.02
Married		0.141	0.064	0	8
Age	0.029	0.007	0.006	1.05	0.29
Education Level					
Primary	0.229	0.050	0.090	0.55	0.58
Secondary education	0.045	0.009	0.087	0	1
University Education	0.898	0.211	0.090	2.34	0.01
Land Finance	0.269	0.0624	0.031	2.02	0.04
20001-30000	0.188	0.150	0.074	2.02	0.04
30001-40000	0.130	0.031	0.091	0.34	0.73
40001—50000	0.696	0.048	0.102	0.47	0.63
Access to ICT	0.546			1.98	0.04
Yes		0.127	0.064	0	8
Distance to Market	-0.057	-0.013	-0.006	2.22	0.02
Household Size	-0.397	-0.092	0.029	-	3.16
Agricultural Training	0.625			2.28	0.02
Yes		0.145	0.064	0	3

Source: Authors computation from survey data (July,2023)

Results indicated that marital status is a determinant of youth participation in agriculture. The estimated marginal effect of marital status was found to be positive and statistically significant at 5 percent significance level. Youth who are married are more likely to participate in agriculture by 14.1 percent compared to those who are single if all other factors are kept constant. The results agree with the findings of Kimaro,(2015).In search of extra income to sustain their families youth tend to find agriculture as a gateway out of poverty.

University level of education significantly influenced youth participation in agriculture.at 5 percent level of significance. Attainment of university education by a youth increases the chance of participating in agriculture by 21.1 percent if all other factors are kept constant.The findings are in line with Nnadi and Akwiwu,(2008).University level education exposes one to many farming techniques hence increasing chances of participation

Estimated coefficient of land size is a determinant of youth participation in agriculture and significant at 5 percent level of significance. A unit increase in size of land increases probability of participating in agriculture by 6.24 percent if all other factors are kept constant. Land is regarded as one of the most critical factor of production especially in agriculture. Availability of land provide ideal environment for farming. Availability of more land is an incentive to youth participating in agriculture. Access to land is fundamentally important for youth in farming startup. Accessing land among youth could be challenging especially on occasions that surround inheritance or lack of capital to lease might make more youth not to participate in agriculture.

In many societies land is perceived as only managed and owned by adults thus forcing youth to wait till adulthood to own land. Land management has changed over time

allowing youth to own piece of land through purchasing. However, many of the youth are not able to purchase land jeopardizing their participation in farming. Some of the youth are not knowledgeable on land tenure system and administration thus hampering their participation in farming. A knowledgeable youth on land tenure system are likely to participate in agriculture since they can easily overcome impediments linked land ownership. The finding of this study agreed with a study by Kimaro (2015) and Kising'u (2016) which observed that land is a crucial asset that determine participation of youth in agriculture.

Access to finance of between 20000 and 30000 was statistically significant at 5 percent level of significance. Provision of finance of between 20000 and 30000 would increase chance of youth participation in agriculture by 15 percent. Farming require elaborate financial services ranging from purchasing farm inputs, incurring labor cost in all farm operations from planting to harvesting as well expenditure on improving productive capacities within the farm.

Estimated marginal effects of ICT access positively and significantly influenced youth participation in agriculture. Youth who never experienced difficulty with ICT were 12.7 percent more likely to participate in agriculture, than those who experienced difficulty,. Adoption of ICT affect youth participation in agriculture significantly. Modern ICT gadgets such has smartphones and internet are appealing to rural youth and can be instrumental in making information accessible pertaining methods of improving farm productivity, enabling innovations in the sector, readily available markets and financial services. Youth have high affinity to modern technology and adoption of technology in farming is likely to increase the number of youth participating. The adoption of phone technology in rural areas is quite impressive but internet cost is still high, likewise

electricity that powers this technology is still limited making the adoption of ICT difficult in rural areas.

ICT can offer a platform where farmers in different location can conference and discuss issues that are significant to their sector through sharing experiences and expertise. It is through such platform farmers can interact with experts who can offer extension services regardless of the distance apart. This platform can also allow emergency meeting in case there is need for clarification on certain issues or a problem has occurred as result of implementing strategies learned over the platform. There is also instant feedback from the parties when learning interaction are aided by ICT infrastructure which critical in implementation of best practices. The finding of this study agreed with a study by Urooj (2015) who noted that there was a positive impact of ICTs on agricultural productivity. However, Mwendwa (2016) observed that information access was not an issue since they accessed information from ICT infrastructure such as radios and internet.

An increase in market distance by a kilometer significantly reduced the probability of youth participation in agriculture by 1.33 percent if all other factors are kept constant. The availability of market affect youth participation in agriculture significantly. Market is critical component of agriculture since it determines the margins of profits and other benefits of participating farming. Availability of market that can be accessed with ease is likely to cut down some costs. Increased distance from market inhibits participation of youth in agriculture because more distance from market imply that more expenses are likely to be incurred in transportation and storage thus ballooning more expenditures that is likely to reduce the profit margins. Access to market is crucial for many farmers because it furnish them with information on demand and remunerative prices that is essential for their welfare.

Farmers can access market easily through coordination of various actors and necessary supporting services such as a good infrastructure. Availability of information timely and accurately is important for farmers to sell their products at the most convenient time. Reliable information about markets are good for decision making and planning purpose for farmers to avoid producing surpluses that can go wastage and ultimately form a loss. This finding was in agreement with a study by Urooj (2015) which noted that government should create an integrated agricultural information system on agro-technologies and techniques, pricing and market information so that strategic information could be provided to farmers and other stakeholders at national, provincial and district levels. On the other hand, Muthomi (2017) found out that access to market is one of the challenge undertaking agriculture are faced with.

Household size significantly influenced youth participation in agriculture at 5 percent level of significance. All other factors held constant, additional individual to a household is likely to decline chances of youth participating in agriculture by 9.19 percent. Additionally, person in a household is likely to increase the consumption pattern that is considered cost and burden thus reducing the profit margin. This implied that more heads sharing household will be a burden when it comes to youth participation in agriculture as a result of constrained resources. Land is the major factor production in agricultural sector and increasing more heads to work in the similar size of land without fostering other factors that enhances productivity is likely to diminish actual share of returns among the increased heads in the household. This study finding concurred with a study by Nnadi and Akwiwu (2008) which concluded that household size is a key determinant of agriculture participation. It also concurred with a study by Adesina and Eforuoku (2016) which found out that household size is a significant predictor of agricultural participation.

Agricultural training has a significant influence on youth participating in agriculture. Results showed that the youths who underwent agricultural training had more chance of participating in agriculture compared to those who did not have any training relating to agriculture. Agricultural training increased chance of participation by 14.5 percent. The agricultural training is statistically significant at 5 percent level of significance. Investment in training impart new skills and knowledge on youth who participate in agriculture thus enhances best practices that are likely to improve agricultural yields in the farm. Training is essential in sensitizing youth on how to undertake sustainable practices that guarantee more returns in agricultural practices. Training is a platform where youth can find many of the solutions to the challenges ailing the agricultural sector.

Training equip youth with appropriate agribusiness skills, knowledge and information. Training youth equip them with financial literacy that can help them access affordable funding. Training youth enhances gaining knowledge on research, development and utilization of innovative agricultural technologies thus increasing more yields. Youth who attend training programs are likely to be exposed to modern agricultural methods, optimum utilization of land and enhancing value addition. Youth are likely to be equipped with skills and knowledge of how to interpret market information and sell produce at the most appropriate time. The finding of this study concurred with a study by Adesina and Eforuoku (2016) which noted that inadequate training constrained level of agricultural participation among youth in rural areas.

4.5 Effect of Youth Participation in Agriculture on Welfare of Youth

The second objective of the study was to determine the effect of participation in agriculture on youth welfare in Bomet County, Kenya. The welfare of youth was

defined by differences in levels of income before and after participating in agriculture.

The study used OLS in estimating the model.

Table 4.13 Effect of Participation in Agriculture on Welfare of Youth

Variable	Coefficients	Std.err	t	P> t
Age	0.001	0.002	0.370	0.715
Gender				
Male	0.010	0.018	0.560	0.574
Marital Status				
Married	0.046	0.019	2.429	0.016
Education				
Primary	0.003	0.026	0.110	0.911
Secondary	0.016	0.026	0.620	0.538
University	-0.176	0.075	-2.349	0.013
Land	0.006	0.002	2.542	0.024
Finance				
20001-30	-0.007	0.022	-0.340	0.737
30001-40	-0.023	0.024	-0.950	0.344
40001—50	-0.013	0.027	-0.460	0.643
Above 50000	0.252	0.126	2.007	0.045
Access to ICT Infrastructure				
Yes	0.111	0.028	4.007	0.002
Market	-0.023	0.005	-4.886	0.001
Household Size	-0.025	0.008	-3.264	0.014
Agriculture Training				
Yes	0.04	0.017	2.353	0.029
PRD	0.329	0.159	2.07	0.027
_cons	3.950	0.066	60.140	0.000

Source: Authors computation from survey data (July,2023)

From the findings the following variables influenced welfare at 5 percent level of significance; marital status, university level of education, land size, finance access above 50000, market distance, ICT access, household size, agricultural training and predicted values from youth participation. The adjusted R^2 implied that 19.6 percent of the variation in youth welfare is explained by the model.

The coefficient of marital status positively and significantly influenced the welfare of youth participating in agriculture ($p=0.016<0.05$). If all other factors are kept constant, married youth enjoyed increased welfare compared to their single counterparts by 0.046 units. In marriage, people tend to share common aspirations coupled with combined efforts to bring agricultural activities to higher levels thus earning more income which improves welfare. Marriage is an institution full of responsibilities, unlike the unmarried cluster of youth with lesser responsibilities. The responsibilities that are characterized in marriages demand financial needs. The demand for financial needs occasioned by marriage makes people to work extra hard to earn more living in agricultural activities in rural areas. The results concur with Bahta and Myeki (2022) that married people are more engaged in agriculture, possibly because married household heads can make better decisions during agricultural drought with the assistance of their partners. However, the results contrast a study by Ngeywo et al. (2015) that marital status is not a significant predictor of youth participation in agriculture and welfare derived from.

The estimated coefficient of university education had a negative and significant influence on the welfare of youth participating in agriculture ($p=0.013<0.05$). Youth with university education enjoyed less welfare compared to their counterparts who did not attain university education by 0.176 units. University education in Kenya has been tailored towards white-collar jobs with less emphasis on income-generating activities

like agriculture. Education curriculum in many universities is more theoretical and translating it into practical implementation is quite immense thus forcing more youth not to participate in agriculture.

The estimated coefficient of land size had a positive and significant effect on the welfare of youth participating in agricultural activities ($p=0.024<0.05$). If all other factors are held constant, a unit increase in the size of the land will result in a 0.006 increase in welfare. It signifies that the adequate size of the land is crucial for agricultural activities that are a source of livelihood for many youths engaged in farming activities. One of the essential components of agriculture is the availability of land, lack of adequate land denies youth an opportunity to be involved in agriculture. It is extremely impossible to practice agriculture without land. Land is the primary factor of production in agricultural activities. In a study by Emongo (2015), land size is significantly related to agriculture participation and welfare derived from the activities.

The estimated coefficient of finance access of more than 50000 significantly influenced welfare ($p=0.045<0.05$). Youth who accessed finance more than 50000 experienced more positive welfare change compared to their counterparts who accessed credit less than 50000. Access to more credit is likely to increase the number of youth practicing agriculture and thus earn livelihoods that improve their welfare. Commercial agriculture requires adequate financing to sustain its activities and generate desirable returns. Access to a reasonable amount of financial credit is essential in purchasing farm inputs and acquiring extension services that are important in fostering agricultural productivity. The findings concur with Teka and Lee (2020) that access to finances to fund agricultural activities improves the welfare of rural smallholder farmers in Ethiopia.

The estimated coefficient of access to ICT infrastructure had a positive and significant effect on the welfare of youths ($p=0.002<0.05$). Youth who never had difficulty accessing the internet enjoyed more positive welfare change compared to their counterparts who had difficulty with internet access. This is evidenced by a positive estimated coefficient of 0.111. The ICT platform provides essential information that fosters farming practices. ICT is an important tool that can help young farmers market their produce virtually to different destinations across the globe and the region. ICT is an enabler of sharing crucial information entailing good practices that can sustain farming and receive decent returns. The latest agricultural innovations that help improve farming can be obtained through the ICT infrastructure at a lower cost as compared to physically outsourcing them from the areas of origin.

The estimated coefficient of market distance negatively and significantly influenced the welfare of youth practicing agriculture ($p=0.001<0.05$). If all other factors are held constant a unit increase in market distance resulted in a reduction of youth welfare by 0.023 units. This implied that more distance from the market adversely affected the welfare of youth doing farming. Long distances from the market amount to spending extra cost on transportation which take more from actual revenues that would have induced extra benefits as welfare. It also subjects the farmer to incur storage costs because long distances at times make it difficult to ferry farm produce to reach the market within a shorter period.

Further, the finding of the study noted that the coefficient of agricultural training had a positive and significant effect on the welfare of youth participating in agriculture ($p=0.029<0.05$). Youth who had undergone agricultural training experienced a more positive change in welfare compared to youth who had zero training in agriculture by 0.04 units. More exposure to modern training related to agricultural activities

imparted more skills and knowledge on how to undertake agricultural activities efficiently and effectively. Training on combining the optimum inputs and using appropriate techniques is instrumental in maximizing agricultural produce. Application of the modern innovation in farming has proved productive in developed economies unlike developing economies that is still lagging and one of the enablers to the adoption of innovation in agriculture is training. Training is essential in imparting new skills that can aid productive methods which increases yields that fetch more income thus enhancing welfare. Training is vital in embracing innovation and technological advancement in farming. Innovation and technology are crucial in eliminating challenges brought by pests and diseases that hamper agricultural production.

The estimated coefficient of household size had a negative and significant effect on the welfare of youth practicing agriculture. If all factors are held constant an extra head on a household decreases welfare by 0.02 units. More heads in a household are considered a burden in maintaining their lifestyle. The income generated through venturing in agricultural activities will be divided among many heads thus declining the actual amount previous members of the household would have derived without additional heads into the household. The results concur with Obisesan (2019) that household size influences agriculture participation and value from it.

The predicted probabilities of youth in participating agriculture is positive and statistically significant ($p=0.027<0.05$). If all other factors are kept constant, youth participation in agriculture increased welfare by 0.329 units. Youth gain increased welfare through increased income as a result of participating in agriculture. The results are in line with the findings of Teka and Lee, (2020) who found that practicing agriculture leads to an increase in consumption expenditure, income and household assets

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The section gives the synopsis, conclusion and recommendations of the study.

5.2 Summary of the Study

The study investigated determinants of youth participation in agriculture and its welfare. The study answered questions on level of youth participation, determinants of youth participation and effect of youth welfare practicing agriculture. The study reviewed various existing literature to identify possible gaps that were addressed by the study. Youth from Bomet County participated in the survey where 284 questionnaires were answered adequately. Data from the study was analyzed using Stata and SPSS software where results were presented in charts and tables.

The descriptive finding of the study established that majority of the youth participate in agriculture and many of them involve in crop farming. Youth owned an average of 1.95 acres of land under farming. There are inadequate training facilities thus discourage more youth from participating in agriculture. It also indicated that several youths experienced challenges while accessing land, many of those accessed land through leasing. Internet penetration in rural areas is quite above average and so many youths have taken advantage by leveraging on smartphone technology. Youth have used internet in learning new techniques in agriculture. Access to financing is still a challenge among youth. Many of the youth have not sought credit financing due to restrictions such as presenting collateral instrument and high cost of credit.

Several youths are aware of possible market destinations for their products. Technology has grown online marketing and currently is the leading among youth in exploring new markets of agricultural products. Several youths still consider agriculture as a low status activity. Several youths agreed that agriculture has improved welfare of farmers. Engaging in agriculture restored food security and source of income to many of households in rural areas. Practicing agriculture has increased household expenditure on food, housing and energy, clothing, medical insurance and transport.

The study conducted diagnostic tests to ensure that the model was fit to determine the relationship of the study variables. These diagnostic tests include test of endogeneity, multicollinearity and heteroscedasticity test. The study employed logistic and multiple regression model to determine the relationship of the study variables. Logistic regression model established that marital status, university education, land size, financial access, access to ICT infrastructure, market distance, household size and agricultural training are the determinants of agricultural participation. On the other hand, multiple regression model established that land size, type of agriculture and agricultural training significantly influenced welfare of youth practicing agriculture.

The predicted probabilities of youth in participating agriculture is positive and statistically significant. However, the predicted probabilities for youth to participate in agricultural activities is low at 32.0 percent. This is also in consistent with past studies that confirm that participation of youth in agricultural activities is deemed not sustainable career. It is also perceived to be not decent activities especially with believe that as an educated youth they must be employed in white collar jobs in offices and organization and not engaging in agricultural activities.

5.3 Conclusions

The study conclusions are drawn from the findings based on research questions. The study concludes that majority of the youth are involved in farming. Crop growing is the leading form of agriculture employing youth. Youth involvement in agriculture has been aided by modern technology that has been embraced by youthful farmers. Access to financing and land is still an impediment to many youth participating in agriculture.

It can be concluded from the study that marital status, university education, land size, financial access, access to ICT infrastructure, market distance, household size and agricultural training are the determinants of youth participation in agriculture. Gender and age are insignificant in determining whether a youth can participate in agriculture. Years of experience in agriculture and level of training is essential in enhancing agriculture participation.

The study concludes that marital status, university education, land size, financial access, access to ICT infrastructure, market distance, household size and agricultural training significantly influenced welfare of youth practicing agriculture. Household size and university education adversely affected the welfare of youth participating in agriculture. Access to training and financial literacy is essential in improving welfare of those youth participating in agriculture.

5.4 Recommendations

The study made recommendations on practice, policy and areas for further research.

5.4.1 Recommendations for Practice

Access to financing is still an impediment to youth participating in agriculture. The study recommends reconfiguration of financial products to suit needs of youth

participating agriculture. Many of the financial institutions have not tailored their financial products towards the needs of youth practicing agriculture. The strict measures/conditions put by financial institutions on accessing credit should be loosened to attract more youth.

Training of youth on best farming practices is essential in changing the perception of significant number of youth who still perceive agriculture as activity for low ranked individuals in the society. The study recommend collaboration of all stakeholders offering training to youth on agricultural related activities. Collaboration of all stakeholders will help in identify training gaps existing and bridge them. Training is essential in imparting new knowledge and skills that will not only improve productivity in agriculture but also enhance a rational decision making.

Access to land is a pertinent issue in realizing participation of youth in agricultural activities. The study recommends sensitization of land holders especially parents to grant youth an opportunity access land and practice agriculture. Youth are knowledgeable and have energy that can thrive agriculture to higher level. Youth are more efficient in leveraging technology in agriculture and this can foster productivity.

5.4.2 Recommendation for Policy Makers

Education is a vital tool in entrenching agricultural ideals among the youthful generation. One of the weak links the study identified is inadequate agricultural training centers in Bomet County. The training facilities should be increased and funded adequately. The syllabus is supposed to be tailored towards solutions seeking, where graduates can think and offer solutions to problems bedeviling the society.

5.4.3 Recommendations for Further Research

The study focused on Bomet County and this is a small area. There are other areas outside Bomet County that would have enriched the study. Future researchers should focus on the expanding the geographical scope of the study to reduces biasness. The study employed multiple regression model in determining the relationship of some of the study variables. Multiple regression might not be the ideal model and future researchers are supposed to modify the dependent variable to have two outcomes so that Logit regression model can be employed.

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APPENDICES

Appendix I: Questionnaire.

The study seeks to examine the determinants of youth participation in agriculture and its effect on youth welfare in Bomet County, Kenya. In particular, the study aims at exploring the effect of agriculture on welfare of youth as well as examining the determinants of youth participation in agriculture. The results from the study will inform the policy decisions on youth employment and food security.

Serial number.....

Date.....

Cover Letter for the Respondent (Youth)

I am Kevin Kiprono, a student of Kenyatta University taking Masters in Economics (Econometrics). My research project is DETERMINANTS OF YOUTH PARTICIPATION IN AGRICULTURE AND ITS EFFECT ON WELFARE: THE CASE OF YOUTH IN BOMET COUNTY, KENYA. I request you to participate in this research by filling this questionnaire. The study will have a positive impact on youth welfare as it will shed light on the challenges the youth are facing in agriculture. Your responses will be treated with utmost confidentiality.

Yours faithfully,

Kevin Kiprono.

Instructions

Please indicate the answer on the spaces given by marking a tick (√) on the appropriate answer and also writing down your opinion where required.

Section A: Demographic Characteristics

1. Gender (tick appropriately):

Male [] Female []

2. Do you fall between ages 18 and 35 years?

Yes [] No [].If yes, proceed.

3. Specify Age: (Can use year of birth)

.....

4. Marital status (tick appropriately):

Married [] Single [] others (Specify).....

5. Highest Education (tick appropriately):

No education [] primary [] secondary [] University [] others

(specify).....

6. Occupation (tick appropriately):

formal employment [] self-employed []

Specify;

7. Number of persons you are living with in the same

homestead.....

Section B; Participation in Agriculture

8(a). Do you participate in agriculture?

Yes [] No []

8(b). if no, give the reason for not participating

.....

8(c). Which of these agriculture activities do you participate in (tick appropriately)?

Cattle farming []

Crop farming []

Poultry []

Apiculture []

Others(specify).....

8(d) Size of land (acreage) you are using in the activity in 8(c) above

.....

8(e) Give the main reason for selecting the type of agriculture in 8c above?

.....

.....

9. Do you have any training on farming?

.....

If yes, State the training provider, year and the type of agricultural training you underwent

.....

.....

Section C; Determinants of Youth participation in Agriculture

10(a). Do you have difficulty in accessing land?

Yes [] No []

10(b) If no, how do you access land for agriculture?

Inherited land Leased others (specify).....

10(c) what's size of the land you can access for agriculture (acres)?

.....

10(d) If you get the land (for those who will inherit) how would you utilize it?

lease it out

Sell it

Agriculture

Build rentals

Others

(Specify).....

11(a). Do you have any difficulty in accessing internet?

Yes

No

11 (b) Do you have a mobile phone that access internet?

Yes

No

11(c) what do you mostly use your internet for in relation to agriculture production?

Get credit from loan applications

Get training relating to agriculture

Check available produce markets

11 (d) Has information from 11(c) above helped you improve on agriculture?

Yes

No

12(a). Do you have difficulty in accessing finance?

Yes

No

12 (b) If no in 12(a) Have you ever applied for credit?

Yes

No

12(c) if no in 12(b) why have you not applied for credit?

I don't know the application process []

they asked for collateral which I don't have []

Credit too expensive []

12(d) if yes in question 13(b) how much finance can you access?

Below 20000 []

20001-30000 []

30001-40000 []

Above 50000 []

13(a) what is the distance (km) from your farm to agricultural market?

.....

13(b) Are you aware of the available agriculture markets?

.....

13(c) where do you sell your agricultural produce?

Online []

face to face []

Group marketing []

Section D; Agriculture and Welfare

14. what is your general perception on agriculture?

Low status activity []

profitable and decent activity []

15 (a) Do you agree that participating in agriculture has improved your welfare (tick appropriately)?

Strongly agree []

Somewhat agree []

Neither agree nor disagree []

Don't agree []

Strongly disagree []

15(b). What mainly has participating in agriculture offered you?

Income []

Food []

Health []

Others [specify].....

15(c) what's your average monthly income for the last three months (those who have participated in agriculture more than three months?

.....

15(d) what was your average monthly income before starting the agricultural activity?

.....

15e) Indicate how participation in agriculture has affected the following primary household expenditures in your household

Recurrent Household Expenditure	Monthly Expenditure Participating Agriculture(Ksh.)	Average Before In	Monthly Expenditure Participating Agriculture(Ksh.)	Average After In
Food				
Energy and housing				
clothing				
Health insurance				
Others(specify)				

16.Has your households' assets increased after participating in agriculture

Yes []

No[]

If yes, State the types of assets you have purchased as a result of participating in agriculture (Indicate price for each)




.....

.....

.....

.....

Appendix II: Research Permit NACOSTI

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 929423	Date of Issue: 05/April/2023
RESEARCH LICENSE	
	
This is to Certify that Mr.. Kevin Sigei Kiprono of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Bomet on the topic: DETERMINANTS OF YOUTH PARTICIPATION IN AGRICULTURE AND ITS EFFECT ON WELFARE: THE CASE OF YOUTH IN BOMET COUNTY, KENYA for the period ending : 05/April/2024.	
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