FACTORS INFLUENCING STUDENTS' SELECTION AND PROGRESSION IN AGRICULTURE CAREER IN TERTIARY INSTITUTIONS OF KENYA

ANNAH NAWAMBISA MANYASI

A Thesis Submitted in Partial Fulfilment of the Requirement for the Award of the Degree of Doctor of Philosophy in Agricultural Education and Extension of Masinde Muliro University of Science and Technology

September, 2023

DECLARATION

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

Sign……Date……..

Manyasi Annah Nawambisa

SAE/H/01-54 991/2020

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The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled **"Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya**"

Signature……Date……

Prof. Alice Chesambu Ndiema (PhD)

Department of Agribusiness and Extension Management

School of Agriculture, Veterinary Science and Technology

Masinde Muliro University of Science and Technology.

Signature……Date……..

Dr. James Bill Ouda (PhD)

Department of Educational Psychology

School of Education.

Masinde Muliro University of Science and Technology

Signature……Date……..

Prof. Stephen O. Odebero (PhD)

Department of Education Planning and Management

School of Education.

Masinde Muliro University of Science and Technology

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Sign……Date……..

Manyasi Annah Nawambisa

SAE/H/01-54 991/2020

SUPERVISORS

Signature……Date……

Prof. Alice Chesambu Ndiema (PhD)

Department of Agribusiness and Extension Management

School of Agriculture, Veterinary Science and Technology

Masinde Muliro University of Science and Technology.

Signature……Date……..

Dr. James Bill Ouda (PhD)

Department of Educational Psychology

School of Education.
Masinde Muliro University of Science and Technology

Signature……Date……..

Prof. Stephen O. Odebero (PhD)

Department of Education Planning and Management

School of Education.
Masinde Muliro University of Science and Technology

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DEDICATION

This thesis is dedicated to my dear husband Josephat, my sons Innocent and Ivan and my daughters Joy and Sifa for being a pillar of perseverance, tolerance, consideration, joy and love in due course of my study. The thesis is also dedicated to my late parents Alfred Manyasi and Emily Nanjala for exposing me to a strong background in Agricultural Education that became valuable in my research.

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Finally, thanks be to God for granting me unique mix of skills and knowledge to do this research.

ABSTRACT

In Kenya agriculture is one of the key subjects taught yet it is notable that youths are unemployed just like in other developing countries. Despite the above facts, Kenya still requires human resource to drive the agricultural sector as one of the big four agenda. The purpose of this study was to establish the factors influencing selection of agriculture subject and progression in agriculture career of students in tertiary institutions of Kakamega and Bungoma counties of Kenya. Correlational and descriptive designs were used, cluster sampling was used to identify Bungoma and Kakamega counties. Stratified random sampling was used to select agriculture students, Census method identified the tertiary institution, purposive sampling was used to select key informants and agriculture students because they possess the needed information. Simple random sampling was used to select samples without bias from the accessible population while quota sampling was used select focus group discussion. Using a pragmatic philosophy, the study applied qualitative and quantitative strategy in data collection. The sample size was determined from Cochron (1972) formulae based on the study population. One hundred and sixty-two (162) secondary schools, out of 839. A sample size of (249) secondary school students, (24) university students and (131) TVET institutions students giving a sample size of 404 from a target population of 11928 students. Pilot study was conducted in Vihiga County. Data was collected using document content analysis, questionnaires, focus group discussions and interview guides. Due diligence, was taken into consideration while collecting and processing data to ensure both reliability and validity of the study. Both descriptive (mean, standard deviation and graphs) and inferential techniques (diagnostic test, trend analysis and factor analysis) were employed to analyze data and presented using frequency tables and line graphs. Multiple comparison table revealed the years that differed in agriculture selection for the 5 different categories of schools. Significant factors contributing to the variance in selection were change in type of schools. A paired sample t-test shows that the average difference between total KCSE agriculture selection in Kenya scores and the total agriculture enrolment in the universities is significant ($t(5) = 18.912$, $p < 0.05$). The average difference between the total KCSE agriculture selection in Kenya scores and total agriculture enrolment in TVET is significant ($t(5) = 18.978$, $p < 0.05$). The average difference between the total KCSE agriculture selection in Bungoma and Bungoma counties agriculture progression to the universities in Kenya scores is significant ($t(5) = 14.095$, $p < 0.05$). The average difference between the total KCSE agriculture selection in Kakamega and Kakamega agriculture progression to the universities in Kenya scores is significant ($t(5) = 17.825$, $p < 0.05$). Principle component analysis with varimax rotation revealed that ‘friends as a motivator’ factor accounted for 23.99% ‘peer motivator’(41.786%), and ‘parents motivator’ accounted for 55.924% of the variance in selection of agriculture subject in secondary school. Similarly, socio-economic factors are motivators to progression in agriculture career since after rotation, ‘parental income’ accounted for 24.511% of the variance, ‘family size’ 42.723%, and ‘Parent education’ 59.337% of the variance in progression. Students’ selection challenges include ministry policies, parents’ decision, teacher influence, peer compliance and limited government scholarships in agriculture sector. Identified strategies to mitigate challenges recommended the ministry of agriculture to review salary scales and create job opportunities while the ministry of education to make agricultural course business oriented and lower entry grades to university or TVET. The results should inform policy makers and guide effort to career progression in agriculture education.

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OPERATIONAL DEFINITION OF TERMS.

Operational terms are words used in the study write up which individuals outside the study cannot understand because their meaning as used in the study go beyond the common language (Creswell & Creswell, 2018). Some key operational terms used in this study have been explained in the following sub-section.

Selection and Progression. Choosing agriculture as a technical subject to learn and sit for Kenya Certificate of Secondary Education and Proceed to enroll for agricultural course in the department of agriculture in a tertiary institution.

Selection of Agriculture Subject. Choosing agriculture from among the technical subjects to learn and sit for Kenya Certificate and Secondary Education

Progression in Agriculture Career. Learning agricultural education as an academic subject in secondary schools and as a career course in tertiary institution so as to nurture skills and knowledge for job opportunities in agriculture.

Agriculture Education. Is the teaching and training that develop knowledge, skills, attitudes and competencies of students to make them function in professions in agricultural related career.

Agriculture. A science and an art of cultivating plants and keeping livestock. It occupies many people if well trained.

Agricultural subject. An applied science and optional subject offered in primary and secondary schools in the current system of education in Kenya

Agricultural programs. Agricultural courses offered in the tertiary agricultural learning institutions.

Agriculture career. Work based learning in agricultural education as a career.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANAFE	African Network for Agriculture and Natural Resource Education
CAADP	Comprehensive Africa Agricultural Development Program
HELB	Higher Education Loans Board
FAO	Food and Agricultural Organization
GoK	Government of Kenya
GDP	Gross Domestic Product
KUCCPS	Kenya Universities and College Central Placement Services
KICD	Kenya Institute of Curriculum Development
MoA	Ministry of Agriculture
MoEST	Ministry of Education Science and Technology
MOHR	Ministry of Human Resource.
SSA	Sub Saharan Africa
TVET	Technical and Vocational Education Training
UNDP	United Nations Development Program
USA	United States of America
USAID	United States Agencies of International Development

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture being the economic activity of many people living on the globe (FAO, 2016) serves approximately 70 per cent of the people as a means of living and contributing 6.4 per cent of the world's Gross Domestic Product. More so, agriculture is of global interest since it has cultural, economic as well as social development. Africa's agriculture contributes 15 per cent of its total Gross Domestic product while in Kenya, agriculture is next to the services sector in National GDP contribution providing 17.8 per cent while the services sector gives 32.9 per cent. (World Bank, 2012). UNDP (2014), reported that 85 per cent of the global youth are found in developing countries and are unemployed and yet agriculture is a major source of employment and a source of food. As much as many countries have not been able to convince youths to train for agriculture careers (Tiraieyari and Krauss, 2018), there are huge prospects in agricultural sector.

In West Africa, despite the contribution to economic growth, a decline in skills and labour has been realized since youths are reluctant to enroll for agricultural professions as it is observed in Nigeria (World Bank, 2012). They therefore stream to urban centers leaving the old in the rural. This has led to reduced productivity due to ageing farmer population (Bloom *et al.,* 2011).In Kenya, despite this contribution to economic growth, several researchers posted unemployment among the youths. Agriculture is one of the optional subjects learnt in secondary schools.

The 2019 Agriculture Kenya Certificate of Secondary Education (KCSE) report indicated that the number of students enrolled in the Agriculture subject increased from 278,658 in 2018 to 289,315 in 2019 revealing a 3.9 % increase. The report

further indicates that this trend was observed in the year 2018, 2017 and 2016 attributing the percentage increase to the popularity of the subject among students. According to Mogaka *et al.,* (2019) the number of secondary students enrolling in agriculture increased steadily in Kisii and Nyamira Counties in the years 2012-2016. Although the statistics also revealed a significant fall in agriculture selection of 30.8% between 2012 and 2013, the researchers noted a large increase in agriculture selection of students of 60.7% between 2013 and 2016. The number of students enrolled for the Agriculture subject in Busia County slightly decreased from 1500 in 2016 to 1450 in 2017 (Busia County Education office, 2023). The same county reported a 1.2 % increase of students enrolled in 2018. The county recorded 1400 and 1500 students enrolled for the subject in the year 2019 and 2020 respectively. According to the report, Busia County had 1800 students enrolling for the Agriculture subject in 2021. This was the highest number recorded between 2016 and 2021. Data on the enrolment are as shown in Table 2.1.

Table 1.1: Selection of Agricultural Subject from 2016 to 2021

Selection	2016	2017	2018	2019	2020	2021
KCSE Total Enrolled in Kenya	577,249	615,591	664,479	699,706	752,602	824,392
Total Agric Enrolled in Kenya	228,443	247,265	278,658	289,315	307,541	324,328
Percentage	39.6%	40.2%	41.9%	41.3%	40.9%	39.3%

(Source: KNBS Statistical Abstracts)

Data on enrolment shows that there was an increment from 2016 to 2021 as indicated

in Table1.1. Data on selection shows that there was a positive trend in selection of Agriculture students in Kenya across the years since the year 2016 to 2021. There is need to understand the trend in enrolment of students in agriculture in the two counties to help re-orient the subject curriculum so that it can attract more students and stimulate progression in agriculture career

Agriculture is taught for learners to understand the production content and processes which increase the quality and quantity of the products. In the current Competency Based Curriculum (CBC), agriculture is taught under environmental activities in the early years of education. In the upper primary, learner's human capacity is developed by involving the learner in practical and experiential activities. Its focus will be to develop knowledge, skills and attitudes to form a foundation for development of agricultural Competencies (KICD, 2021). Similarly agriculture has several branches for learners to choose as life career, hence it's taught for the students to appreciate its role in the economy. In the recent past years, reviewed literature shows that the enrolment of students to agricultural courses has been declining, meaning that learners opt to enrol in alternative courses that will lead them to be employed in different professions other than agriculture.

There are numerous opportunities for students who graduate with secondary school agriculture in tertiary institutions to develop agriculture as a career. Previous researchers have posted the fact that certain factors influence career choice among the learners. Past efforts to understand whatever influences learners to choose agriculture subject in Kenya have been done at secondary school level (Ekwere, 2014) as well as perceptions of agriculture subject by students (Muchiri *et al.,* 2013), however, it's yet to be understood how progressive agricultural career development can be achieved among learner in Bungoma and Kakamega Counties of Kenya.

The current study fills the gap by determining the selection and motivation factors for progressive agriculture career development, establishing selection and enrolment trends in agriculture programs and suggesting strategies to enhance progression in agriculture career in selected learning institutions of Bungoma and Kakamega Counties of Kenya. The study provides strategies to the education sector to increase enrolment and progression in agriculture career in Kenya.

1.2 Statement of the problem

Agriculture sector is a key driver to achieving Vision 2030 (Vision 2030) hence; it is Kenya's blue print for development. As a sector, there are many prospects in the agriculture profession, (Tiraieyari and Krauss, 2018). The goals of agricultural education are to introduce learners to the principles and practices of agriculture, develop the understanding of the importance of agriculture as a sector and stimulate their interest in agriculture development and economy. It is expected that, learners who select agriculture subject in secondary school will progress to enroll for agricultural programs in tertiary institutions. Unfortunately, many students select agriculture subject in secondary schools but there is limited enrolment of students in agriculture science programs (Bloom *et al.,* 2011) in the tertiary institutions. This has greatly affected the progression percentage of the agriculture KCSE graduates to join the agriculture industry. This is a worrying trend since Kenya requires human resource to drive the agricultural sector. Studies by (Ekwere, 2014; Muchiri *et al.*, 2013) have been conducted on factors that influence students' choice of agriculture as a subject at school level as well as perceptions of students on agriculture as a subject. However, limited studies have been conducted to understand what motivates students to progressively select agricultural education up to training level in preparation for agricultural career. The current study will fill this gap. It will therefore evaluate the selection and progression in agriculture career among students in learning institutions

of Kenya. The focus of the study will be the selection trends of agriculture subject in secondary schools, trends in progression in agriculture career among students in tertiary institutions, relationship between selection factors and selection of agriculture subject, then relationship between progression factors and progression in agriculture career in tertiary institutions and suggest strategies that can be employed to mitigate the challenges facing students in selection and progression in agriculture career in tertiary institutions in Kenya.

1.3 Overall purpose of the study

The overall objective of the study was to establish the factors influencing selection and progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya. Specifically, the study compared the selection of agriculture subject among secondary students with progression in agriculture career among students in tertiary institutions.

1.4 Specific objectives of the study

Specific objectives for this study were:

(i) To establish trends in selection of agriculture subject among secondary school students in Kakamega and Bungoma Counties, Kenya from 2016 – 2021

(ii) To establish the trends in progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya from 2016 – 2021.

(iii) To determine the relationship between selected motivation factors and selection of agriculture subjects among secondary school students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

(iv) To determine the relationship between socio-economic factors and environmental factors in progression of agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

(v) To evaluate the strategies that can be employed to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya.

1.5 Research questions

The study sought to answer following research questions;

i. What are the trends in selection of agriculture subject in secondary schools of Kakamega and Bungoma Counties, Kenya from 2016 – 2021?

ii. What are the trends in progression in agriculture career in tertiary institutions of Kakamega and Bungoma Counties, Kenya from 2016 – 2021?

v What are the strategies that can be employed to mitigate the challenges facing Students in selection and progression in agriculture career in tertiary institutions In Kenya?

1.6. Research hypotheses

The study investigated the following hypotheses.

(i) Ho1: There is no statistically significant relationship between selected motivational factors and selection of agriculture subject in secondary school in Kakamega and Bungoma Counties, Kenya.

(ii) Ho2: There is no statistically significant relationship between socio-economic factors and environmental factors in progression of agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

1.7 Justification of the study

Limited research has been conducted in Kenya to evaluate motivational factors for agriculture career development and suggest strategies to promote career progression although literature is available on influential factors to choose agriculture as a career. The current study is justified on the basis of the following factors:

Agriculture is offered by the Ministry of Education (MoE) in Kenyan learning institutions hence, there is need to establish the selection trends in agriculture subject and programs, evaluate the motivation for progression in agricultural career and develop strategies for agriculture career development.

The Ministry of Agriculture (MoA) needs future human resource, hence there is need to ensure presence of trainees in agricultural training institutions to establish existence of experts for future development of the sector and lastly, the study is done to add knowledge for future researchers to refer.

1.8. Significance of the study

Existing trends in selection and progression of students in agriculture career in Kakamega and Bungoma counties in Kenya may aid education stakeholders do appropriate career guide. The suggested strategies may help or guide the education sector to increase selection and progression in agriculture career in Kenya.

It also provides strategies to resolve unemployment in the ministry of agriculture and improve economic growth. To the ministry of education it increases the knowledge to be used by future researchers and help policy makers to re-orient agriculture training in line with Vision 2030. To the student, this study is hoped to be the key to open

doors for better research methodologies as well as promotions to higher level of education.

1.9 Scope of the study

The study was confined to two (2) counties, Bungoma County and Kakamega County of Kenya. The learning institutions of interest were Universities, agricultural colleges and secondary schools. The target population were secondary schools offering agriculture subject, University undergraduate agriculture students, Technical and Vocational training agriculture students, Head of departments of tertiary colleges of agriculture, chair of departments in the school of agriculture in the Universities, Quality Assurance and Standards of education. The study focused on selection trend of students in agriculture subject, trends of progression in agriculture career, relationship between selected factors and selection of agriculture career, relationship between motivational factors for progression and motivation factors for progression in agricultural career and suggested strategies that can be employed to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya.

1.10 Limitations

The limitations to this study may include the following:

(i) Data of selection in agriculture subject was only provided by school principals of sampled schools.

(ii) The study is focused on small sized populations obtained from the two public universities and tertiary colleges of agriculture in the study area.

(iii) Only students who selected agriculture at secondary school level were

respondents to this study since they could reflect on their experiences at the time of subject selection in secondary schools.

(iv) Students who selected agriculture at secondary school level and choose to enroll for agricultural programs for career training and development were respondents to this study since they could reflect on their experiences at the time of program. Upon registration in tertiary institutions, the study did not investigate how the students progressed from first year to forth year grades selection and enrolment in tertiary institutions.

(v) Strategies put in place by the ministries of agriculture and education are mitigate the challenges faced by students to ensure progression in agriculture career.

1.11 Delimitations

Delimitation is used to make the study better and more feasible. Delimitations describe the boundaries the researcher set for the study. A study can be delimited in terms of geographical location, age, population traits, population size, sex, and any other considerations, (Theofanidis & Fountouki, 2019).

The key delimitations for the current study included;

(i) Students who studied agriculture in high school were not preferred for interviews for this study because the researcher could not a certain whether they could progress in agriculture to middle level colleges and Universities.

(ii) The trend of selection of agriculture in secondary schools became useful to give a general view of how students select and progress in it to the training colleges of agriculture.

1.13 Assumptions

The study was based on the following assumptions:

(i) That academic performance in basic agriculture education is a prediction for choice of agriculture career training.

(ii) Schools that participated in this current study by providing data represents all other schools in the selected study site.

(iii) That the form four students are usually informed of the career consequences of training in courses that they do not have passion. That all form four students applying for various subjects have career counselling teachers with knowledge to guide them as expected.

(iv) The college students already enrolled in various programs were given a chance to transfer from one course to another basing on their reasons.

(v) That all respondents gave socially acceptable responses to help the ministries of agriculture to mitigate challenges faced by students and hence increase progression.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers literature review on key concept issues that inform the study. It also provides the theoretical and conceptual framework of the current study.

2.2 Key concepts explained.

The current study has Key concepts that have unfolded to provide ideas for research. These concepts include agricultural careers, agricultural selection and agricultural progression.

2.2.1 Agricultural careers

Reports from United Nations Development Program **(**UNDP, 2014), indicates that 85 per cent of the global youth found in developing countries and are unemployed and yet agriculture is a major source of employment and a source of food. Many countries have not been able to convince youths to train for agriculture careers Tiraieyari and Krauss (2018), yet there are huge prospects in agricultural sector. Business Insider, (2013) indicate that agriculture is not among the most popular major disciplines of study in the United States. Yet, some of its programs are among those with the highest employment rates in the United States, while others are less spectacular.

In West Africa, despite the contribution to economic growth, a decline in skills and labour has been realized since youths are reluctant to enroll for agricultural professions as it is observed in Nigeria (World Bank, 2012).The Economist, (2013) States that majority of careers have transitioned from one gender to another as a result

of societal, cultural, and economic shifts that have also incorporated contemporary academic developments Many historical events, including economic, cultural, environmental, academic, and many others, have altered the professional field of people, hence affecting employment rates and the labour force over time. (The Economist, 2013).

The Princeton Review, (2013) notes that numerous majors and career paths are open to learners. Business administration and management, psychology, nursing, biology, and education are the top five college majors. So, it is necessary to devise unique motivational factors that would encourage students to choose jobs in agriculture. The focus of the current study will be selection trend of students in agricultural programs, trends of progression in agriculture career, and the motivation factors for progression in agricultural programs in selected learning institutions and suggest strategies to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya

Thiesse, (2012), notes that due to a dearth of career possibilities in agriculture, a number of students began their own farming operations on a small farm. Rather than returning home to work on the farm, students now have the option of working in certain agricultural fields. The purpose of the present study was to determine student advancement patterns in the sector of agriculture. It was expected that students who chose agriculture as a topic in high school would devote time to exploring the skills and technology taught in agriculture and enroll in agricultural programs as a vocation. Despite the fact that there are many programs for students to enroll in, the number of secondary school agricultural selections does not correlate with the number of selections in agricultural tertiary colleges.

Jones, Williams, and Gill (2017) conducted a study on human values and agriculture.

Agricultural education was not included in the scientific domains; consequently, it was not as esteemed in the workforce as the sciences. These perceptions of agriculture at the time of the study influenced the kids' perceptions, which was backed by their families and teachers. Pupils viewed agriculture as unattractive, so their parents and instructors urged them to pursue other fields of study and leave agriculture subject. This type of communication impedes agricultural career advancement and particularly for students who choose agriculture at the secondary level. They drop agriculture for other subjects. They create reasons for failing to perform well in agriculture. The scenario creates a void in the occupational identification of age groups within a population, resulting in a labor shortage particularly for students who choose agriculture at the secondary level. It creates a void in the occupational identification of age groups within a population, resulting in a labor shortage.

Pelco & Ball (2018) claim that instructors involved in the professional development of young people can benefit from understanding occupational identity statuses and the theory of operation. These researchers hypothesize that individuals who have researched a vocation and are dedicated to it may benefit from further investigation. Individuals with a low level of exploration and no commitments may benefit from assistance in recognizing their abilities and interests. And individuals with little exploration who are committed to a career may benefit from assistance in re-evaluating their career decision prior to exploration (Pelco & Ball, 2018). Therefore, it is essential that every young person has the opportunity to investigate and select a proper occupational identity for their future employment. Before selecting agriculture as a topic in secondary school, students are introduced to agriculture curriculum and practical activities, so they explore the subject without commitment. Once they

recognize their abilities and passions, they choose agriculture and then commit. At this level, it is expected that students will investigate agriculture as a career and pursue it in college by picking an agriculture curriculum.

Agricultural education practitioners are impacted by issues of occupational identity and career development. Porfeli and Lee (2012) opined that it is vital to educate young people on the increasingly dynamic workforce and equip them with the information and abilities to adapt and establish their identity early in life. As such, career education is necessary for pupils, particularly those who plan to select subjects. This is because young occupational identity supports professional advancement. The purpose of this study was to examine the selection patterns of agriculture courses in secondary schools and the transition of students with agricultural knowledge into agricultural careers.

Developing a job identity is a sign of a person's feeling of purpose and development (Praskova, Creed, & Hood, 2015). The selection of agriculture courses is a preparatory step for students' professional advancement. It is expected that they are sensitized to continue with the same programs in agriculture. This progression in a single program, helps students to specialize in agriculture and develop their knowledge for a purpose. Obayelu and Fadele's (2019) research from a study done with high school students found that more female students (57.6%) wanted to study agriculture in college than male students (42.4%). A greater number of pupils from public schools (51.4%) were willing to pursue agriculture than students from private schools (48.6%). On the role of agriculture to national growth, the students were unsure, although they firmly disputed that agriculture pays less than other professions. The willingness was linked to an agriculture career awareness program, agricultural education, and an agricultural excursion. Having a father who primarily practices

agriculture and supports agricultural education, attending a school where crude implements are not used, visiting a mechanized farm, and the youth's willingness to own a farm in the future regardless of the course of study increased the likelihood of a high school student's willingness to study agriculture, while attending a private school decreased it. In conclusion, high school pupils held a dismal view of agriculture and lacked a desire to study it in tertiary schools.

2.2.2 Agriculture education

Globally, the goal of any agricultural education program, whether it is at the elementary school, secondary school, or university level, is to train future teachers to effectively convey the fundamentals of agriculture to students (Olaitan, 2017). It is a form of instruction that prepares students for self-employment in vocational sectors. Kennedy (2011) argues that Vocational Training Education (VTE) prepares students for independent work and financial stability. Internationally, it teaches agricultural production, livestock management, soil and water conservation, and other areas of agriculture (Olamie, 2012), thereby preparing students for professions in Agricultural education and the Ministry of agriculture (Wright, 2012). There is a pressing need for agricultural education courses to ensure food security as the rising population in developing countries has resulted in severe food shortages despite the availability of agricultural resources.

Agricultural educational training is anticipated to play an important role in creating a firm foundation and knowledgeable agro-based nations composed of farmers, extension employees, researchers, teachers, and agri-business professionals. In Kenya, students need resources (such as information, training, exposure, and interest) before making a career choice. Farming is included in the early grades' environmental activities section of the current Competency Based Curriculum in Kenya. Kenya

Institute of Curriculum Development, (2021) stipulates that in upper primary, students build their competency capacity via hands-on experiences. Its primary goal is the improvement of agricultural competence in terms of education, training, and practice. The current study focused on selection and progression trend of students in agricultural programs, factors that motivate students to choose agricultural programs and evaluation of strategies to promote agriculture career progression among students in selected learning institution of Bungoma and Kakamega Counties of Kenya.

2.3 Selection of agriculture in learning institutions

According to Gall, Gall & Borg (2007), literature review helps the researcher to contribute to research knowledge in their area of interest by reviewing what the other scholars have discovered. While reviewing literature, specific objectives sub sections of this study are aligned to selection in agriculture subject, progression in agriculture career, motivational factors for selection and progression as well as strategies to mitigate challenges in selection and progression in agriculture career.

2.3.1 Selection of agriculture in secondary schools and tertiary institutions in developed countries

Agriculture subject selection process has never been easy, since many students find themselves between several other options to take. However, selection in agriculture has taken different perspectives since variations in selection tendencies have been noted across countries. These are indications of freedom of choice of the subjects by students in some countries although in others, despite the fact that youths are in the midst of discovering career possibilities and roles to which they will commit, many teachers are still insistent on enrolling students in their subjects (Xu & Lee, 2019).

In recent decades, the significant decline in the number of students enrolled in agricultural education has sparked widespread concern (Scott and Lavergne, 2004; Wildman and Torres, 2001), while opportunities in agriculture and agriculture-related professions continue to expand (Jones and Larke, 2001). However, as opportunities in agriculture-related industries continue to expand, the number of college-educated individuals pursuing agricultural careers continues to decline, particularly among minority populations (Jones and Larke, 2001). This decline is a result of the migration of large populations from rural farm areas to more urbanized areas, which supports the need for agricultural education in today's institutions (Gibbs, 2005). Bricknell (1996) supported these views by stating that "young people [raised] in urban centers and suburbs have little direct contact with agricultural lands and ways of life and therefore know very little about where and how their food is produced". Although a growing number of people are leaving for urban areas, very few are relocating to rural areas. Consequently, there is still a knowledge and participation disparity in agriculture among these populations. For populations remaining in urban areas, the disparity is even greater and widening as fewer generations acquire agricultural knowledge and technologies.

Bobbitt (2006) reported agriculture selection trends at eight universities located in the center of the United States. He found a selection declined at six of the eight colleges between the end of 2001 and the start of 2004. This decline was unexpected since.

This is a matter of concern since colleges of agriculture invest time and money in student recruitment (Washburn, 2002). Selection trends in Bungoma and Kakamega counties' higher institutions in the field of agriculture needs to be evaluated since

agriculture education is a pilar in food security in Kenya.

Agriculture education is highly valued and taught as a required subject in the curriculum of developed countries such as China, Brazil, and the United States (Mustapha and Greenan, 2007). According to Lloyd and Osborne (2014), a Competency Based Curriculum is used in the United States to teach agriculture in secondary schools, tertiary colleges, and universities. The Competency Based Curriculum teaches voluntary agricultural activities. Hence, some countries, like Cuba, are following suit by including voluntary agricultural activities into their agricultural education programs at all levels (Ritzen, 1999). Increased agricultural output in the country can be attributed in large part to this strategy's success in changing public and official opinion on the subject at hand.

Chee (2003) discovered in her research that secondary school students fail to enrolling in secondary agriculture and that, weak students are forced to take the subject. This leads to reduced selection in agriculture subject. Similarly, there is a lack of budget and financial support for the subject, there are insufficient basic gardening tools, and there is no laboratory or storage room. This scenario is applicable to some secondary schools in Bungoma and Kakamega counties, a situation that creates a concern for research. According to Camp *et al.,* (2002), students' enthusiasm for agriculture classes hinges on their impressions of the field, both in terms of the content they're learning and the potential careers it offers hence low selection in agriculture. Most students have false assumptions about employment related to agriculture because they do not understand the breadth of opportunities available in this field and believe that all positions in this industry pay poorly and offer no room for advancement (Sereno, 2004).

their curricula to include more science and agricultural courses, which would perhaps entice students to apply to university programs in this area.

2.3.2 Selection of agriculture in secondary schools and tertiary institution in least developed countries

Lewin (2008) examined patterns of agricultural education selection in Sub-Saharan Africa. It indicated that out of the 93 million pupils of secondary school age in the region, 25 million were enrolled in agriculture subjects offered at their local high school. In Sub-Saharan Africa, only a small percentage of students enrolled in high school agriculture. Between 1990 and 2000, the education gap between Sub-Saharan Africa and other developing regions widened, albeit it is slowly beginning to close. Lewin (2008) also discovered that even though the government heavily subsidized secondary agriculture, selection rates remained low, especially among those who would otherwise be in secondary school.

In different continents, different factors determine the selection of agriculture subject and affects the percentage of students who select the subject. Kayode (2002) employed a descriptive type of research using a mailed questionnaire to study the enrolment of female senior secondary school students in agricultural science subject in Gaborone, Botswana. Statements were developed around four major domains of parent, student, teacher and school related variables that literature had asserted could contribute to enrolment in agriculture subject. Analysis of data revealed that the parent related domain mostly affected the enrolment of female students in agricultural science.

Esters (2007) research aimed to determine what factors led graduates of an urban agricultural education program to enrol in higher education. Students reported that their parents and/or legal guardians were the most influential factor in their decision to pursue agricultural studies beyond high school. On the other hand, many reported feeling more influenced by their moms or female guardians than their fathers or male guardians. A number of students cited events and experiences, including an interest in agriculture, personal considerations, and employment prospects, as major motivators for enrolling. Students who did not select agriculture typically mentioned things like not being interested or not having the time as their main justifications. A discriminant analysis revealed that high school grade point average and the level of maternal or female guardian influence were the most significant predictors of whether or not students would select a postsecondary agriculture education program.

Evelyn (2015) analyzed patterns in Zimbabwean students' pursuit of agricultural degrees. This is in light of a six-year analysis of what motivates students at 15 accredited universities to choose jobs in agriculture compared to overall student enrolments (2009-2014). This analysis looked specifically at the rising popularity of agriculture as a field of study. Documentary content and structured questionnaires were used in the 2015 study to collect data from 250 students majoring in agriculture sciences and 250 students majoring in fields other than agriculture; the current study was be conducted at eight (162) secondary schools, all of which offer agriculture programs, and two colleges in Bungoma and Kakamega, Kenya. Each institution’s standards officers and deans should be consulted as primary sources of information. While total enrolment in agriculture courses at the secondary level increased in 2015, enrolment in agricultural-related courses decreased.

According to Nenty and Baliyan (2015), low interest, low selection, and low motivation in agriculture education schools pose a serious threat to the government of Botswana's policy of economic diversification through agriculture growth. As a result, a study was conducted to identify the factors that influence students' attitudes toward agriculture and serve as predictors of whether or not they will choose to study agriculture in Botswana's secondary schools. It suggested that using strategies of encouragement and motivation could help improve students' attitudes.

In Nigeria, young people prefer white-collar jobs in cities. There has been a decrease in per capita productivity and output in agriculture as a result of the country's diminished agricultural production capacity and the aging of its farmer population (Alexandratos & Bruinsma, 2012). Food security is one of Kenya's "big four" goals, and the country needs to learn more about the careers interests of young people, and if the Kenyan youths cannot link themselves with agricultural activities then food insecurity would quickly come in. The focus of the current study was enrolment trend of students in agricultural subject, trends of progression in agriculture career in tertiary institutions of Kenya.

Mukembo *et al.,* (2014) recruited 102 members of Young Farmers Clubs (YFCs) from two secondary schools in eastern Uganda to study more about YFCs' members' motivations for joining the organization and their views on potential future careers. The objective was to characterize YFC club members in terms of their individual characteristics and reasons for participating. The survey also aimed to learn what motivated YFC members to join the organization and what variables they considered while making career decisions. Mukembo *et al.,* (2014) found that a large proportion

of club members joined primarily to better their academic performance in agriculture, but were not devoted to further their agricultural careers. The current study in Bungoma and Kakamega Kenya purposed to establish enrolment trend of students in agricultural programs and trends of progression in agriculture career, the motivation factors for progression in agricultural career

Agriculture is an optional topic in most African countries, with the exception of South Africa and Uganda, where agriculture is required (Ajidagba, 2010). Recruiting and maintaining young people in agriculture remains a global concern. Education in agriculture is essential for both national economic development and personal development since it offers opportunities for innovation and is very practical. Like in many other African nations with significant agricultural economies, agriculture teaching is essential in Kenya's secondary school curriculum.

2.3.3. Selection of agriculture in secondary schools and tertiary institutions in Kenya

Mwiria, (2005) states that the percentage of Kenyan high school students majoring in agriculture has dropped from over 70% in the early 1990s to about 40% today. The goal of this research is to find out what has caused this drop. According to Mwiria, (2005), the time allocated to agriculture is insufficient for efficient instruction of both theory and practice, as agricultural teachers deemed the curriculum to be overly broad. The KIE research report (1999) conducted in collaboration with agricultural teachers and home science instructors verifies Mwiria's, (2005) assertion that many educators use their free time outside of school to teach practical subjects like as agriculture and home science. Since this affects the free time of many students, it may

discourage some of them from enrolling in the course. The study places a lot of emphasis on illuminating the reasons why fewer students are opting to study agriculture.

Ngesa (2006) found that agricultural groups in secondary schools, such as the young farmers club, are an integral part of high-quality school agriculture in Kenya. Yet, the majority of students do not participate in club activities beyond the farm projects and agricultural fairs. Agriculture was the sixth most popular option according to the report, which would explain the current selection increase (Kenya National Examinations Council [KNEC], 2013). Unfortunately, the research does not describe any trends in agriculture students' secondary school selection. Thus, the objective of this study is to assess the selection trends of secondary school students in agriculture studies.

Kirimi (2015) asserts that there are 33 public secondary schools, both day and night, in the Buuri District. According to the district's examinations officer, the number of students majoring in agriculture has increased over the past five years. This number has progressively grown from a low of 690 in 2010 to a new high of 790 in 2015. According to these data, the proportion of students majoring in agriculture in the Buuri Subcounty has increased dramatically. This study aimed to discover if the aforementioned factors influenced the selection of agriculture courses in public schools.

Makori *et al.,* (2019) assessed the number of form four students who study agriculture in Kisii and Nyamira counties. The researcher found that 44.4% of agriculture

students are between the ages of 20 and 30, while 38.7% are beyond the age of 40, while only 16% of population is between 30 and 40 years old. To add on the above information national and extra-county schools have much greater selection rates than county and sub-county schools, as shown by the data. The results corroborate those of the KNEC 2004-2012, which focused on the decline in agricultural majors.

Kamau and Orodho (2014) also analyzed the trend in agriculture selection rates as a proportion of total KCSE applicants from 2009 to 2014. They found that between 2009 and 2014, the number of freshmen enrolling in Agriculture dropped from 40.73 percent to 31.73 percent. Despite agriculture's vital importance in the economy, less than half of KCSE students chose this career.

Cheruiyot (2018) asserts that despite the fact that agriculture has been a high school subject since its inception, its recognition in terms of student choice poses challenges in Kenya. This is due to the fact that students can only take one of the two offered versions of the course because it is grouped with ten other subjects like Home Science, Art and Design, Woodworking, Metalworking, Building Construction, Power Mechanics, Electricity, Drawing and Design, Aviation Technology, Computer Studies, and Business Studies. Because of this setup, picking a major is more challenging than ever. The foregoing is complicated further by Kenyan regulation on KCSE, which demands three required subjects: mathematics, English and Kiswahili, as well as any two science subjects, one humanity subject, and one technical subject, for a total of seven subjects for grading (KIE, 2002).

Ongang’a (2016) contend that subjects of study in secondary schools are chosen, especially so in emerging countries. When students start Form Three in Kenya, the

Ministry of Education (MoE) mandates them to enrol for a minimum of seven and a maximum of nine subjects. Given the vital importance that agriculture plays in Kenya's economy, understanding the factors that have led to this rising trend is essential. In his study to ascertain the impact of selected school-related and student-related factors on the choice of Agriculture course among secondary school students in Uriri Sub-county, Career awareness and involvement in peer group activities were shown to have no statistically significant effect on Agricultural subject choice, however teaching methods and student interest were found to have a statistically significant influence on Agriculture subject choice.

According to Ngesa (2006), Kenya implemented the 8-4-4 system of education in 1985 in an effort to vocationalize the curriculum. When the curriculum was reviewed in 2002, the Kenyan government made an effort to promote the practical side of education by eliminating agriculture from the primary school curriculum and leaving it as an elective in secondary schools. Due to this development, fewer high school students were interested in studying this area. The majority of research conducted in this field indicate a worldwide decline in agricultural program selection. Thus this study sought to establish the enrolment trends in agriculture subject of students in secondary schools.

Muchena (2013) sought to identify the factors that influence students' selection in agriculture in public secondary schools in the Kiambu-East District of Kiambu County, Kenya. The opinions, beliefs, and life stories of the study's 140 participants informed its design and execution. The study's findings indicated that selection in agriculture courses was low. The main factors discovered to contribute to low selection in agriculture subjects were career and parental influence. While most

schools were able to supply the bare minimum in terms of tools and equipment, this was a contributing factor to low selection. Many students had unfavorable view of agricultural jobs because they associated them with dirt. The researcher also noted that, thanks to the Ministry of Education, schools had an adequate supply of textbooks and reference materials. All schools had some sort of agricultural area that was put to use by fourth graders working on examination projects, but none of the schools had a dedicated agriculture laboratory beyond the stores where the tools were kept.

Odero (2022) sought to fill this informational void by analyzing the impact of the Free Day Secondary School Programs on student selection in Agriculture, student access to agriculture instructional materials, and student participation in Agriculture within secondary schools in Mbita Sub County, Homa-Bay County, Kenya. Specifically, the study examined the relationship between student access to agricultural teaching and learning resources and their selection in the agriculture subject. The research was a cross-sectional survey. The participants in this study were 103 secondary school principals and teachers of Agriculture from public and private schools in Mbita Sub County, as well as 4 (four) Quality Assurance and Standards Officers (QUASO). The Systems theory provided a foundation for this investigation. From among 51 randomly selected public secondary schools in Mbita Sub County, a sample of 106 respondents (4 Quality Assurance and Standard Officers, 51 principals, and 51 teachers of agriculture) was selected using a multistage sampling process. The study found that in public secondary schools in Mbita Sub County, students who participated in the Free Day Secondary School Program were more likely to take agriculture classes ($t=17.5826$, $p>0.0000$), have access to agriculture instructional materials ($t=6.9022$, $p> 0.000$), and take part in agricultural activities ($t=13.1437$, $p>0.0000$). It was also found that between 2003 ($r (49) = 0.6087$, $p .0000$) and 2012 (r

(49) = 0.4975, p .0002), there was a strong, positive, and statistically significant correlation or association between the number of students selected Agriculture subject and the number of textbooks for teaching agriculture subject.

Tsisiga, Odebero and Ndiku (2018) investigated current trends in selection rates and subsidized school funding in Kenyan public secondary schools by school category, basing on the Von Thunen‟s Production Function Theory that relates educational inputs and outputs. The study was undertaken in Vihiga County while the current study in Bungoma and Kakamega county. Findings revealed that there was a steady rise in the average number of students enrolled in form one in public boarding schools as compared to those who enrolled in day schools, which registered a lacklustre trend. On the basis of these findings, it was recommended that the government of Kenya sensitizes parents on the need to enrol their children in day schools, so as not to overwhelm the already overstretched facilities in public boarding secondary schools, which would bridge the gap in section rates among both categories of schools.

FAO (1997) found that many students are not passionate about studying agriculture and will only do it out of necessity. Agriculture was first taught in Kenyan schools in 1926, but was dropped the next year (1931) until being reinstated in 1960 at Chavakali high school. According to Mutonga (1995), selection was low at Chavakali high school because parents claimed their kids would rather attend jembes or rather farming agriculture, since the Cambridge Examination Syndicate (CES) did not test for knowledge in agriculture. Many parents in Africa still believe the notion that an education in agriculture will not help their sons find respectable work and instead force them into a life of farming.

2.4 Progression and factors for progression of students in agriculture career in tertiary institutions in developed countries

Basing on the operational terms in this study, students who select agriculture subject in secondary school and proceed to tertiary institution to enroll for agricultural programs are said to have progressed in agriculture career.

Sullivan and Baruch (2009) define a career as the sum of an individual's work-related and other significant experiences throughout his or her lifetime, whether or not those experiences took place within an organization. According to Pam (2013), the key to happiness in old age is choosing a career that aligns with one's values and goals. Factors such as exposure to role models and educational opportunities in secondary school have an impact on students' career choices (Mberia & Midigo, 2018). As a result, one's career path can be understood as the actualization of one's occupational self-concept, which is often shaped by both internal and external sources of input (Kimberly, Eleanor, & Sean, 2016).

There is evidence, for instance from the works of Andrea, Julia, Nicole, Shashank, and Thomas (2017), Jackson and Wilton (2017), and Steve (2016), indicating people intentionally pursue educational paths that bring them to their chosen professions. Others talk about the rewarding monetary benefits of their occupations, while others talk about the personal fulfilment, job security, social impact, and interestingness of their work (Weiss, 2012). Yet, many things happen in the cultural surroundings of people's lives that influence their assumptions and perspectives on their careers. This means that before entering a certain field of employment, each individual must create a profile outlining the specific qualities, abilities, and knowledge necessary to succeed

in that line of work (Kazi & Akhlaq, 2017). Students' career goals are the driving force behind their secondary school aspirations (Mberia & Midigo, 2018).

According to Goecker *et al*. (2010), there is still a dearth of graduates who are proficient in agriculture in the United States, which affects a number of developing nations.

It was estimated that of the 54,400 annual employment openings for college graduates with degrees in agriculture, food, and natural re-sources, around half would be filled by graduates from colleges of agricultural and life sciences, forestry, and veterinary medicine, with the other positions being filled by graduates from allied higher education programs. Falling selection in agriculture institutions is a contributing factor to the shortage of qualified agriculture graduates (Goecker, *et al.*, 2010). In the counties of Kakamega and Bungoma in Kenya, the number of students in tertiary institutions was not encouraging. Therefore, the current study was valid for investigating the primary cause of the observed annual selection in agriculture courses. The purpose of the study was to determine whether a significant number of individuals enrolled in the program in preparation for a profession.

Encouraging professions in agriculture can be particularly challenging if students have negative impressions and if agricultural careers are perceived as production agriculture comprised of tough to influence tasks that pay poorly. This would indicate that pupils are unaware of the vast array of occupations accessible in agriculture (Dobbins, *et al.*, 2002).

Pelco & Ball (2018) claim that instructors involved in the professional development

of young people can benefit from understanding occupational identity statuses and the theory of operation. These researchers hypothesize that individuals who have researched a vocation and are dedicated to it may benefit from further investigation. Exposing those who are exploring but have not yet committed to a vocation to its actual activities is beneficial for them. Individuals with a low level of exploration and no commitments may benefit from assistance in recognizing their abilities and interests. And individuals with little exploration who are committed to a career may benefit from assistance in re-evaluating their career decision prior to exploration (Pelco & Ball, 2018). Therefore, it is essential that every young person has the opportunity to investigate and select a proper occupational identity for their future employment. Before selecting agriculture as a topic in secondary school, students are introduced to agriculture curriculum and practical activities, so they explore the subject without commitment. Once they recognize their abilities and passions, they choose agriculture and then commit. At this point, it is expected that students will investigate agriculture as a career and pursue it in college by picking an agriculture degree.

The agricultural sector in Malaysia has access to a highly trained and enthusiastic workforce because of the country's emphasis on vocational agriculture education. This verdict is based on the idea that enhancing vocational and technical education is a vital step toward creating a better workforce (Syeda, 2011). Rashid *et al.,* (2020) utilized a qualitative case study approach to look into what factors affect students' decision to stay in a Malaysian technical and vocational education and training (TVET) agricultural science program. They zeroed down on what makes students decide to stick with the agricultural program in college after taking one or more

agriculture-related classes in high school. All those who took part in the study had either finished an agricultural degree program at a university or had taken agriculture-related classes in high school. The results indicate that students' commitment to a career in agriculture is influenced by a variety of factors, including close personal support, the school environment, exposure to agriculture, and personality traits.

Beintema and DiMarcantonio (2010) found that the gender gap in African Agricultural sciences is decreasing at a rate of 8% each year. In addition, they discovered that more women in Higher Education in Agriculture hold a Bachelor of Science degree and are concentrated in the life and social sciences as opposed to the "Hard sciences." When more women enrol in education, they begin to consider diversification. They desire to compete favorably with males so that they may share the available work prospects. The gender selection gap in agriculture narrows over time.

Amy Margaret Powell (2019) examined the demographic profile of students in the College of Agriculture and Life Sciences at Iowa State University. She also sought to identify the factors that influence students' decisions to major in agriculture and determine whether or not these factors varied by student demographics or entry mode. This research aims to better understand how students in Kenya's tertiary institutions make decisions about which agricultural programs to enroll in, how those students progress through those programs, what motivates them to do so, and which institutions they choose, and then to propose solutions to the problems that arise as a result. The current study will use questionnaires given to agriculture students at Technical and Vocational Colleges and Universities offering agriculture sciences, as well as Key informant guides given to key informants, to collect data. Powell used a

quantitative survey given to all first-year students at Iowa State University College of Agriculture and Life Sciences, which was developed from qualitative focus groups and interviews. Powell discovered that students were influenced by aspects such as communication, campus quality, and career prospects while choosing a training program at a college. When looking at the many ways men and women entered college, there wasn't much of a difference.

Retallick and Smalley (2018) discovered that students with agricultural experience and rural upbringing are more likely to pursue a profession in agriculture. The study compared demographic factors such race, major, high school, and gender by matching survey data with Iowa State University records. Powell (2019) wanted to analyze student demographics, learn what characteristics lead people to choose agriculture as a major, and see whether these aspects change depending on a person's background or the means by which they entered college. Students in this study tended to be Caucasian females who grew up on farms or in rural areas. Findings show that parents, websites, campus visits, letters from the university, and personal conversations all play a role in choosing a college major.

Mat Taib *et al.,* (2019) investigated the roles of social status and parental influence on Malaysian students' views on pursuing careers in agriculture, with career prospects serving as a moderator. Career prospects were shown to moderate the association between social status and students' views about occupations in the agricultural sectors, and the results demonstrated that students' social standing had a considerable influence on their attitudes towards these careers.

2.4.1 Progression and factors for progression of students in agriculture career in tertiary institutions in least developed countries

Inegbedion and Islam (2020), in response to a worldwide decline in enrolment in agricultural programs at postsecondary institutions, studied the factors that motivate students to stick with their agricultural studies rather than abandon them. It was a cross-sectional study. There were 967 respondents, representing four universities in Southwest Nigeria. Motive was measured using a 5-point Likert scale based on research from the field of Self-Determination Theory (SDT). For this data analysis, we employed both descriptive statistics and Principal-Axis factoring. All four types of external incentives were found to play a role by the SDT, with recognized regulation being the most important. The results show that among the listed regulation aspects, the capacity to learn about innovations, the development of entrepreneurial abilities, and prospects for self-employment after graduation were the main motivators.

Having a strong sense of identity leads to building a sense of direction that influences the other phases (McLeod, 2018). After students choose agriculture as a topic, it is anticipated that they would pursue a career in agriculture by enrolling in tertiary-level agriculture programs. A decade of research suggests that well-developed career identity, like other aspects of personal identity, leads to greater self-awareness, whereas less developed career identity and other aspects of personal identity tend to lead to confusion and less self-awareness in relation to others and the world (Marcia, 1980). At higher schools, a number of students who majored in agriculture in high school switch to other fields of study. This indicates a lackluster career development

procedure. This circumstance results in uncertainty and a diminished sense of self-awareness for the developed professional.

Marcia's identity status theory claims that, as teenagers establish their identities, two significant processes are occurring. The first phase is the exploration or crisis phase, during which teenagers explore and experiment with many aspects of their identities, such as their beliefs, roles, and occupation. The second process is commitment, whereby teenagers dedicate themselves to a selected identity. Four identity statuses occur from the combination of the exploration and commitment processes: diffusion, foreclosure, moratorium, and achievement. Youths with a diffused status have neither explored nor committed to an identity, and they care little about making decisions. Youths with a closed status have committed to some part of their identity but have not investigated alternatives. Youth with a moratorium status have not committed to any element of their identity and are instead researching alternate options. Youth with an accomplished status have investigated and committed to some part of their identity (Stitt, 2016). Students with an attained status are those that chose agriculture in high school and enrolled in an agriculture program in postsecondary institutions. They investigated agriculture in secondary school before committing to a career in agriculture by registering for training. The purpose of this study was to examine the selection and progression patterns of postsecondary institution students in agriculture careers.

Hassan *et al.,* (2011) reported that selection in agriculture courses was low. This creates a gap for the current study to investigate the enrolment rates in agricultural causes in selected region. The results suggested that agricultural initiatives involve a

significant degree of risk, that agricultural ventures are gender-sensitive, and that agricultural ventures demand a great deal of energy. Hence the current study stratified the college students, who were respondents to ensure gender representation.

Barau *et al.,* (2016) used a structured questionnaire to gather information about students' intentions to pursue careers in agriculture at secondary schools in Sokoto Metropolis, Nigeria. According to the results, the vast majority of respondents are open to working in agriculture, namely in the poultry industry. Respondents' top three perceived barriers to entering the agricultural sector were a lack of information, a lack of government commitment, and a lack of cash. The current research will use multistage purposive sampling to analyze how students move from secondary schools to agriculture training institutes, all in the name of assessing how students advance in their chosen fields of study.

Egbule E. O. (2020) conducted a study on the topic of "Social determinants of rural secondary school students' choice of agricultural vocation and its relevance for counselling services in Nigeria," and he found that only a small percentage of students majored in agriculture for reasons such as self-employment, interest, a profitable course, and improved performance in agriculture. Students' decisions to major in or pursue a career in agriculture were affected by factors such as their age, parental education and occupation, family income, sexual orientation, prior knowledge of the subject, aptitude for prerequisite subjects, access to guidance and counselling, participation in agricultural child labor, and exposure to commercial farms and mass media. The purpose of this research is to examine the broader influences that contribute to agricultural career advancement.

Precious & Abubakar (2019) investigated factors that influence young people's decision to pursue a profession in agriculture as a first step toward developing a more effective policy mechanism for economic growth in Nigeria. Their research was based on the Theory of Planned Behavior and was experimentally evaluated. Youth agricultural intent was calculated using a regression analysis and descriptive statistics. Researchers in Nigeria found that young people's

sense of subjective norm and perceived behavioral control influenced their decision to pursue careers in agriculture. Since the future of Nigeria is determined by its young population, this has ramifications for the country's policymakers and teachers. The current research will be grounded in the Theory of Fashion Majoring, which lays out the elements that students should consider while settling on a degree path. Statistical methods like descriptive, regression, correlation, analysis of variance (ANOVA), and Spearman Rank Order will be used. The findings of this study will have important consequences for policymakers and educators in Kenya's agriculture sector, which is preparing to implement a competency-based curriculum.

During a study on agriculture and human Values, agricultural education was not listed among the scientific fields; hence, it was not regarded as prestigious in the workforce in the same way as the sciences. These impressions of agriculture at the time of the study influenced the pupils' perceptions, as confirmed by family and school instructors. Parents and teachers urged their children to pursue other fields of study instead of agriculture because they believed it was unappealing (Jones, Williams, & Gill, 2017). This type of communication impedes career advancement in agriculture, particularly for students who choose agriculture at the secondary level. It creates a void in the occupational identification of age groups within a population, resulting in

a labor shortage.

Kpiebaya (2012) found that students' attitudes about learning agricultural science were unaffected by gender in a substantial way. In addition, the attitudes of female students toward agricultural science as a career are identical to those of male students. In conclusion, the study revealed that parents and teachers influence students to enroll in science-related courses, whereas students expressed a desire to be involved in course selection. It is evident that professors play a significant impact in generating and sustaining students' interest in agricultural science. Girls and boys have diverse attitudes and interests for the study of science and its related courses, including agriculture, according to studies. Although more women enroll in postsecondary schools and receive higher grades in science and engineering courses than men, significantly more men than women major in the natural sciences or engineering (Division of Research, Evaluation, and Communication, Directorate for Education and Human Resources, 1996; National Science Board, 1998; Rosser, 1995). The purpose of the present trends was to identify the selection trends of students in agriculture programs from 2016 to 2021 in order to comprehend the implications of these trends on students' career progression in agriculture.

Cooper and Centre (1998) point to societal and cultural influences. Success in agricultural classes can be affected by factors such as one's race, socioeconomic standing, and ethnicity. Societal expectations have an effect on students' achievement in science classes like agriculture. According to Davis (2008), the socioeconomic context influences the decision to pursue agricultural education. The style of life of students is influenced by their socioeconomic background, which may be seen in their

parents' financial situation and its relation to parental education, family size, and income. Kidane and Worth (2012), notes that an individual's character shapes their academic and professional interests. Students' grades are dependent on a variety of factors, including their age, attendance, and how well they do in class.

Academic success is influenced by parental involvement or family as a factor. (Alam *et al.,* 2011). Parental goal, perception, and expectation all have a role in how agriculture is taught and learned. Influences of the classroom atmosphere on student learning: The school environment, including factors like security and individualized instruction, affects student performance. (Kidane and Worth, 2012) Improved school management and student discipline have a positive effect on students' ability to learn and their interest in a career in agriculture. Graduates from colleges around the world are being sought by businesses in the agriculture sector, including the agriculture and education ministries. Thus, it is important to enrolment in agricultural institutions to match the demands of the expanding agricultural sector.

Evelyn (2015), reports that poor employment prospects, bad impressions of agricultural jobs, and a lack of better chances, numeracy, and better working conditions, in addition to the same entry requirements to other programs, as the primary issues discouraging students from studying agriculture. The current study determined some selected factors for progression in agriculture subject. These factors could motivate students to select and agriculture in secondary schools and later enroll for agricultural programs in tertiary institutions.

According to Ouano *et al.,* (2019), students in their final year of high school face a variety of challenges while deciding on a major, including their own decision-making

and interest, the impact of their peers, the nature of the school itself, and the prospects for employment. The graduating students were influenced in their choice of major by these elements. But, institutional factors should be given more weight. Location, school resources, tuition, and career prospects are among institutional variables that students consider when deciding where to enroll in college.

Mkong *et al.,* (2021) investigates what factors influence college students' decisions to work in Cameroon's agriculture sub-sector. A multi-stage random sampling method was used to select 550 students from two state universities. Students' perspectives on the strengths and weaknesses of Cameroon's agricultural sector were evaluated using the SWOT analysis, students' motivations for choosing agriculture as a university major were analyzed using the binomial probit analysis, and their preferences for involvement in specific agricultural sub- sectors were evaluated using the ordered probit analysis. The results demonstrate that factors such as sex, prior agricultural experience, prior academic background, mother's level of education, and family income all play significant roles in determining whether or not a student chooses agriculture as a major in college.

Obayelu and Fadale's (2019) research examined how college students view agriculture and what variables make them interested in majoring in the field. Data from 285 high school science students were analyzed using descriptive statistics, a Likert scale, and logistic regression. The students had a mean age of 15 to 30, 1 to 17 years and were split nearly evenly across sexes. More than half of them, 50.5%, were interested in studying medicine in college, whereas only 4.6% were interested in agriculture. College-level interest in agriculture was higher among female students

(57.6%) than male students (42.4%). Public school pupils were more likely (51.4%) to be interested in agriculture as a career than their private school counterparts (48.6%). Respondents were significantly influenced to pursue an agricultural education by exposure to agricultural careers, hands-on experience in the field, and an educational field trip. Some factors that increase a high school student's likelihood of wanting to study agriculture include having a father who primarily practices agriculture and supports agricultural education, going to a school where crude implements are not used, touring a mechanized farm, and the youth's willingness to own a farm in the future regardless of the course of study.

Eremie and Okwulehie (2018) demonstrated that environmental, opportunity, and personality factors can all play a role in shaping individuals' career decisions while they are still in high school. Students' interest, values, and skills, as well as their family's socioeconomic status and their social circles, were found to be important determinants of their course selections, while the results indicated that environmental factors, such as family income and social circles, played a smaller role.

Egbule E. O. (2020) observed that few students majored in agriculture for reasons including job, interest, a profitable course, and improved academic performance. Students' decisions to major or minor in agriculture were affected by factors such as their age, parental education and occupation, family income, sexual orientation, prior knowledge of the subject, aptitude for prerequisite subjects, access to academic guidance and counselling, participation in agricultural child labor, and exposure to commercial farms and mass media.

Moreover, Kaneez and Medha (2018) agreed that parental influence is a major factor in their children's professional decisions. Umar (2014) found that, while parents do have some effect on their children's professional decisions, other influences, including peers, teachers, and family, also play a role.

Dagang and de Mesa (2017) found evidence that parents had a significant impact on their children's decision to enroll in a postsecondary institution. Respect for elders is firmly ingrained in Filipino culture, which explains why parents carry such sway over their children's decision making. This mild effect from others, including peers, friends, and relatives, might be explained by the fact that children in Filipino families are financially dependent on their parents. The availability of scholarships and the price of tuition were also important considerations.

According to Ibrahim (2017), students' families are the most influential group in their decision to pursue a career in medical laboratory science. This is likely owing to the fact that family members are the primary sources of financial support for students. According to Eremie and Okwulehie (2018), environmental, opportunity, and personality factors can all play a role in shaping students' career decisions in high school. Students' interest, values, and skills, as well as their family and socioeconomic backgrounds, were found to have a significant impact on their course selection, while environmental factors like family background and socioeconomic standing were found to have a greater impact on students' course selection than education and mentorship.

2.4.2 Progression and factors for progression of students in agriculture career in tertiary institutions in Kenya.

Chemjor (2016), observes that institutions like Bukura College, Egerton University, and Kabete School of Agriculture and Veterinary Technology promote agriculture as a technical subject that helps students get jobs after graduation. The practical aspects of the course are stressed to produce competent professionals in the sector. Particularly for pre-service teachers and future agriculturalists, universities place a premium on agricultural studies alongside other scientific and creative disciplines. So, the country invests much in agricultural education at the secondary level, while primary and secondary education suffers.

Manyasi (2021) points out that despite the abundance of research, no study has yet looked at every possible element influencing students' decisions to major in agriculture. Bringing together all of the factors requires extensive background reading on the issue. Some researchers focus solely on academic characteristics, others on social features, and still others on demographic factors; consequently, for comparison and suggestion, all factors must be examined. It is imperative that all students have access to agriculture classes in order to improve production capabilities and ensure global food security. Consequently, the purpose of this study was to analyze changes in agricultural career progression among Kakamega and Bungoma County college students from 2016 to 2021.

Similar to other global National Qualifications Frameworks (NQFs), the Kenya National Qualifications Framework (KNQF) incorporates lifetime learning and job

experiences that are converted into credits similar to those earned via formal education. With the principle of lifelong learning, it is assumed that individuals will advance academically along training and career pathways and across occupations. KNQF is comprised of principles and rules for registering records of learner success to provide national acknowledgment of acquired skills and knowledge, hence assuring an integrated system that promotes lifelong learning. When learners are aware that there are clear learning routes that provide access to, mobility throughout, and progression within education, training, and career paths, they are frequently more motivated to develop their skills and knowledge, as doing so will increase their employment options. The improved skill level of the labor force indicates a rise in the nation's functional and intellectual capacity (KNQA, 2018).

The KNQF standardizes and harmonizes the country's qualifications by implementing a framework for defining the expected knowledge, abilities, and understanding required for employment, self-employment, or further study inside Kenya's education and training system and beyond. One of its goals is to encourage students to acquire and enhance their skills and knowledge by integrating academic and vocational training, theoretical and practical education and training, and professional certifications within the context of the requirements of a globally competitive labor force (KNQA, 2018).

Ochuodho, J. O. (2018) found that students are admitted to degree programs and universities that are not of their choosing. Study of the students admitted to Agriculture programs at the University of Eldoret found that forty percent did not choose these courses; thus, when they arrive at university, they attempt to switch to

popular courses or what they claim to be their love. According to the same analysis, 30% of the students did not choose the university and would have preferred to attend another institution. This is an indication of student discontentment. This scenario results in the discontinuation of certain courses, which then become extinct. So, there is a need for the current study to devise motivational strategies to ensure progression in agriculture among secondary school students who choose this subject.

Shikanga *et al.,* (2022) determined the influence of teacher-related factors on selection in agriculture in secondary institutions in Kakamega North Sub-County, Kakamega County, Kenya. The study, which was based on the learning theories of Behaviorism and Connectivism, employed correlational research design and descriptive survey design. Participants included school principals, school career masters, agriculture instructors, students in form three, and parents. Twenty (20) schools, twenty (20) Principals, twenty (20) career masters, twenty (20) agriculture instructors, three hundred (300) form 3 students, and twenty

(20) Parents instructors Association (PTA) members were selected using purposeful and stratified random sampling. Ethical considerations were observed as questionnaires and interview schedules were used to collect data from respondents. The study determined that teaching methodology (63.6%) was the most significant teacher-related factor influencing student selection in agriculture. At the p0.05 level of precision, the Chi-square test of independence [2 (36, N=7) = 42.00, p =.007] indicated that there is a statistically significant relationship between teacher-related factors and selection of students in agriculture. In order to inspire more students to pursue agriculture-related professions, the study recommends that agriculture teachers employ effective instructional methods when teaching and learning agriculture.

Manyasi (2021), notes that while agriculture may not be the most popular major choice among students, it is nonetheless related to people and communities despite its poor reputation. There has been a worldwide decline in student selection in agriculture studies despite an overall increase in university selection. The theories and criteria students use to select a career skill are important for all members of society to comprehend. Everyone in society should be aware of the principles and criteria students employ when deciding on a career path. Family dynamics, life circumstances, and the surrounding environment are three of the most significant influences on students' ability to learn about agriculture. Personality, cultural norms, and economic status all play a part.

According to Klein and Washburn (2012), students who visit an agricultural college are more likely to enrol in an agriculture program, and they also gain a better understanding of what to expect from the institution. Manyasi (2021) argues that the aforementioned principles of agriculture education training have led to the identification of the following characteristics that affect students' decisions to major in agriculture: academic factors, interpersonal aspects, personal factors, significant individuals, prior experience with agricultural activities, prior university experience, environmental issues, employment alternatives, and government economic ability. The purpose of this research was to identify the characteristics that influence students' decisions to continue their education in agriculture-related fields at postsecondary institutions in Kakamega and Bungoma Counties.

2.6 Strategies to promote progression in agriculture career

A strategy is a plan of action designed to achieve a long-term or overall aim. This

originates from set objectives by individuals due to experienced challenges.

2.6.1 Strategies to promote progression in agriculture career program in tertiary institutions in developed countries

Internationally, nations are attempting to devise the most effective techniques for enhancing agriculture education because educated human resources are projected to increase productivity and wealth.

Anquilo-de Asis (2013) conducted research on obstacles and strategic approaches in promoting agricultural education at the University of the Eastern Philippines (UEP) after discovering that agricultural education at UEP was in jeopardy and that it was impossible to ignore reports of diminishing selection and dwindling market demand for agriculture education graduates. The study analyzed the selection trend over a five-year period, as well as the challenges associated with agricultural education and the measures made to strengthen it. There is a strong argument that streamlining the approved agricultural education curricula and implementing agricultural entrepreneurship is a feasible strategy for agricultural education, which must promote system innovation in the province's agro-food complex. More emphasis should be placed on theoretical and technological transfer by applying the "hands-on activities, mind-on approach" in order to bring learning to the field and make it applicable. Technology change of agriculture's should involve a process of interaction between those who generate, consume, and transfer knowledge. This will contribute to the improvement of agricultural education by fostering innovative networks and boosting the capacity of organizations and individuals to transfer and modify data, products, and methods. This study will describe potential solutions to reduce obstacles faced by

students in Kenyan tertiary institutions during career choices and advancement in agriculture.

Calvin and Peens (2013) did a study on obstacles and solutions to student recruiting tactics into post-secondary agricultural education programs in Sub-Saharan Africa to assess the most recent evidence on the relationship between extension and education in order to identify viable routes that integrate agricultural education training (AET) with extension for greater student skill learning and extension. Analysis was conducted by showing alternative pathways to link extension with education, and it was concluded that establishing community-based courses within the curriculum and/or attaching a field/practical component to different courses that can be tied to ongoing research and development would strengthen the connection between extension and education. The purpose of the current study is to determine the selection trend of students in agricultural programs, the progression trends in agriculture careers, the motivating reasons for progression in agricultural programs in selected learning institutions, and to offer solutions to minimize the problems faced students in selection and progression in agriculture careers in Kenyan tertiary institutions.

Alawa. *et al.,* (2020) recommend that among the policies that support agricultural education and training are the development of occupational agricultural colleges to reflect agricultural practices in the forest zone, the recruitment of pedagogically educated professors, and the revision of the land use decree to allow graduates to acquire land for agriculture.

According to Ostovic *et al.,* (2017), students view agriculture as consisting primarily

of farming and ranching and have a negative outlook on pursuing a career in agriculture. Societies and youth from both low-income and high-income nations view agriculture as having an unviable or unattractive career path, poor income, or low pay relative to other industries, according to studies examining the reasons why students do not enrol in agricultural courses (Ariyo & Mortimore, 2012; Grant, 2012; SRUC, 2016). According to Pratley (2008), the decline in agricultural program enrolment in the United States is due to a lack of skilled people, which impacts current and future agricultural secondary programs as well as learner preference.

2.6.2 Strategies to promote progression in agriculture career in tertiary institutions in least developed countries

Adebo and Sekumade (2013) argue that many young Nigerians choose careers that require them to move to the cities in quest of white-collar work. The sheer fervor of agriculture that is not embraced by youths, along with rural-urban drift, has dislocated the nation's agricultural productive capacity, causing the farmer population to age and resulting in poorer per capital productivity and output.

Taghibaygi (2015) claims that a lack of motivation among students prevents them from acquiring the skills and technologies necessary for agricultural vocations and businesses as one of the reasons for agricultural training institutes' limited impact on the development of students' employment chances. Colleges often select students to enrol in their programs based on their level of education and high school performance, but the placement department must realize that a student's choice of college is considerably more significant than college placement (Chapman, 1981). College selection will always take into account the student's educational goals.

Sereno (2004), in his study on the obstacles facing higher agricultural education in the United States, underlined that agricultural education in many developing nations suffers difficulties, including selection, curricular content, and funding. According to his research, interest in studying agriculture among university students has been on the decline since 2001. He suggested that, to get around these problems, primary and secondary schools be helped to revise

2.6.3 Strategies to promote progression in agriculture career in tertiary institutions in Kenya

Atela and Ongang'a (2018), report that students' attitudes of agriculture as a career were modest, despite the fact that their career aspirations had little influence on them. Field trips, excursions, and agricultural exhibitions should be used to enhance students' agricultural skills and knowledge. This would improve their morale and attitudes towards agriculture. In order to promote positive attitudes in their students, agricultural educators must demystify agriculture as a science subject. Students should be encouraged to select a career path as early as form one and two in order to develop a positive attitude toward the subject. Professionals in the agricultural industry should make a concerted effort to engage with school officials in gaining access to give career-related information. These professionals should present agricultural careers in a favorable light. In addition to providing written material about vocations and opportunities in higher education, schools can also invite career professionals to their campuses. In addition, it is recommended that colleges and universities with programs that prepare professionals for agricultural careers collaborate with schools to disseminate information by producing high-quality media that positively portrays the expansive array of professional opportunities in agriculture

and technology. In addition, schools and universities should offer agricultural experiences outside of their regions, such as mentoring programs for high school students.

Manyasi (2021) illustrates that despite the fact that agriculture accounts for 40% of Africa's GDP and 70% of its employment, many nations have reported a decline in agricultural project selection. In spite of bountiful agricultural resources, the rising population in developing countries like Kenya has led to severe food shortages and the establishment of agricultural education programs on food security. In countries with efficient farm laborers, researchers, educators, extension agents, and professionals, agricultural education may play a crucial role in providing a clear context for profitable and sustainable agricultural expansion. Governments should strongly support agriculture education by financing agriculture education research, which will improve students' perspectives, attitudes, and desire to study agriculture. Students' perspectives on agriculture education and the profession must be altered by encouraging everyone to learn farming and participate in Kenya's new Competency-Based Curriculum (CBC) for high school graduation.

2.7 Career development theories and models

The theoretical frameworks used in this study provides information on the process of program selection and an interpretation of factors influencing students' decision-making. The two permits understanding of the decision-making process. Their empirical use applies across a variety of college programs and in different countries.

2.7.1 Model for choice of a program

The model provides a framework in student experience while mapping the path that they take to get at their professional decision to enroll in a program. Its' illustration permits understanding of the decision-making process as shown in figure 2.1.

A student's decision to enroll in a professional program can be impacted by a wide range of circumstances. Students of different programs tend to value different aspects when choosing a program of study, as evidenced by the motivating factors influencing choice of a program. (Hodges and Karpova, 2009).

According to Powell, Amy Margaret (2019), as stated by, Hodges and Karpova (2009) model, personal attributes, interpersonal factors and environmental factors have a role in a student's decision-making process. The model concludes that personal variables include gender, race, socioeconomic status, hobbies, aptitudes, and values, Interpersonal variables such as persons whom the student encounters with and their perspectives could affect their decision to choose a program, and they may be parents, teachers, or peers.

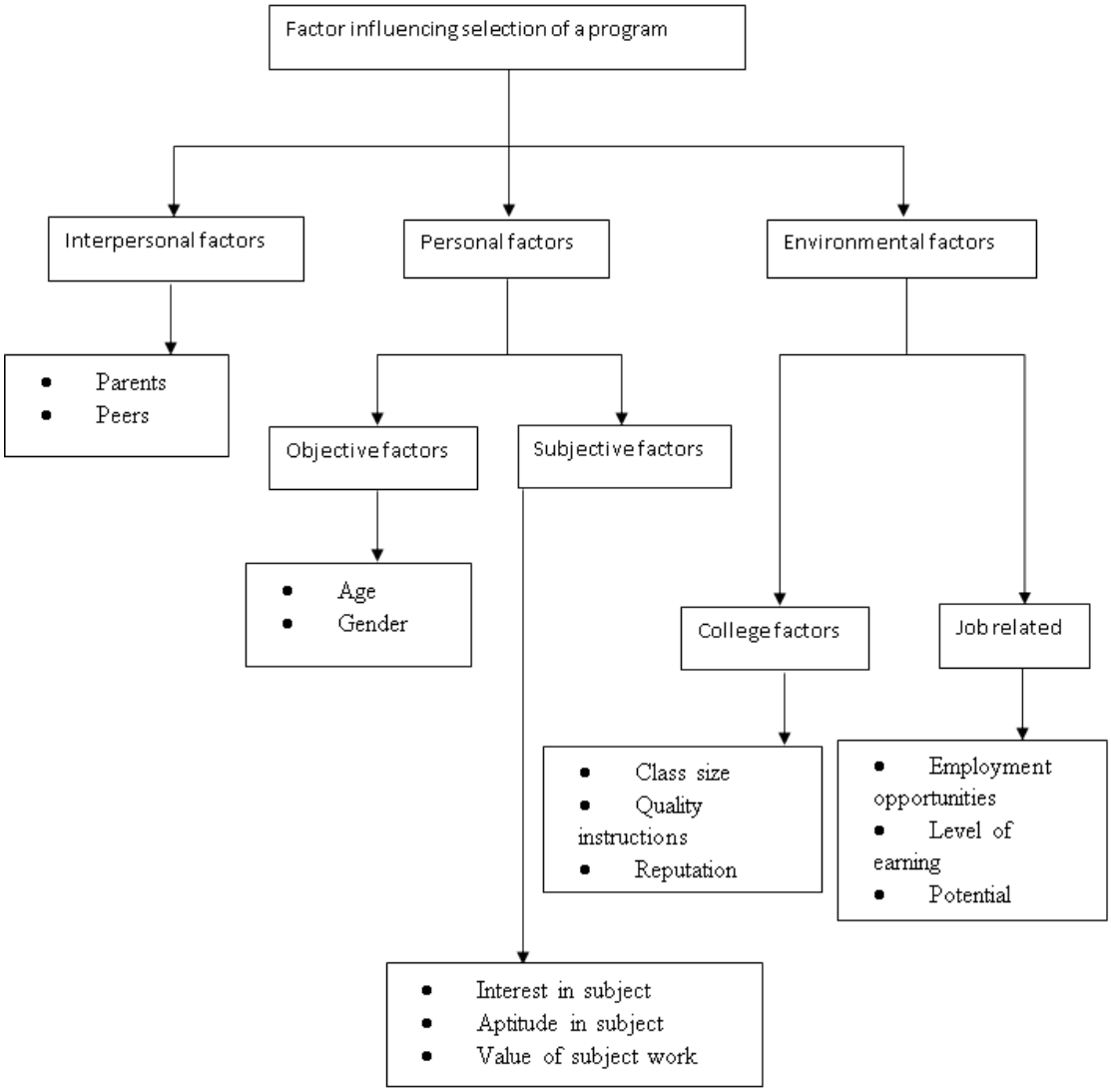

Figure 2. 1: Factors influencing selection of college major.

[Source: Modified from Powell, Amy Margaret (2019)].

Environmental factors include those factors that are institution specific such as cost of education, reputation of program and industry and occupation- related characteristics like employment opportunity and level of earning potential.

The model specifies that there are three key elements that influence the decision to enroll in the fashion major, as reported by Hodges and Karpova (2009). A person's

subjective attributes as well as interpersonal and environmental elements. From the model students' decision to enroll in a program is influenced by three factors. Just one possible point can serve as a starting point of a discussion but the student should consider discovering and evaluating alternatives, and he or she should explain why they chose the major over other options.

After completing the first step, most students continue on to the second stage of evaluating their options, and finally to the third stage of deciding on a degree program to undertake. The initial step of motivation, on the other hand, can be skipped by some. Even if you choose one of the two paths, you'll find that students have some effect. Prior to selecting a major, students look for information about many institutional elements, including industry-related aspects that provide information such as employment. For some, the search process is informal and depend on the people they relate with as well as the information. The model also specifies that recruitment efforts need to consider the fact that several other forces during the decision-making process sale a program for popularity (Hodges and Karpova, 2010).

2.7.2 Post-behavioral Science education theory

In the view of Murphy (2002), managers need to understand that there are three interrelated concepts in the development of the next era of the profession, since, behavioral science approach influence the practice of school administration. The state, school agents and the administrators and teachers set standards that become policies in subject selection. School education accountability is the main theme of state policies to make sure that No Child Left Behind (NCLB) as stated in the Act of 2001.The policies determines whether some students will enroll for the subject or not.

The described models are relevant to the current study since the study embraces the subject selection process and progression achievement of the learner as a characteristic that stimulates the career development. The basic themes of state policies which ensures that No Child is Left Behind in education should be applied during subject selection and since it aims to career development. To help all students to achieve their dream career, freedom of subject selection should exist, which is based on the open flow of set policies that enables students to be informed, allowing them to participate in open selection actions for justice in the education areas. Schools should teach the set curriculum as a state policy without forcing students to follow other school policies. This will promote excellent and equity in subject selection and progression of students in agriculture career.

2.8 Conceptual framework

To understand the problem under investigation, specific objectives of the study are bound together in a construct called conceptual framework. In this framework, measurable and interrelated ideas are tied together. Measurable factors are classified as independent, dependent and intervening.

Figure 2.3 shows independent variable are the measurable determinants for selection of agriculture, progression in agriculture, relationship between motivational factors and factors for progression and strategies for agriculture career progression

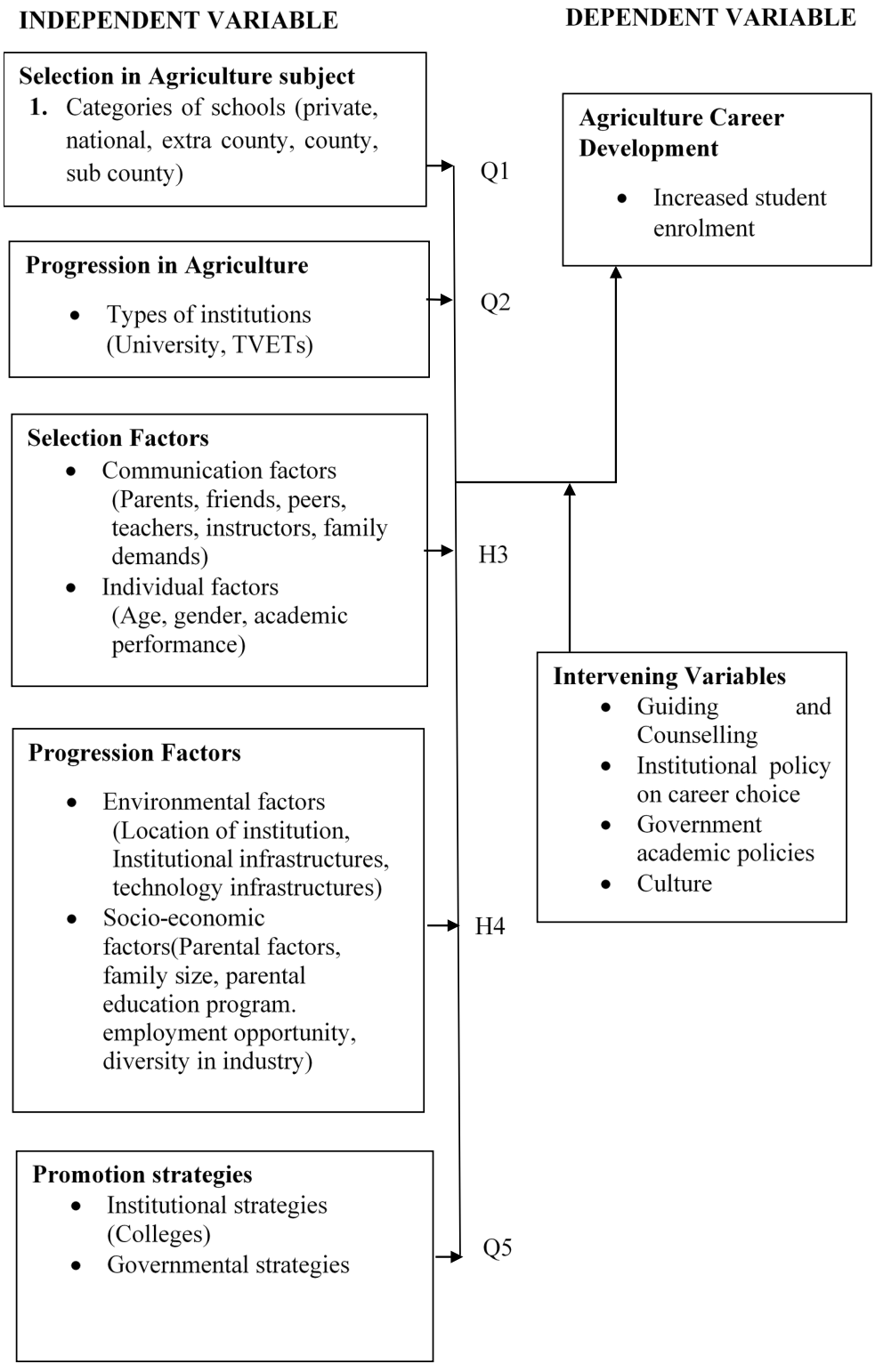

Figure 2. 3 Conceptual framework model for the study on factors influencing students' selection and progression in agriculture career in tertiary institutions of Kenya. Source: Researcher's own conceptualization (2022)

In the current study, measurable determinants for selection of agriculture subject include categories of schools such as private, public, national, extra county, county and sub county). Progression in agriculture was determined by the types of institutions, gender. Selection factors as informed by the theoretical framework include individual factors (such as age, gender and academic performance) and communicational factors (such as Friends, peers, parents, instructors, and family demands). Progression factors including socio-economic factor (such as family size, parental education program, parental factors and diversity in industry and environmental/institutional factors (such as location of the institution, institutional infrastructures, technology infrastructures) affecting the students' decision-making to choose agriculture subject and progression to agriculture career development. Dependent variable is the agriculture career development which can be observed from the increased selection in agriculture. The intervening variables such as culture affect the independent variables and dependent variables but students are expected to work through towards progressive agricultural career development.

The conceptual framework is based on the choice of program model and occupational choice theory which specify that, key elements among learners influence the decision to enroll in a program. Every individual learner has dream sectors with career prospects that drive their purpose for schooling. It is important that students' focus on learning certain programs achieved through proper selection and progression in their dream career such as agriculture. Students of agriculture must therefore be guided by instructors to follow the right policies during selection of subjects so that they later progressively develop agricultural career successfully.

2.9 Summary of research gaps from literature review

Summary of research gaps explore the existing similarities and differences between reviewed literature and the study.

2.9.1 Selection of agriculture subject in secondary schools in Kenya and developed countries

Studies have been done on the current study topic, though some concentrated on selection while other are on the progression of students. These creates a research study gap that needed to be filled. For instance,

Agriculture education is highly valued and taught as a required subject in the curriculum of developed countries such as United States (Mustapha and Greenan, 2007). According to Lloyd and Osborne (2014), a Competency Based Curriculum is used in the United States to teach agriculture in secondary schools, tertiary colleges, and universities. The Competency Based Curriculum teaches voluntary agricultural activities. Hence, some countries, like Cuba, are following suit by including voluntary agricultural activities into their agricultural education programs at all levels (Ritzen, 1999). Kenya is also changing from the theoretical and theory based curriculum of education to the Competency Based Curriculum with hopes that the embraced experiential learning will stimulate the students enthusiastic interest in agriculture and motivate them to progress in agriculture career. It is believed that increased agricultural output in the country can be attributed in large part to this strategy's success in changing public and official opinion on the subject at hand.

2.9.1 Selection of agriculture subject in secondary schools in Kenya and other developed countries

In developing countries, Nanty and Baliyan (2015), studied the characteristics that influence students' attitudes about agriculture as a predictor to enroll in subjects in Botswana's senior secondary schools. The study was conducted in senior secondary schools in Botswana and look at factors and strategies for enrolment while the current study was conducted in Kenya while it determined selection motivational factors in senior secondary and tertiary institutions in Kenya hence filling the contextual and methodology gaps. Some factors identified as selection and progression factors in agriculture need to be embraced to help students to progress in agriculture career.

Agriculture education is highly valued and taught as a required subject in the curriculum of developing countries such as China and Brazil, (Mustapha and Greenan, 2007). This has not been the scenario in Kenya. Students select agriculture as a subject of choice from among the technical in the outgoing 8.4.4 curriculum. According to Lloyd and Osborne (2014), a Competency Based Curriculum is used in the United States to teach agriculture in secondary schools, tertiary colleges, and universities. The Competency Based Curriculum teaches voluntary agricultural activities. Kenya should embrace Competence Based Curriculum where all students study agriculture as a subject of need in the society and capitalize on the findings of this study to increase progression in agriculture career.

Egbule Elizabeth Ostia (2020) carried out research on social determinants of rural secondary school students' choice for agricultural career and its implication for counselling in Nigeria. The study indicated that few students chose agriculture for semi- employment, interest, profitable course, for better course and for better performance. As a career, agriculture was influenced by social attributes, knowledge

of the subject, counselling and child labor involvement and exposure to mass media and commercial farms and aptitude of the prerequisite subjects while the scenario in Kenya secondary schools is different since students' involvement in agriculture is by choice of the subject and hence not compulsory.

Chee (2003) discovered in her research that secondary school students fail to select secondary agriculture and that weak students are forced to take the subject. This leads to reduced selection in agriculture subject. Similarly, there is a lack of budget, there are insufficient basic gardening tools, and there is no laboratory or storage room. In Kenya similar situations are identified. This scenario is applicable to secondary schools in Bungoma and Kakamega counties, a situation that creates a concern for research. According to Camp *et al.,* (2002), students' enthusiasm for agriculture classes hinges on their impressions of the field, both in terms of the content they're learning and the potential careers it offers, hence low selection in agriculture. Most students have false assumptions about employment related to agriculture because they do not understand the breadth of opportunities available in this field and believe that all positions in this industry pay poorly and offer no room for advancement (Sereno, 2004).

Some studies have been conducted on this topic. However, they have largely concentrated on secondary schools. For instance, Kamau and Orodho (2014) analyzed the trend in agriculture selection rates as a proportion of total KCSE applicants from

2009 to 2014 Ongang'a (2016) ascertained the impact of selected school-related and student-related factors on the choice of Agriculture course among secondary school students in Uriri Subcounty among others. The current study focuses on both selection trends of students in agriculture subject in post primary institutions and progression trend of students in agricultural programs among students in selected tertiary institutions of Bungoma and Kakamega Counties of Kenya.

Manyasi (2021) points out that despite the abundance of research, no study has yet looked at every possible element influencing students' decisions to major in agriculture. Dagang and de Mesa (2017); Eremie and Okwulehie (2018); Ibrahim (2017), sought to expose factors that motivated students' selection of agriculture in secondary schools. This forms a gap for the current study which gives focus on selection trends, progression trends of students in agriculture career as well as factors motivating students to select agriculture subject and progress in agriculture career in tertiary institutions, in tertiary institutions of Bungoma and Kakamega Counties of Kenya.

2.9.3 Progression in agriculture subject in Kenya and developed countries

Students from secondary schools enroll in agriculture programs. Bobbitt (2006) reported agriculture enrolment trends at eight universities located in the center of the United States. He found a selection declined at six of the eight colleges between the end of 2001 and the start of 2004. This decline was unexpected and it became a matter of concern since colleges of agriculture invest time and money in student recruitment (Washburn, 2002). Similar situations are observed in Kenya. Selection trends in

Bungoma and Kakamega counties' higher institutions in the field of agriculture evaluation is justified since agriculture education is a pilar in food security in Kenya. Tertiary colleges of agriculture found in the same location have invested time in marketing the available programs yet the numbers of students enrolling for the programs is never encouraging.

Powell, Amy Margaret (2019) research on factors influencing choice of majors in college of agriculture and life sciences at Iowa State University and reported that the influencer factors of a college major include quality of the college and career interest but gender had little influence. These was conducted in Lowa, States of America while the current is in Kenya. The study did survey on first year students while the current is done with all levels of students of technical colleges and university hence. The current study in Kenya determines the factors for progression in agriculture career development and found that socio-economic factors are influential in agriculture career development.

Business insider (2013) investigated to understand the majors that are most popular and are most paying. They found out that agriculture is not one of the most popular major fields of study, although some of its programs have top highest employers. The study was done in United States of while the current study was conducted in Kenya hence filling the contextual gap. In Kenya, agriculture in not also a popular subject of study especially at tertiary level. Students associate agriculture with farm work and low payment. There is need for the ministry or education to understand the factors that can motivate students to progress with agriculture education into agricultural

careers as they join tertiary colleges. Students need to understand that agriculture careers can improve life of people working in different departments of agriculture and that some departments pay highly just like other fields.

The economist (2013) carried out research to find out if the living standards improved during the industrial revolution. They found out that careers fields of people became diverse and could shift from one gender to another due to emerging society needs. The study was done during industrial revolution context while the current study seeks to understand the context that can enhance agriculture career progression in Kenya at the time of need of food security for the increasing population.

Princeton review (2013), indicated that among the many majors and career paths, the top five are business administration and management, psychology, nursing, biology and education. The study defined and measured the major popularity among college students hence filling the contextual gap. This research is justified on the basis that there is need to make agriculture a popular subject for students progress into training as future career.

Reports from United Nations Development Program **(**UNDP, 2014), indicates that 85 per cent of the global youth found in developing countries and are unemployed and yet agriculture is a major source of employment and a source of food. Many countries have not been able to convince youths to train for agriculture careers Tiraieyari and Krauss (2018). This scenario is similar to the one in Kenya and hence the study sought for factors progression in agriculture career.

2.9.4 Progression in agriculture subject in Kenya and developing countries

Calvin J. & Peens S.L. (2013) study on barriers and solutions to recruitment strategies

of students into post-secondary Agricultural Education programs indicated that to improve the link between extension and education, designing community-based courses that be attached to ongoing research and extension and activities should be practiced to bond agricultural education training with extension. The study was conducted to support the process of training in Sub-Saharan Africa but current study was done to support progression in agriculture career in Kenya hence filling the contextual and conceptual gaps.

Everlyn C. G. (2015) study on Trends in students' Enrolments in Agricultural degree programs in Zimbabwe, found out that, the major features demotivating students to study agriculture were poor employment prospects, negative perceptions of agriculture jobs, lack of better opportunities, remunerations and better working conditions and same entry requirements as other programs. The results displayed an upward trend in overall students' enrolment and a decline in student in agriculture programs in tertiary institutions. This is not the situation in Kenya since the enrolment in tertiary institutions is generally lower than selection in secondary schools.

A study by Precious & Abubakar (2019) on factors of choice of career in agriculture among youths and steps in designing a more effective policy mechanism for economic growth in Nigeria, found out that Subjective norms and perceived behaviour control agricultural intentions and careers in agriculture among the youths in Nigeria.

This study in Nigeria was backed with the theory of planned behaviour and was empirically tested while the current study was based on the theory of pairing in fashion in Kenya.

Mat Taib *et al* (2017) study on factors influencing a prospective career: The moderating role of career prospects, indicated that social status has significant influence on the students' attitude towards careers in agricultural sectors and that,

career prospects moderated the relationship between social status and students' attitudes towards agricultural career. The current study also analyzed institutional as well as socio economic factors influencing agriculture career development.

Barau et al. (2016) researched on the willingness to pursue career in agriculture in secondary schools in Sokoto Metropolis, Nigeria and reported that most of the respondents were willing pursue occupational career in agriculture and not professional career. Challenges to pursue career in agriculture included lack of information, poor government commitment and lack of capital. The study was done in Metropolis while the current study was done in Kenya filling the contextual gap. The study also examined the willingness to pursue professional and occupational careers while the current determines factors that motivate learners to progress in agriculture career.

Hothersall, (2019) study on epistemology and social work: Enhancing the integration of theory, practice and research philosophical pragmatism in Europe while the current study used pragmatic philosophy as a standing lens in data collection.

Mwiria (2005) investigated the vocationalisation of secondary education: Kenya Case Study. The report established that the proportion of Kenyan secondary school students majoring in agriculture has dropped. The study majored on secondary school students

Kirimi Doreen Kagendo (2015).The study investigated the influence of choice of agriculture subject among public secondary school students in Kibirichia Division Buuri Sub-County and found that, the percentage of students majoring in agriculture in Buuri Sub-county had increased significantly. The current study was done in Kakamega and Bungoma County in Kenya, hence filling the contextual gap.

Makori (2019) carried out a research on influence of selected factors on choice of agriculture subject among secondary school students in Kisii and Nyamira counties,

Kenya. The study indicated that, methods employed by teachers in teaching of agriculture have an influence on the choice of the subject by students but school finances and gender have no statistical influence on the choice of agriculture. It was also found that parents, teachers and the ministry of education have an influence on the choice of agriculture subject. The study used cross-sectional survey design, simple random sampling and stratified sampling techniques to sample agriculture teachers and students. The present study used correlational and descriptive research design to collect data from respondents. In addition to stratified sampling technique, the study used purposive sampling technique hence filling the methodological gaps.

Business Insider, (2013) indicate that agriculture is not among the most popular major disciplines of study in the United States. Yet, some of its programs are among those with the highest employment rates in the United States, while others are less spectacular.

In West Africa, despite the contribution to economic growth, a decline in skills and labour has been realized since youths are reluctant to enroll for agricultural professions as it is observed in Nigeria (World Bank, 2012).

Jones, Williams, and Gill (2017) conducted a study on human values and agriculture. Agricultural education was not included in the scientific domains; consequently, it was not as esteemed in the workforce as the sciences. These perceptions of agriculture at the time of the study influenced the kids' perceptions, which was backed by their families and teachers. This perception is similar among students in Kenya and hence influencing their progression in agriculture career (World Bank, 2012).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In research, methodology section lay down the design and methods that have been used in the study. According to Creswell &Creswell (2018), qualitative and quantitative are the three research methodologies from which researchers may choose. The methods provide information on the procedures used to collect data, analyse and present the findings. Hence, this section provides the research paradigm, research design, study population, sampling strategy, validity and reliability of data collection instruments, instrument for data collection, piloting, data collection, data analysis, ethical considerations, limitations, delimitations, assumption of the study, data presentation as well as the data analysis matrix.

3.2 Study location

The study was conducted in Bungoma and Kakamega counties of Western Kenya, indicated as Appendix X**.** Western Kenya region is subdivided into four counties which are Busia, Kakamega, Bungoma and Vihiga. Bungoma and Kakamega Counties were preferred for this study due to their large population that has necessitated construction of several variety of learning institutions which offer agriculture education. According to the Independent Electoral and Boundaries Commission (IEBC, website), these Counties cover a total of 8,308.3 Km^2 with a total population of 4,334,282 people (population density of 2,415). The Counties are basically inhabited by Bantus and Nilotes. Bungoma borders Uganda to the west while Kakamega borders Rift Valley to the East. Agriculture is the main economic activity of Bungoma and Kakamega Counties of Kenya. Crops grown include

sugarcane, cotton, groundnuts, coffee, tea, maize and rice. The study concentrated on institutions based in Bungoma and Kakamega Counties. Piloting was done in Vihiga County.

Well known rivers transverse through the counties such as river Nzoia, Isiukhu, Yala and Lusumu that empty their water to the famous Lake Victoria. To an extent, every household in the rural area farms to provide some food to the farm families (Ngetich, 2013) though the food produced is not enough, hence there is need for agriculture

education to enlighten and motivate the youths of the agricultural skills and technologies of the 21st century

3.2.1 Tertiary institutions selected for the study in Kakamega and Bungoma counties

In Bungoma, Kibabii University which lies between latitudes 0:56’99’ N and longitudes 34’55’93’ E. and an urban agricultural training institution was one of the study site. Other agricultural training study locations in the same County were Sang’alo Institute of Science and Technology, Webuye Technical and Vocational College, Musakasa Technical Institute, Bungoma North Technical and Vocational College, Sirisia Technical and Vocational College and Kisiwa Technical Training Institute.

In Kakamega County, Masinde Muliro University of Science and Technology which lies between latitudes 0’59’92’ N and longitudes 34’77’96’ E and an urban agricultural training institution was also a study area. Other agricultural training study locations in Kakamega County included Sigalagala National Polytechnic, Bukura Agricultural College, Shamberere Technical Training Institute, Wanga Technical and Vocational College, Mumias West Technical and Vocational College, Navakholo

Technical and Vocational College, Kongoni Technical and Vocational College and Masinde Muliro Technical Vocational Training.

3.2.2 Schools selected for the Study in Kakamega and Bungoma County

More schools as compared to colleges were chosen to provide data on selection of agriculture subject in secondary schools. Learning agriculture subject during basic level of education is assumed to provide basic skills for farming as well as increased food security in the study area. These may also increase enrolment in agricultural programs at college level and provide opportunity for them to become professionals suitable for available careers in agriculture and education sectors. The researcher selected 80 schools from Bungoma County and 82 schools from Kakamega County by proportionate method to participate in the study. The schools provided data on students' selection in agriculture subject which would help to fill the gap identified by establishing selection trends in agriculture subject and, later determine trends of progression in agriculture career and suggest strategies to promote agricultural career progression among students of Bungoma and Kakamega Counties of Kenya.

3.3 Research paradigm

Philosophy refers to the study of the fundamental nature of knowledge, reality and existence of academic discipline. Social research defines paradigm as the philosophical assumptions or basic beliefs that guide the action and define the world view of research (Lincoln *et al.*, 2011). A research paradigm affects all stages of the research as argued by Mertens, (2015). A paradigm consists of ontology, epistemology and research methodology. Ontology seeks for reality in the intended study, epistemology studies the knowledge that incorporates the validity and methods of acquiring knowledge Research methodology gives the methods that can be used to

give an answer to the raised questions.

The current research is based on Pragmatism paradigm, which finds its philosophical foundation in the historical contributions of the philosophy of pragmatism which embraces plurality of methods. It allows researchers to apply methodological approaches that work best for the particular research problem under investigation. It's associated with mixed methods. It may employ both formal and informal procedures (Creswell &Creswell, 2018).

Pragmatic lens allows researchers to utilize ideas and expertise from practitioners to address research goals and socially useful knowledge (Koenig *et al.,* 2019). A pragmatic model allows for a plurality of views and methods as part of its research plan. A pragmatic lens gives an alternative that can be developed and utilized for this social research (Hothersall, 2019). Pragmatism is a set of ideas that advocates employing what works in a particular situation or problem, based on diverse approaches that value and gather both objective or positivist, and subjective or interpretive, knowledge (Morgan, 2014;). It allows both qualitative and quantitative research techniques, in gathering different points of view within a single research study. As a mixed methods study, both positivism and interpretivism was used in the same study with research instrument containing both closed and open-ended questions. According to (Antwi and Hamza, 2015), subjective paradigm is also known as idealism. It seeks peoples' views on different factors. In this study, it is shown in the way in which the participants are asked, to respond to closed-ended questions, and to give their own views on o pen-ended questions. Variations may be observed in the responses given while truth may also be held in different responses.

Based on the above, the current study borrowed from the pragmatic philosophy to contribute to both the body of the knowledge and practice. Data collection was

achieved by using questionnaires, interview guides, document content and Focus Group discussions. Both primary and secondary data was therefore collected. This was then subjected to descriptive and inferential techniques of data analysis. The research was carried out using mixed methods that involved both quantitative and qualitative that allowed for triangulation. For pragmatists education curriculum should be designed to bring the disciplines together to focus on solving problems in interdisciplinary way, rather than passing down the organized bodies of knowledge to real situations through experimental injury. This prepares students for citizenship, daily living and future career.

3.4 Research design

Research design refers to all the approaches used to bring together study components in a logical manner to address the research problem (McNabb, 2009). Hence the suitable research designs used were correlational and descriptive design as per the specific objectives shown in **Table 3.1**. Correlational research design measure relationships between variables. It was employed to assess the association or relationship that exists between selected factors and selection of agriculture subject as well as progression factors and progression in agriculture career. Descriptive research design is qualitative and quantitative research which allows description of data the way they are.. Survey research is applied on descriptive research involving large sample data obtained through administering questionnaires to a sample of individuals as for the current study. Table 3.1 shows a summary of measurable variables/indicators as per specific objectives of the study.

Table 3. 1: Summary of measurable variables/indicators as per specific objectives.

Specific objectives	Measurable variables/indicators
i. To establish trends in selection of agriculture subject among secondary school students in Kakamega and Bungoma counties, Kenya from 2016 – 2021	• Type of schools (Public, private, national, extra county, county, sub county
ii. To establishthe trends in progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma counties, Kenya from 2016 – 2021	• Types of institutions (University, TVETs) • Gender
iii. To determine the relationship between selected motivation factors and selection of agriculture subject among secondary school students in tertiary institutions of Kakamega and Bungoma counties, Kenya.	• Communication factors (Parents, friends, peers, teachers, instructors, family demands) • Individual factors (Age, gender, academic performance)
iv. To determine the relationship between socio-economic factors and environmental factors in progression of agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.	• Environmental factors (Location of institution, Institutional infrastructures, technology infrastructures). • Socio-economic factors (Parental factors, family size, parental education program).
v. To evaluate the strategies that can be employed to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya.	• Institutional strategies • Government strategies

Source: researcher: (2022).

3.5 Target population

A population includes all individuals about whom the researcher wishes to draw s specific conclusions, (Welman, Kruger & Mitchell, (2012). Therefore, a population refers to all the elements that meet certain criteria for inclusion in a study. The study population from (Two) 2 Counties of Kakamega and Bungoma comprised of 694 University undergraduate students enrolled in agriculture programs, 3855 technical and vocational training students enrolled for agricultural programs, and 7,379 agriculture students from 820 secondary schools in Bungoma and Kakamega Counties as indicated in Table 3.2.

Table 3.2: Target population of Student respondents as at February 2022

Students	**Kakamega**	**Bungoma**	**Total**
Secondary school students	3,338	4,041	7,379
Universities students	468	226	694
TVET students	3023	812	3855
Total	6829	5079	11928

Source: Field data(2022)

The target population 820 secondary schools, 17 Technical and Vocational Training Institutions and 2 universities are indicated in Table 3.3.

Table 3.3: Target population of Institutions in Bungoma and Kakamega Counties as at 2022 February

No	Institutions	Kakamega	Bungoma	Total
1	Secondary Schools	439	381	820
2	Universities	1	1	2
3	TVET colleges	9	8	17
	Total	449	390	839

Source field data (2022)

3.6 Sampling Strategy

One (1) head of department of agriculture in each TVET, one (1) chair of department in each Universities were selected purposively since they are in custody of the needed information for the current study. Students of agriculture programs in tertiary institutions of Kakamega and Bungoma Counties were selected using stratified random sampling method. The stratification was based on year of study, gender and program of study. One (1) County director of TVET from each County and one (1) County Quality Assurance of Standards Officer of education per County were also respondents to this study. Table 3.2 shows the summary of the sampling strategy for respondents and the sample size.

Table 3. 4: Sampling Strategy for Respondents

Description	**Sample Size**		**Sampling design**	**Instruments of data collection**
	Kakamega	**Bungoma**		
Secondary school students	113	136	Purposive	Questionnaires
Director of studies	8	8	Purposive	Interview guide
H.o.D of agriculture of TVET institutions	9	8	Purposive	Interview guide
C.o.D of university	1	1	Purposive	Interview guide
County director of	1	1	Purposive	Interview guide

TVET				
TVET students of agriculture programs	103	28	Stratified random sampling	Questionnaires
University students of agriculture programs	16	8	Stratified random sampling	Questionnaires
County Quality Assurance and Standards Officers of education	1	1	Purposive	Interview guide
Director of studies (10%)	8	8	Purposive	Interview guide
Focus Group Discussion		18	Quota Purposive	FGD Guide
KUCCPS				Document content analysis.

Source: Field data (2022)

Purposive sampling was used to select Bungoma and Kakamega Counties as study area since they have many varieties of learning institutions required to provide needed information for the current study. Tertiary institutions were then selected by Census method since they were few and all could be accessed to participate in the survey. As shown in Table 3.5 Census method of sampling was used to increase the accuracy of the findings of the study.

Table 3. 5: Sampling strategy for Institutions

Institution	**Sample size**		**Sampling method**
	Kakamega	**Bungoma**	
Schools	82	80	Stratified random sampling
TVET	9	8	Census
University	1	1	Census
KUCCPS		1	Purposive

Source: Field data (2022).

Since secondary schools were not the main sampling unit, their sample size was determined basing on Yamane (1967) table 2 of determining sample size for 10% precision level at 95 % confidence level and P=5 shown in Appendix XI, (Yamane, 1967). Tertiary institution students took part in a survey to provide responses to the questionnaire provided by the researcher

From the 439 schools of Kakamega County and 381 schools of Bungoma County, Eighty two (82) secondary schools from Kakamega County and Eighty (80) secondary schools from Bungoma County were proportionately sampled to provide data on selection of agriculture subject for the years 2016 to 2021 from the documented contents. The stratification of interest were the category of school (Type of schools) The two main categories were private and public schools. The stratification according to the level of schools in the Ministry of education were National schools, Extra County schools, County schools, and Sub County schools. National schools were sampled by Census method since they were only two in each County. Census method is a complete enumeration survey where data is collected on each and every unit. The extra County, County and the subcounty schools were sampled by proportionate method. After proportionate calculation for the number of schools to be selected from each strata, random selection was employed. Random selection means each and every school had an equal chance of being selected in the sample. The law of statistical regularity points out that a moderately large number of items chosen from a large group at random poses almost the same features as that of the target population. Census method of sampling was also employed to select Technical and Vocational Education Training colleges that participated in this study. The two public universities were selected by Census method**.** Eight (9) agricultural colleges from Kakamega County and seven (8) agricultural colleges from Bungoma

County were sampled to take part in the research study. These institutions were selected purposively based on availability of agricultural programs offered to students. One (1) public university from Kakamega County and one (1) from Bungoma County for career training in the two Counties.

3.6.1 Sample Size

Stratified random sampling was used to select students from tertiary institutions. Random, or chance sampling, is that in which every unit, or person, in the population has an equal chance of being selected to participate in the survey (Kowalczyk, 2015). According to Gall, Gall & Borg (2007), a sample size is a planned estimate of a suitable number of participants for a given study. The approach, therefore, gave a broad sample of agriculture student, ranging from first year to fourth years, male and female and program of study.

For large populations that are more than 10000, (Cochran, 1972), developed the Equation 1 which yields a representative sample for proportions.

Equation I

$$n_0 = \frac{Z^2 pq}{e^2}$$

$$= \frac{\text{ท}1.96\text{ท}^2(5)(5)}{0.5^2}$$

=385 respondents.

For non-response respondents, the sample was obtained as follow;

Non-response = $\frac{5}{100} \times 385 = 19.25 \approx 19$

Where

$Total\ sample\ size = 385 + 19 = 404$

The sample size for each strata was determined using proportionate stratification approach. With proportionate stratification, the sample size of each stratum is proportionate to the population size of the stratum. Strata sample sizes are determined by the following equation as proposed by Cochron (1972)

$$n_h = \frac{N_h}{N} \times n$$

Where

$n_h = samle\ \ size\ \ for\ strata$
$N = the\ total\ \ population\ size$
$n = the\ total\ \ sample\ size$
$N_h = population\ \ size\ \ for\ \ strata$

$$n_h = \frac{7379}{11928} \times 404 = 249$$
$$n_h = \frac{694}{11928} \times 404 = 24$$
$$n_h = \frac{3855}{11928} \times 404 = 131$$

The sample sizes were summarized in Table 3.6.

Table 3.6: Sample Size of the Student Respondents in Bungoma and Kakamega Counties

Students	Kakamega county	Bungoma county	Total
Secondary school students	113	136	249
Universities students	16	8	24
TVET students	103	28	131
Total	231	173	404

Source: Field data (2022)

3.7 Data Collection

Data collection is the process of gathering information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes (Bhandari, 2021). Both qualitative and quantitative research approaches were used to collect both qualitative and quantitative data of primary and secondary type.

3.7.1 Data collection procedures

After getting the introductory and approval letter to collect data from the directorate of post graduate studies, Masinde Muliro University of Science and Technology ethics office and then from National Commission of Science Technology and Innovation (NACOSTI), actual data collection activity commenced. Data was collected from the selected learning institutions located within Bungoma and Kakamega Counties. The respondents were subjected to various instruments of data collection for them to give their views on the highlighted themes.

Data on selection of students in secondary school agriculture subject was collected concurrently by merging quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. The researcher collected both forms of data at roughly the same time using mailed document content in a three-phase administration process as stated by Creswell & Creswell (2018). The advance-notice letter to all principals of schools was the first mail of the sample, and the second mail-out was the actual survey mail, distributed about one(1) week after the advance-notice letter. The third mail was a follow-up sent to all members of the sample 10 days after the initial document content guide together with a questionnaire for principals to fill and return. Qualitative data was also collected from county quality assurance officers of education using interview guides. Contradictions in the findings were explained or further probed as a follow-up.

Explanatory sequential was employed to collect data on progression of students in agriculture career which is the second objective of the study. The researcher first collected quantitative data and analyzed it. The initial quantitative data results were explained later by the qualitative phase. The data collection procedure was therefore in two phases with quantitative sampling in the first phase where data on progression in agriculture was collected from Kenya Universities and Colleges Central Placement Services (KUCCPS) and was followed by purposeful sampling in the follow up qualitative phase. The follow-up qualitative respondent included students of agriculture in tertiary institution, of Bungoma and Kakamega counties, county quality assurance officers of education, chair of departments in tertiary institutions and heads of departments of universities and county director of TVETS from the two counties.

Tertiary institutions provided the accessible population that was by then available on Campus for the researcher to sample the respondents required to respond to the

questions in the questionnaires. Interviews guides, questionnaires, document content analysis and Focus Group Discussion were used to collect primary data from the respondents. Less structured research instruments were used to gather data. More in depth information was obtained by asking open-ended questions as posited by (Mugenda, 2008). Qualitative research is defined as an inquiry process of understanding social problems by building a complete picture formed by words, reporting detailed views of key informants given in natural environment (Mugenda, 2008). Quantitative research was carried out to provide numerical data.

3.7.2 Data collection instruments

Data was collected using interview guides, Questionnaires, document content analysis and focus group discussion.

Interviews are used to gather experiential narrative information that may serve as a resource for developing a richer and deeper understanding of a human phenomenon (Munhall, 2001). According to (Lincoln & Guba, 1985) interview is critical for the study for it provides a better understanding of research respondents' opinion and experience. Gubrium and Holstein (2001), individual Interview is a face-to-face communication between the interviewer and the respondents. Individual interview was done by asking questions. Head of departments of Technical and Vocational Education Training colleges and chair of departments of agriculture in selected universities were interviewed to get their views on selected themes of study. They provided data of enrolment to help establish trends of enrolment in agricultural programs. They also gave their opinion on motivation of students' progression in agricultural Programs, and suggested strategies for agricultural career progression among students. County Quality assurance and standards officers and County director

of Technical and Vocational Education Training from the two counties also provided their opinion on level of enrolment in agriculture, and suggested strategies for agricultural career progression among students

.

Questionnaires were used in this study to get information from Technical and Vocational Education Training students of agriculture and University students of agriculture as well as the secondary school students. Questionnaires were used to collect data because respondents were literate and could therefore read and respond to items in the questionnaire adequately and at their own convenient time. Gratton and Jones (2010) define a 'questionnaire' as standardized set of questions that is used to learn about the subject. This increased their response rate (Mugenda, 2008). The questionnaire had four sections. That is, demographic characteristics of respondents, motivational factors for choice of agriculture programs, challenges and strategies for agriculture career progression among students in selected learning institutions.

The questionnaire contained sections aimed at collecting both quantitative and qualitative data. In addition to 'yes' and 'no' responses, the quantitative data relied on the participants' frequency (f) of response to the given questions. A Likert-type scale (with positive responses such as 'strongly agree' and 'agree', and with negative responses such as 'disagree' and 'strongly disagree as well as 'not sure) was used to allow the respondents to react to some statements related to objectives of study. They also contained questions on challenges faced by respondents as open-ended questions.

Gall, Gall & Borg (2007) define documents and records as defined by Lincoln and Guba stating that documents are written communications that are prepared for personal use but, when written for official communications, they are called records. Henning (2004) claim that the analysis of documents provides information that fills

the gaps that will be left by the interviews during qualitative research. In the current study records of selection were used to provide information on enrolment of students in agriculture subject and agricultural programs in natural situations.

Document content guides were used to collect data on enrollment. The selected institutions provided documented evidences on enrolment of students in agricultural programs since the year 2016 to 2021 in their natural situations for analysis to provide answers to objective one and two of the current study. From schools, the researcher sought to know the number of students who selected and sat for Kenya Certificate of Secondary Education agriculture subject from the year 2016 to 2021. This informed the researcher of the total number of students who selected agriculture at secondary school level for the years in question in Bungoma and Kakamega County. The tertiary institutions provided documented contents on the enrolment of students in the departments of agriculture for years 2016 to 2021.They also provided information of the current accessible population that were sampled to participate in a survey to provide data on the factors motivating student's selection and progression in agriculture career in tertiary institutions of Kenya. Using enrolment of students in agriculture documents, the County Quality assurance and standards officers of education and County director of Technical and Vocational Education Training from the two counties also provided their opinion on level of enrolment in agriculture, and suggested strategies for agricultural career progression among students.

According to Nyumba, Wilson, Derrick and Mukherjee (2018) a focus group discussion is conducted among group representatives of the community under study and desegregated by gender.

Focus group discussion guides were used to collect data from a focus group comprising of students from tertiary institutions. Focus group discussion became

necessary for the researcher to listen to the opinion of students on available challenges and strategies for progression in agriculture career. Basing on the challenges to progression and strategies for progression in agriculture career stated by agriculture students and Key informants in tertiary institutions, one representative student from each TVET and one from each University were identified, and selected for the discussion. In total eighteen (18) students of agriculture attended and participated in the discussion. They prioritized the strategies for progression in agricultural career basing on the available challenges. The instruments for data collection as well as the appendix are indicated in a summary Table 3.7.

Table 3. 7: Summary of Study Population Units, Sampling Methods, Sample Size, Data Collection Instruments and the Appendices

Study Population Unit	Sampling size	Data collection Instrument	Appendix
Students of Agriculture	404	Questionnaire	III
Heads of department of TVET	17	Informative guide	VI
Chair of department of Universities	2	Informant guide	VI
Director of studies (10%) of the number of schools.	16	Informant guide	XIV
Director of TVET	2		IX

County quality assurance officer of Education	2	Informant guide	VIII
Focus group discussion	18	FGD Guide	XV
KUCCPS	1	Document content	XVI
Secondary Schools	162	Document content Guide	V
TVET Institutions	17	Document content Guide	III
Universities	2		

Source: Field data 2023

3.8 Quality Assurance of Research Instruments

Quality was ensured in both the quantitative and qualitative research methods by checking for validity, reliability of the quantitative data, and the trustworthiness of qualitative data.

3.8.1 Validity of the Research Instruments

Gall, Gall & Borg (2007) defines validity as the extent to which a research instrument measures what is intended to be measure. Scholars concur that data are valid if they provide a true picture of what is being studied and therefore a valid statement should reflect social reality. Creswell & Creswell, (2018) informs that, there are four types of validity, namely criterion, face, content, and construct validity. Content validity which examines whether a measurement instrument or assessment tool adequately covers all the relevant aspects of the research question or concept being measured and this was ensured by was ensured by supervisors who read through the instruments to ensure

content for each objective is captured. Construct validity which examines whether a measurement instrument or assessment tool accurately measures the concept it is intended to measure was ensured by supervisors who read though this thesis to ensure content was up to standards. Supervisors who are experts in the area of study ensured face validity by proper and appropriate formatting of the information in the thesis. Criterion validity. Criterion validity which refers to the extent to which a measurement tool accurately predicts or correlates with an established criterion of the type of study was ensured by relevant supervisors who understand the area of study. To affirm the degree of content validity of the instruments used in the current study, a pilot study was done. A pilot study is a small-scale testing of the procedures that the researcher intends to use in the main study, which might lead to a revision of the procedures, depending on what is revealed (Creswell & Creswell, 2018).

3.8.2 Pilot Study

In the current research pilot study was conducted to ensure quality on the instruments of data collection. It was done to pre-test the questionnaires and the interview guides. According to Luethi and Udy (2017) a pilot study is "the testing of the research instrument and to assess the reliability, and take corrective action before conducting the whole research". It is important to conduct a pilot study to test the quality of the instrument before the actual data collection process begins. In this research the participants who were approached for the purpose of pilot testing were University and College students, heads of departments of Technical and Vocational Education and training colleges, Chair of departments of Universities and the sub County and County Quality assurance and standards officials towards identifying any challenges that could be encountered when collecting data for the whole research.

Permission was sought from the schools of interest prior to pilot testing. The

interview guide was tested to check on its ability to gather quality and reliable data prior to the actual data collection (Bryman, 2016). The questionnaires and interview guide were tested with the above stated respondents to check for credibility, transferability, and confirmability of data that the instrument would produce for the study. The results were then used to correct the questionnaires. The pilot study for this research was conducted in selected learning institutions of Vihiga and Busia Counties.

3.8.3. Reliability of the Research Instruments

Reliability refers to the degree to which an instrument measures the same response. The result is reliable if the persons' score on the same test twice is similar (Fernandez-Marcos *et.al,* 2018). Cronbach reliability coefficient was used for this study to establish the internal consistency of the responses. Cronbach alpha coefficient of internal consistency is an estimate of reliability. It ranges in values from 0-1. Values exceeding 0.7 (Taber, 2018, Orodho and Kombo 2002) is reliable as shown in Table 3.4 and the instrument can therefore be used in research study.

Table 3. 8: Summary of Cronbach's Alpha Values.

Cronbach's alpha	Internal consistency
a >= 0.9	Excellent
0.8<= a >=0.9	Good
0.7<= a >=0.8	Acceptable
0.6<= a >=0.7	Questionable
0.5<= a >=0.6	Poor
a < 0.5	Unacceptable

Source: Orodho and Kombo (2002)

During pilot study the split- half method was used and a reliability coefficient value of 0.75 was attained which was then considered reliable for this current study. Result of the pilot study were used to improve the instruments.

3.8.4 Trustworthiness of the Qualitative Data

Trustworthiness refers to research quality in a qualitative research study. Quality in research is based on criteria, consisting of credibility, transferability, dependability, and confirmability, of the data collection instruments employed. (Shenton, 2004). Quality reflects trust and confidence in the findings and conclusions in research.

3.8.4.1 Credibility

According to McMillan & Schumacher (2010), credibility is the extent to which research findings are judged to be accurate, reasonable and believable. Denzin and Lincoln (2000) stress that the use of multi-methods, and of simple triangulation as a strategy that adds value to the research findings. Since validity is mutually dependent on reliability, both are used to achieve credible research data in relation to the study objectives (Shenton, 2004). Therefore, some of the relevant questions in the questionnaire were repeated in the interviews, and the data collected was used in triangulation during discussion of the results.

3.8.4.2 Transferability

Transferability is the extent to which research outcomes can be applied to similar contexts (Leedy & Omrod, 2014). The above was achieved through proper and accurate description of the research site as the context within which research took place.

3.8.4.3 Dependability

According to Joppe (2000), dependability refers to the degree to which results are consistent and reflecting the views of participants. The quality was achieved through the proper selection of participants. The participants consisting of the education sector staff both for Tertiary institutions and secondary schools were selected to provide data in this research. They responded to the questions in questionnaires, interview guides and document content analysis as requested.

3.8.4.4 Confirmability

Confirmability refers to the investigator's concern for objectivity in terms of obtaining data that are not biased, and are relevant to the study objectives (Shenton, 2004). In the current study, the above was achieved through supervisors' supervision of data collection process as well as checking of data collected. This aimed at reducing researcher bias and prejudice.

3.9 Data Analysis Procedures.

Collected data was edited, coded and entered into the data sheets ready for processing using Statistical Package for Social Sciences version 25. In addition, selected schools were stratified into National, Extra County, County, and sub-County, mixed school, boarding, day, hey provided data of enrolment of students in agriculture that was then analyzed to give the trend of how students select agriculture. The output of the data resulted into trends of enrolment in different learning institutions and at different levels. It was also processed to show enrolment and progression in agriculture career of students in Kenya.

3.9.1 Quantitative Data Analysis

All quantitative data collected was subjected to descriptive statistics first before being

analyzed inferentially. Descriptive statistics entailed analysis of frequencies, means and standard deviation. A correlation, trend analysis and regression were performed. Analysis of variance was carried out to establish whether there were significant differences in enrolment between Kakamega and Bungoma counties and across the types of institutions. Factor analysis was carried out to Data on factors that motivate students to choose agriculture was also subjected to ANOVA to determine the effect of motivational factors on choice of agricultural programs. Regression analysis was carried out to establish the influence of strategies and motivational factor on enrolment and progression.

3.9.1.1 Chi-square

Chi-square is a statistical test used to determine the significance of the relationship between two categorical variables. It is used to determine whether there is a significant difference between observed frequency and expected frequency for each category. The observed frequency is calculated based on a null hypothesis that assumes no significant association between the two variables being compared.

The test statistic of calculated with chi-square is compared to a critical value (usually 0.05 or 0.01) observed from chi-square table. If the test statistics exceed the critical value we reject the null hypothesis.

3.9.1.2 ANOVA

ANOVA stand for analysis of variance. It is used to compare means between two or more groups by analyzing the variances within and between these groups. There are different types of ANOVA such as one way ANOVA and two ways ANOVA. In the current study it was used to compare means of students who selected agriculture

within counties and between counties in Objective one (1).

3.9.1.3 T-test statistics

The t-test statistics is used to compare the means of two of data to test whether there is a significant difference between the means of the two sets of data. There are two types of test, independence test and two paired test. The test computes the values which are then compared from the values observed from the table as used in Objective 2(Two).

3.9.2 Qualitative Data Analysis

Qualitative data were collected by interviewing the chair of departments of the selected learning institutions while some was obtained from college students. Less structured research instruments were used to gather data. Data was then analyzed using Spearman Rank Order and factor analysis. Findings were useful since they were more in depth and obtained by asking open-ended questions as posited by (Denscombe, 2008). Qualitative research is defined as an inquiry process of understanding social problems by building a complex picture, formed by words and reporting detailed views of key informants (Mugenda, 2008), hence creating a greater latitude. The information collected and recorded was analyzed through stages such as recording of voices, then data cleaning, listening to information and tallying with specific themes, then relating the identified patterns and drawing inferences from patterns observed as used in Objective 5(Five).

3.9.3 Factor Analysis.

Factor Analysis (Principal Component Analysis) (PCA) is the process of computing the principal components and using them to perform a change of basis on the data,

sometimes using only the first few principal components and ignoring the rest. According to Gall *et al.,* (2007), it is one of the most frequently used techniques in multivariate research, since many variables in a single research project are tested. It therefore provides a basis for reducing all these variables to a few factors by combing factors that are highly related with each other. Each set of variables that are combined forms a factor. It was used to search for variables that are all correlated with each other. The first cluster of variables represents the variables that are most intercorrelated. This correlation coefficient is sometimes known as the loading of the measure on the factors (Gall *et al.,* (2007). PCA is a good method to use when, a researcher wants to reduce the number of variables, but aren't able to identify variables to completely remove from consideration, a researcher wants to ensure that variables are independent of one another or when a researcher is comfortable making the independent variables less interpretable.

Techniques used to achieve dimensionality include feature elimination and feature extraction. In feature extraction, independent variables consisting of a combination of each of the "old" independent variables if created in a specific way and order these new variables by how well they predict our dependent variables. Dimensionality reduction come into play we keep as many of the new independent variables as we want, but we drop the "least important ones." Because we ordered the new variables by how well they predict our dependent variable, we know which variable is the most important and least important

Principal component analysis as a technique for feature extraction combines all input variables in a specific way, then drop the "least important" variables while still retaining the most valuable parts of all of the variables as used in objective 6(six) and 7(seven).

The steps to perform PCA are the following*:*

1. Standardize the data.
2. Compute the covariance matrix of the features from the dataset.
3. Perform eigen decomposition on the covariance matrix.
4. Order the eigenvectors in decreasing order based on the magnitude of their corresponding eigenvalues.

PCA works because as a method it brings together

1. A measure of how each variable is associated with one another. (Covariance matrix.)
2. The directions in which data are dispersed. (Eigenvectors.)
3. The relative importance of these different directions. (Eigenvalues.)

It combines predictors and allows to drop the eigenvectors that are relatively unimportant. (Gall & Borg (2007).

3.10 Ethical Considerations

Research ethics are ethical guidelines of how scientific research needs to be conducted and disseminated (Thomas, 2020). These principles are widely accepted by research assistants and students (Masoga, 2013). The procedures followed are outlined below**:**

3.10.1 Permission to Research.

Permissions and approvals are used to verify the cooperation between an organization and the researcher (Rober, 2009). The researcher sought permission letter from Masinde Muliro University of Science and Technology postgraduate. The research proposal was approved by the Masinde Muliro University of Science and Technology research board and Ethics Committee. The research permit was then obtained from

the National Commission for Science, Technology and Innovations (NACOSTI).The researcher also obtained permission to carry out research in the two Counties, from the county Commissioner, County director of Education and the County Governor as shown in Appendix XII and Appendix VIII Permission to carry out research was also sought from the managers of selected learning institutions.

Participants were informed of their roles and the purpose of study. The participant were informed that the study would not benefit them directly, but it would help the ministry of education policy makers to come up with strategies for progress.

3.10.2 Informed Consent

Before making a decision whether to participate in a study (Bazeley, 2009), one needs to get informed consent. (Is a process in which a person learns key facts about a clinical trial, including potential risks and benefits,). The principle of informed consent was verbally explained to the participants. Principles of research process and its purposes were explained to the participants. The researcher discussed the purpose of the study with all participants. Participants were told that they were free to withdraw from the study at any time during the process if they wished to do so.

3.10.3 Privacy, Confidentiality and Anonymity

Confidentiality refers to a condition in which the researcher knows the identity of a research subject but takes steps to protect that identity (Jary & Julia, 2000). Anonymity was considered (Ritchie *et al.,* 2013). Anonymity was achieved by ensuring that names of participants are not written on the questionnaires and interview guides and responses given were not shared by the researcher to other parties. The individual names of the schools and participants under study were not mentioned in the document; only pseudonyms or code names were used (Schulze, 2002). Selected schools were; National schools, extra county school, County school and sub-county. Participants were named principal of School, Agriculture Head of Department and chair of Departments, County and sub county Quality assurance and the director Technical and Vocational training. Both data was subjected to strict confidentiality.

3.10.4 Voluntary Participation.

Participation was voluntary and free from coercion. Participants were also made aware of essential information them to understand the information as well as educating them of their rights to withdraw from participation. This consent was

written for participants to read and sign to show willingness to take part in the study. Voluntary participation refers to a human research subject's exercise of free will in deciding whether to participate in a research activity (Lang, 2000). The participation were informed that they were volunteers and had a right to withdraw from the study at any time if they wished to do so. In addition, I ascertained that all the sampled participants gave their expressed voluntary willingness to participate in the study.

3.10.5 Psychological and Emotional Constraints

Mayring, (2014) posited that psychological constraint are the techniques of moderating possible user actions through the way people perceive their environment. Emotional Constraints are cultural barrier that blocks effective communication (Saldana, 2016). This was done successfully by assuring that the researcher does not ask the respondents personal related and emotional questions during interviews.

3.11 Elimination of Bias

Bias result from poor methodological processes, (Simundić, 2013) is not necessary in research. Use of appropriate research designs while remaining objective throughout the study are some of the ways which were used by the researcher to avoid bias. Sampling procedures and methods as well as data analysis were keenly carried out to prevent bias by choosing appropriate models. The respondents were treated equally and with care.

3.15 Data analysis Techniques and Presentation.

The final stage of research is manipulation of the data collected so that conclusions can be drawn from the same as stated by Gall *et al*., (2007). Data processing involved follow-up interviews on contradictions observed. Closed form interview responses was done by calculating the percentage of respondents who indicated each response

option for the item in question. The analysis of responses to open-forms of questions, required development of category systems Gall *et al.*, (2007).

Descriptive statistics analysis was determined by frequencies, variance, percentages, means and standard deviation and were presented in form of tables and graphs

The study tested the questions and hypothesis using diagnostic tests, factor analysis and trend analysis. Factor analysis was used to identify the clusters of variables that are correlated to each other by combining variables that are highly correlated with each other. Analysis Matrix

In research, data triangulation increases validity and trustworthy of the data collected and analyzed. According to (Creswell& Creswell, 2018), triangulation is a technique used to facilitate data validity by cross verifying from more than two sources. Table 3.9 Shows the methods of data analysis used during data triangulation.

Table 3. 9 Methods of Analysis for the Study in Bungoma and Kakamega Counties

Specific objectives	Independent variables	Dependent variable	Statistical Tool
To establish trends in selectin of agriculture subject among secondary school students in Kakamega and Bungoma counties, Kenya from 2016-2021	selection in agriculture subject.	Agriculture selection in secondary school	Trend Analysis
To determine the trends in progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma counties, Kenya from 2016-2021.	Trends in progression in agriculture career.	Enrolment in agriculture in Tertiary institution	Trend Analysis
To determine the relationship between selected motivation factors and selection of agriculture subject among secondary school students in tertiary institutions of Kakamega and Bungoma counties, Kenya.	Selected motivation factors.	Selection of agriculture subject	Factor Analysis
To determine the relationship between socio-economic and institutional in agriculture career among students in tertiary institutions of Kakamega and Bungoma counties, Kenya.	Selected progression factors	Progression in agriculture career	Factor Analysis
To evaluate the strategies that can be employed to mitigate challenges facing students in selection and progression of Kenya from 2016-2021.	Challenges to selection and progression.	Strategies for selection and progression.	Descriptive statistics

Source:

CHAPTER FOUR

FINDINGS ON TRENDS IN SELECTION OF AGRICULTURE SUBJECT AMONG SECONDARY SCHOOL STUDENTS IN BUNGOMA AND KAKAMEGA COUNTIES, KENYA.

4.1 Introduction

Trend analysis gives the direction of change over some period of time and determine if there is any significant upward change, downward change or a stable trend. In this analysis the value of a variable may increase or decrease with respect to time. Trend analysis can judge whether the variable value may increase or decrease in a particular time or period.

In line with the first objective of the study of establishing the selection trends in agriculture subject among students in secondary schools of Kakamega and Bungoma counties, the chapter displays a discussion on the response rate for schools, type of schools sampled for the current study from each county, distribution of agriculture students per county, distribution of agriculture students per type of the school, trend analysis of agriculture students selection, selection trends by level of school, selection comparisons by type of schools and county of schools, selection by county of schools, selection by Public and Private school, selection by gender of schools, selection in boarding, day and boarding and day schools.

4.2 Response rate from sampled school in Bungoma and Kakamega counties.

Response rate refers to the proportion of individuals who participate in the study out of the total number of individuals invited. Low response rate leads to biased result which can limit the generalizing of the research, interfere with the sample and hence may not be representative of the population or lead to over or under representation.

A high response rate increases the generalization and with it, the validity of the research. This research examined the response rate based on the counties under study to provide information on the percentage that responded to the sampled data in the respective schools.

A total of 249 (113 from Kakamega County and 136 from Bungoma county) questionnaires were issued to respondents. A total of 170 (68%) questionnaires were received back. Of these 8 (3.2%) were dropped out of the tally for having significant gaps in response for variable items. Therefore, a total of 162 issued questionnaire guides, total response rate and percentage response from schools were as indicated in Table 4.1.

Table 4.1: Response Rate for Sampled Schools from Bungoma and Kakamega Counties

Unit of observation	Data collection method	Target population	Sample size	Usable response (Issued)	% effective response rate (Returned)
Kakamega county secondary school students	Questionnaires	3338	113	77	68
Bungoma county secondary school students	Questionnaires	4041	136	85	63

Source: Field data (2022).

Table 4.1 shows that Eighty five (85) questionnaires were issued to sampled schools in Bungoma County and seventy seven (77) questionnaires were issued to sampled schools in Kakamega County. It therefore implies that, there was 65% response rate of returned questionnaires to the current study. According to Kothari, (1993) over 50% return rate was acceptable return for survey study such as this one.

Schools selected to take part in the survey were positive, willing and cooperated with the call for providing selection data. According to the Quality Assurance Officer of Education, most schools returned questionnaires to the education office within a period of four to five days.

4.3 Basic agricultural information on sampled schools for the current study in Bungoma and Kakamega counties.

Some of the factors that influence agriculture selection in schools are; teachers' availability, access to facilities like the size of the farm available in the school, access to tools needed for learning agriculture and agricultural machinery and size of the classroom. The study collected information on schools in order to have a general knowledge about agricultural requirements in terms of teachers' available, farm size, and classroom size and farm machinery adequacy. School principals were therefore asked to indicate the adequacy of this infrastructure on a scale of 1-4 ranging from very inadequate to very adequate as presented in Table 4.2.

Table 4. 2 Basic Agricultural Information on Selected Schools for the Study

Infrastructure for Agriculture Selection	VI	I	A	VA
Teachers	82(50.6)	52(32.1)	24(14.8)	4(2.5)
Farm Size	101(62.3)	30(18.5)	19(11.7)	12(7.4)
Classroom Size	98(60.5)	51(31.5)	8(4.9)	5(3.1)
Farm Machinery	101(62.3)	47(29.0)	11(6.8)	3(1.9)

Source: Field Survey Data (2022)

Before actual analysis, basic information about schools as per principals of schools revealed that the number of teachers in most schools, 82(50.6%) was very inadequate. It also emerged that farm size according to most schools, 101(62.3%) was very inadequate, and were also affirmed by 51(31.5%) of the teachers who revealed that farm size in their schools was inadequate. The findings also shows that classroom size, 98(60.5%) as well as farm machinery, 101(62.3%) were very inadequate according to the majority of the school principals.

4.4 Selection of agriculture subject in sampled schools in Bungoma and Kakamega counties from 2016-2021

The study sought to understand the number of students who selected agriculture subject across the years 2016-2021. The aim of the study in this section is to analyze the factors that contribute to their effectiveness or ineffectiveness in selection. The focus of the study was to establish selection trends in agriculture subject across the years of study.

4.4.1 Distribution of agriculture students in sampled schools in Bungoma and Kakamega counties from 2016-2021

The distributions of Agriculture student population refer to the way the population I s spread out or clustered together in their respective regions. This distribution is of great importance since it helps in the selection of the sampling method that gives the representativeness and accuracy of the sample. The aim of this section is to display the trends in selection of agriculture subject among secondary school students in Bungoma and Kakamega Counties.

The study established the number of students who selected agriculture subject in sampled schools located in Bungoma and Kakamega counties of Kenya between the years 2016 to 2021. The number of students was important since it determined the dynamics of the expected numbers of agriculture students in the post-secondary education in the subsequent years. This was indicated in Table 4.3.

Table 4. 3: Selection of Agriculture Subject in Bungoma and Kakamega Counties

Counties	2016	2017	2018	2019	2020	2021
Total selection of KCSE Agriculture Subject in Bungoma County.	2,195	2,549	3,108	3,445	3,988	4,041
Total selection of KCSE Agriculture Subject in Kakamega County.	2,196	2,308	2,564	2,548	2,944	3,338

Source: Field Survey data (2022)

From the data in Table 4.3, it can be observed that total selection of agriculture students in sampled schools in Kakamega County was higher than in Bungoma County in the year 2016 only. However, selection in the subsequent years was high in Bungoma as compared to Kakamega County. For instance, in 2017, it was 2,549 against 2,308, in 2018, it was 3,108, in 2019, it was 3,445 against 2,548, in 2020 it was 3,988 against 2,944 and finally in 2021, it was 4,041 in Bungoma County against 3,338 in Kakamega County respectively. A graphical presentation of selection trends is presented in Figure 4.1.

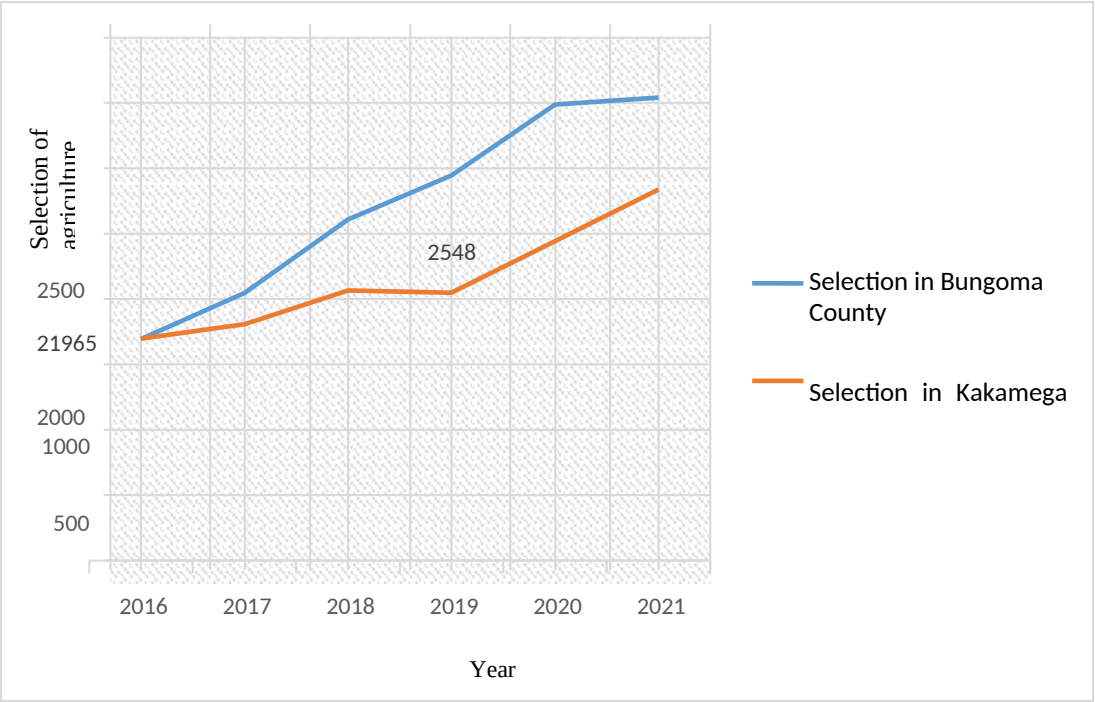

Figure 4. 1: Selection in Agriculture Subject in Kakamega and Bungoma Counties, Kenya

Source: Field Survey Data (2022).

From graphical presentation in Figure 4.1 there is a positive trend in selection, showing increasing in both counties. However, Bungoma County selection is higher than Kakamega County. The overall percentage increase in selection between 2016 and 2021 for Bungoma County was 84.10% as compared to that of Kakamega County which was 52.0%. This implies that selection in Bungoma County is higher than that in Kakamega County. According to County Quality Assurance and Standards Officer Bungoma County, students like agriculture subject and attributed to the excellent grades that students post in the KCSE results every year. According to the officer, most students get high grades in agriculture. The officer added that academic achievement with grades that allow students to enroll for tertiary programs is key to students. The subject is therefore considered to be a booster in academic performance

to most secondary students. According to Mogaka et al. (2019) the number of secondary students selecting agriculture increased steadily in Kisii and Nyamira counties in the years 2012-2016. To some students, selection in agriculture subject is a signal of a career identity in agricultural sector.

4.4.2 Difference in Selection in Bungoma and Kakamega County across 2016-2021

The difference in trends always indicates the variations or discrepancy of the underlying data between the values being observed. This can be due to the fact that the underlying factors effecting the sets of data between the two counties are distinct and requires further investigation. A change in trend over time also indicates a shift in underlying dynamics.

First, the trends in selection in Kakamega county and Bungoma county was represented graphically to show the general trend. From Table 4.3, the differences in selection in Kakamega county and Bungoma county was computed by taking the seemingly higher Selection County (Bungoma) minus the low Selection County (Kakamega) (Total selection in Bungoma –Total selection in Kakamega) for each year. The findings are presented in Table 4.4.

Table 4. 4: Difference in Selection in Bungoma and Kakamega Counties across the years

Years	2016	2017	2018	2019	2020	2021
Difference in Selection	- 1	241	544	897	1,044	703

Source: Field data (2022)

From the results in Table 4.4, there was a difference of (-1) negative one, between Bungoma and Kakamega County in 2016, in which Kakamega had the highest selection (by one student) against Bungoma county. However, the subsequent years had highest selection recorded in Bungoma County. In this case, the highest difference (1,044) in selection between Bungoma and Kakamega county occurred in year 2020, followed by (897) in 2019, (703) in 2021 and (544) in 2018. A graphical presentation of the trend in differences in selection across the years is shown in Figure 4.2.

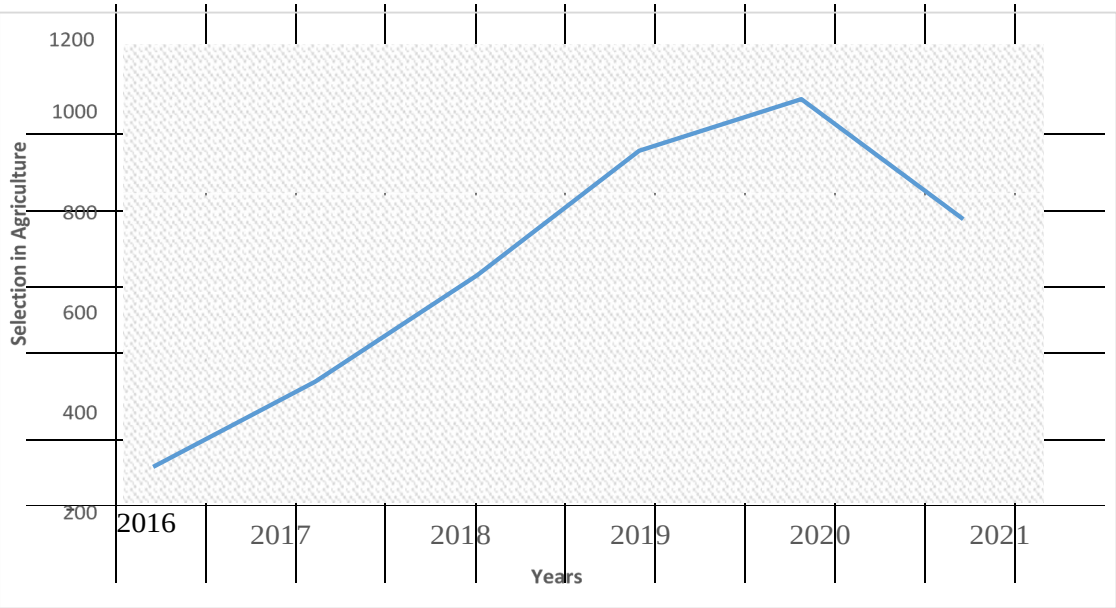

Figure 4.2: Selection Differences between Kakamega and Bungoma Counties across the Years

Source: Field data(2022)

From the results in Figure 4.2, it emerged that there was a positive trend from 2017 to 2020 and thereafter a decline from 2020 to 2021. This implies that there has been a growing gap in selection between Kakamega and Bungoma counties with Bungoma

County consistently recording higher selection than Kakamega County. Contrary to the reports from Busia county education office (2023), which states that the number of students enrolled for the agriculture subject in Busia County slightly decreased from 1500 in 2016 to 1450 in 2017). The county recorded 1400 and 1500 students enrolled for the subject in the year 2019 and 2020 respectively. According to the report, Busia County had 1800 students enrolling for the agriculture subject in 2021. (Busia County Education office, 2023). This means that while selection in agriculture subject increases in the current study area, the selection gap exists too, though the overall trend is positive. The county quality assurance officers indicated sensitizing students on importance of the subjects selected for study is vital and this is observed in the discrepancy existing in the figures of selection recoded.

4.4.3 Trends in selection rate in agriculture subject in Bungoma and Kakamega counties from 2016-2021

In order to understand the dynamics of the trend of selection rate in Kakamega county and Bungoma county, the study determined the growth and decline rates. The rates can be used to perform a comparative on selection trend in Kakamega county and Bungoma county, project the growth, identify areas of opportunity in future selection and help in making informed decisions.

To analyze the growth or decline in selection in Bungoma and Kakamega counties, selection in preceding year was subtracted from selection in the subsequent year in order to get the difference. The result was divided by the preceding year and multiplied by 100%. The findings are shown in Table 4.5.

Table 4. 5: Growth Trends on Selection in Agriculture in Bungoma and Kakamega Counties

Growth/Decline in Selection	2017	2018	2019	2020	2021
Growth/decline in Bungoma County Selection	16.1	21.9	10.8	15.8	1.3
Growth/decline in Kakamega County Selection	5.1	11.1	- 0.6	15.5	13.4

Source: Field data (2022)

From Table 4.5, it emerged that Bungoma County recorded a growth on selection throughout. However, this growth varied across the years with some adjacent years that is 2017 and 2018 registering higher growth while some, (2018 to 2019) as well as (2020 to 2021) registering reduced growth from previous year. For Kakamega county, the findings shows that there was a positive growth from the year 2017 to 2018 and a negative growth from year 2020 to year 2021. However, there was a decline of (0.6%) in selection from year 2018 to year 2019. Further graphical analysis of this trend is presented in Figure 4.3

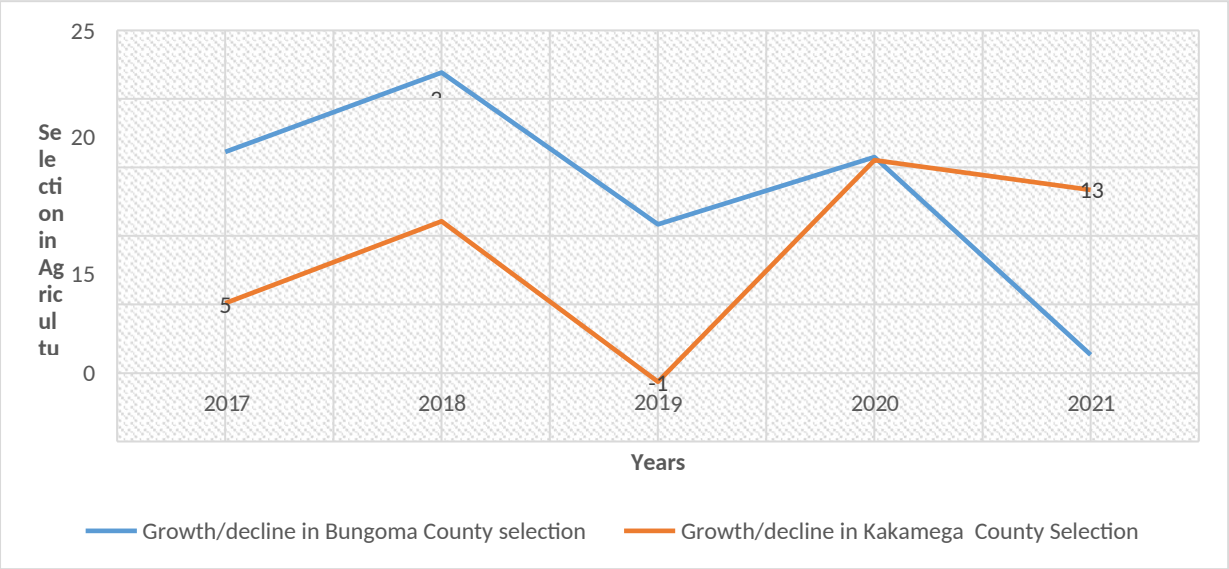

Figure 4. 3: Growth Trends in Selection Comparison between Kakamega and Bungoma Counties from 2016-2021

Source: field data 2022

From Figure 4.3, it emerged that the trend in growth and decline on selection in Bungoma as well as Kakamega counties is not constant, that is, it fluctuates. However, there was a positive trend in both counties from 2017 to 2018 and a negative trend from 2018 to 2019. Both rose from 2019 to 2021 and recorded an almost same percentage in growth that is 15.8% in Bungoma County and 15.5% in Kakamega County. Later on in 2021, both trends declined. It can be noted that in all the years, there is a higher percentage growth in selection of agriculture subject in Bungoma county as Kakamega county. According to the County Quality Assurance and Standards Officer, agriculture is popular among students and most of the students who select the subject work hard for the highest grades as compared to the rest of the subjects. He insisted that, it is a booster subject that most parents and students would

like to associate with for better mean grades in KCSE. These results agree with findings observed in Kisii and Nyamira counties. According to Mogaka *et al.* (2019) the number of secondary students enrolling in agriculture subject increased steadily in Kisii and Nyamira Counties in the years 2012-2016. Although the statistics also revealed a significant fall in agriculture selection of 30.8% between 2012 and 2013, the researchers noted a large increase in agriculture selection of students of 60.7% between 2013 and 2016.The percentage growth and decline in the number of students in agriculture was attributed to the general yearly increase in the number of students who register for national examinations and the previous results in the subjects of interest. From the analysis of the data and findings, agriculture is a subject that attracts many students with various reasons and motivational factors anticipated by students. It is therefore important for the educators and parents to assist students to attain these goals.

4.5 *Objective one: To establish trends in selection of agriculture subject among secondary school students in Kakamega and Bungoma Counties, Kenya from 2016 – 2021*

In line with the first objective of the study of establishing the selection trends in agriculture subject of students in secondary schools of Kakamega and Bungoma counties, the researcher sought to establish trend analysis in agriculture subject.

The study sought to answer following research questions;

Question one: What are the trends in selection of agriculture subject in secondary schools of Kakamega and Bungoma Counties, Kenya from 2016 – 2021?

A descriptive analysis of the of selection in agriculture subject in different categories of schools was performed to show the mean number and standard deviation as well as

the mean intervals at 95% confidence intervals (lower and upper mean limits that cannot be exceeded)). The results are shown in Table 4.6.

Table 4.6: Descriptive statistics for Selection in Agriculture Subject in Categories of Schools in Bungoma and Kakamega Counties

						95% Confidence Interval for Mean	
		N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
2016 agriculture selection.	national school	4	20.7500	2.62996	1.31498	16.5652	24.9348
	extra county school	7	43.1429	15.68894	5.92986	28.6330	57.6527
	county school	24	42.7500	20.77676	4.24104	33.9767	51.5233
	sub county school	120	23.9417	16.54497	1.51034	20.9510	26.9323
	private school	7	15.2857	6.94537	2.62510	8.8623	21.7091
	Total	162	27.1049	18.36571	1.44295	24.2554	29.9545
2017 agriculture selection	national school	4	24.5000	6.13732	3.06866	14.7342	34.2658
	extra county school	7	45.5714	23.82476	9.00491	23.5372	67.6057
	county school	24	48.9583	21.12382	4.31188	40.0385	57.8781
	sub county school	120	26.2000	15.83507	1.44554	23.3377	29.0623
	private school	7	17.2857	6.44759	2.43696	11.3227	23.2487
	Total	162	29.9815	18.84539	1.48063	27.0575	32.9054
	national school	4	30.0000	16.83251	8.41625	3.2157	56.7843

2018 agriculture selection	extra county school	7	53.8571	26.21977	9.91014	29.6079	78.1064
	county school	24	53.2917	23.16196	4.72792	43.5112	63.0721
	sub county school	120	31.3917	20.17457	1.84168	27.7450	35.0384
	private school	7	18.4286	7.99702	3.02259	11.0326	25.8246
	Total	162	35.0123	22.32398	1.75394	31.5487	38.4760
2019 agriculture selection	national school	4	29.0000	15.59915	7.79957	4.1783	53.8217
	extra county school	7	55.4286	34.18019	12.91890	23.8172	87.0400
	county school	24	54.2500	26.01546	5.31038	43.2646	65.2354
	sub county school	120	33.9417	20.96788	1.91410	30.1516	37.7318
	private school	7	16.2857	1.70434	.64418	14.7095	17.8620
	Total	162	36.9938	23.58321	1.85287	33.3348	40.6529
2020 agriculture selection	national school	4	32.5000	19.84103	9.92052	.9285	64.0715
	extra county school	7	66.0000	49.77282	18.81236	19.9678	112.0322
	county school	24	62.8750	34.78169	7.09978	48.1880	77.5620
	sub county school	120	39.2917	22.00206	2.00850	35.3146	43.2687
	private school	7	16.5714	3.45722	1.30671	13.3740	19.7688
	Total	162	42.7901	27.49420	2.16015	38.5242	47.0560
2021 agriculture selection	national school	4	28.0000	16.16581	8.08290	2.2766	53.7234
	extra county school	7	55.1429	43.16800	16.31597	15.2191	95.0666

	county	24	64.7917	34.05364	6.95117	50.4121	79.1713
	school sub county	120	43.2083	26.74621	2.44158	38.3738	48.0429
	school private school	7	20.1429	7.94625	3.00340	12.7938	27.4919
	Total	162	45.5494	29.49704	2.31751	40.9728	50.1260

Source: Field data (2022)

Table 4.6 shows descriptive statistics including the mean, standard deviation and 95% confidence for the agriculture subject selection mean for different years of the five categories of schools as well as the total combined mean. It is important to note that schools with smaller standard deviations have fewer students selecting agriculture and smaller variation in the mean. The higher the standard deviations the higher the variation in the mean of students taking agriculture and the more the students. These figures are useful in describing the data, for instance in the year 2016, the total combined mean for agriculture selection for the five categories of school was 27.1049 with a standard deviation of 18.36571 with a standard error of 1.44295. These values lies within a range of 24.2554 to 29.9545. Implying that the reliable mean of agriculture students remained within this range. The highest standard deviation (20.77676) was observed among the county schools meaning that more county school students selected agriculture subject in the year 2016 hence are the cause in variation.

In the year 2017, the total combined mean for agriculture selection for the five categories of school was 29.9815 with a standard deviation of 18.84539 with a standard error of 1.48063. These values lie within a range of 27.0575 to 32.9054. Implying that the mean of agriculture students remained within this range. The highest standard deviation (23.82476) was observed among the extra county schools

meaning that more extra county school students selected agriculture subject in the year 2017 hence are the cause in variation.

In the year 2018, the total combined mean for agriculture selection for the five categories of school was 35.0123 with a standard deviation of 22.32398 with a standard error of 1.75394. These values lie within a range of 31.5487 to 38.4760. Implying that the mean number of agriculture students remained in this range. The highest standard deviation (26.21977) was observed among the extra county schools meaning that more extra county school students selected agriculture subject in the year 2018 hence are the cause in variation.

In the year 2019, the total combined mean for agriculture selection for the five categories of schools were 36.9938 with a standard deviation of 23.58321 with a standard error of 1.85287. These values lie within a range of 33.3348 to 40.6529. Implying that the reliable mean number of agriculture students remained in this range. The highest standard deviation (34.18019) was observed among the extra county schools meaning that more extra county school students selected agriculture subject in the year 2019 hence are the cause in variation.

In the year 2020, the total combined mean for agriculture selection for the five categories of school was 42.7901 with a standard deviation of 27.49420 with a standard error of 2.16015. These values lies within a range of 38.5242 to 47.0560. Implying that the mean number of agriculture students remained in this range. The highest standard deviation (49.77282) was observed among the extra county schools meaning that more extra county school students selected agriculture subject in the year 2020 hence are the cause in variation.

In the year 2021, the total combined mean for agriculture selection for the five categories of school was 45.5494 with a standard deviation of 29. 49704 with a standard error of 2.31751. These values lie within a range of 40.9728 to 501260. Implying that the mean number of agriculture students remained in this range. The highest standard deviation (43.16800) was observed among the extra county schools meaning that more extra county school students selected agriculture subject in the year 2020 hence are the cause in variation from other categories of schools.

In general, analysis show that, private schools have the lowest mean of selection of agriculture students and therefore causing low combined mean in all the years of study. The combined mean of agriculture subject selection in the five categories of schools has generally been increasing from the year 2016 to 2021, that is in the year 2016 it was 27.1049, in 2017 it was29.9815, in 2018 it was 35.0123, in 2019 it was 36.9938, in 2020 it was 42.7901 and in 2021 the combine mean was 45.5494. More students selected agriculture in the year 2021 as observed from the standard variation value.

According to the director of studies, students in public schools do not fear agriculture practical, instead they take it as an opportunity to learn more skills and new technologies that will help them to secure food for their families. He added that students in private schools are influenced by their wealthy social status not to select agriculture subject leading to a low combined mean of agriculture students in private schools. They believe that agriculture is a poor man’s job due to its’ dirty farm practical and therefore, a few private schools students choose to learn agriculture for the purpose of good performance and not for career progression. Though there might be declining selection in agriculture in some schools, the general selection in public

schools is higher and increasing, These findings are in line with Obayelu and Fadele, (2019), who revealed that a higher percentage of students from public schools (51.4 %) were willing to study agriculture where as 48.6 % of those from private schools were willing to do so and the study attributed this to availability of career awareness programs given to students in public schools. According to Ostovic et al. (2017), students view agriculture as consisting primarily of farming and ranching and have a negative outlook on pursuing a career in agriculture. According to studies examining the reasons why students do not select agriculture (SRUC, 2016), societies and youth from both low-income and high-income nations view agriculture as having unattractive career path, poor income, or low pay relative to other industries. Egbule E. O., (2020) research also revealed that few students chose agriculture for better performance in applied subject as a course of study while another study by Barau, *et, al*., (2016) examined the willingness to pursue career in agriculture in secondary schools in Nigeria and also found that most of the respondents were willing to pursue career in agriculture, mostly occupational career. It is generally known that youths from private schools are children of the rich and cannot be occupied by farming since the job is dirty. Their parents can neither support the same and therefore, they do not select agriculture for career progression but for better academic grades. This leads to low selection experienced in private schools. Data provided show that there are few national schools in the study location as well as fewer students selecting agriculture.

Significant differences in agriculture subject selection in the five categories of schools was performed on the means of agriculture selection using homogeneity of variances. Results were recorded in Table 4.7.

Table 4.7: Test of Homogeneity in Means of Agriculture Selection from 2016-2021

	Levene Statistic	df1	df2	Sig.
2016 agriculture selection	3.035	4	157	.019
2017 agriculture selection	4.096	4	157	.003
2018 agriculture selection	1.844	4	157	.123
2019 agriculture selection	4.658	4	157	.001
2020 agriculture selection	8.748	4	157	.000
2021 agriculture selection	4.364	4	157	.002

Source: Field data (2022)

A requirement for the ANOVA test is that the variances of each comparison group are equal. We have tested this using the Levene statistic. In Levene test we look for the significance value that is greater than .05. Table 4.7 shows that there is a difference (p-value < 0.05) between variances of the agriculture selection except for the year 2018 (p-value >0.05) which implies that the variances are approximately equal.

To show whether there is statistically significant difference between the means of 5 different categories of school, ANOVA Table 4.8 was used.

Table 4.8: ANOVA for Statistically Significant Difference between the Means of 5 Categories of School

				Sum of Squares	df	Mean Square	F	Sig.
2016 agriculture selection	Between Groups	(Combined)		10015.089	4	2503.772	8.875	.000
		Linear Term	Unweighted	526.990	1	526.990	1.868	.174
			Weighted	4400.563	1	4400.563	15.599	.000
			Deviation	5614.526	3	1871.509	6.634	.000
	Within Groups			44290.127	157	282.103		
	Total			54305.216	161			
2017 agriculture selection	Between Groups	(Combined)		13308.643	4	3327.161	11.907	.000
		Linear Term	Unweighted	663.199	1	663.199	2.373	.125
			Weighted	5808.660	1	5808.660	20.788	.000
			Deviation	7499.983	3	2499.994	8.947	.000
	Within Groups			43870.301	157	279.429		
	Total			57178.944	161			
2018 agriculture selection	Between Groups	(Combined)		14103.854	4	3525.963	8.371	.000
		Linear Term	Unweighted	1207.533	1	1207.533	2.867	.092
			Weighted	6882.403	1	6882.403	16.339	.000

			Deviation	7221.451	3	2407.150	5.715	.001
	Within Groups			66132.121	157	421.224		
	Total			80235.975	161			
2019 agriculture	Between	(Combined)		13900.759	4	3475.190	7.213	.000
selection	Groups	Linear	Unweighted	1277.742	1	1277.742	2.652	.105
		Term	Weighted	6223.784	1	6223.784	12.918	.000
			Deviation	7676.975	3	2558.992	5.311	.002
	Within Groups			75642.235	157	481.798		
	Total			89542.994	161			
2020 agriculture	Between	(Combined)		20156.733	4	5039.183	7.791	.000
selection	Groups	Linear	Unweighted	1991.105	1	1991.105	3.078	.081
		Term	Weighted	8993.468	1	8993.468	13.904	.000
			Deviation	11163.265	3	3721.088	5.753	.001
	Within Groups			101548.131	157	646.803		
	Total			121704.864	161			
2021 agriculture	Between	(Combined)		15938.641	4	3984.660	5.039	.001
enrolment	Groups	Linear	Unweighted	443.776	1	443.776	.561	.455
		Term	Weighted	3797.185	1	3797.185	4.802	.030
			Deviation	12141.455	3	4047.152	5.118	.002
	Within Groups			124143.464	157	790.723		
	Total			140082.105	161			

Sourc: Field data (2023)

From the table, in 2016, F (4, 157) is 2503.772 and p-value < 0.05 is significant. This implies that the five categories of schools differ significantly in agriculture selection. The linear term shows no significance (p-value > 0.05). This means decreasing mean in the five different categories of schools. Therefore, we conclude that in the year 2016 there was no significantly difference in all the five categories of school. Similar results can be observed for the consequent years with exemption of F-value which differs.

A post Hoc multiple comparisons test for yearly agriculture selection between types of schools was performed to show the mean differences and the results recorded in Table 4.9. To know whether there are statistically significant differences between the agriculture selection mean of 5 different categories of school, the Multiple Comparisons in Table 4.9, shows which years differed from each other.

Table 4.9: Post Hoc Test for Yearly Statistically Significant differences between agriculture selection in 5 categories of schools

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) type of school	(J) type of school	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
2016 agriculture selection	national school	extra county school	-22.39286	10.52740	.214	-51.4457	6.6600
		county school	-22.00000	9.07083	.114	-47.0331	3.0331
		sub county school	-3.19167	8.53678	.996	-26.7509	20.3676
		private school	5.46429	10.52740	.985	-23.5886	34.5171
	extra county school	national school	22.39286	10.52740	.214	-6.6600	51.4457
		county school	.39286	7.21489	1.000	-19.5184	20.3041
		sub county school	19.20119*	6.53079	.031	1.1779	37.2245
		private school	27.85714*	8.97779	.019	3.0808	52.6335
	county school	national school	22.00000	9.07083	.114	-3.0331	47.0331
		extra county school	-.39286	7.21489	1.000	-20.3041	19.5184
		sub county school	18.80833*	3.75568	.000	8.4436	29.1730
		private school	27.46429*	7.21489	.002	7.5531	47.3755
	sub county school	national school	3.19167	8.53678	.996	-20.3676	26.7509
		extra county school	-19.20119*	6.53079	.031	-37.2245	-1.1779
		county school	-18.80833*	3.75568	.000	-29.1730	-8.4436

		private school	8.65595	6.53079	.676	-9.3673	26.6792
	private school	national school	-5.46429	10.52740	.985	-34.5171	23.5886
		extra county school	-27.85714*	8.97779	.019	-52.6335	-3.0808
		county school	-27.46429*	7.21489	.002	-47.3755	-7.5531
		sub county school	-8.65595	6.53079	.676	-26.6792	9.3673
2017 agriculture selection	national school	extra county school	-21.07143	10.47738	.265	-49.9863	7.8434
		county school	-24.45833	9.02774	.057	-49.3725	.4559
		sub county school	-1.70000	8.49622	1.000	-25.1473	21.7473
		private school	7.21429	10.47738	.959	-21.7006	36.1291
	extra county school	national school	21.07143	10.47738	.265	-7.8434	49.9863
		county school	-3.38690	7.18062	.990	-23.2035	16.4297
		sub county school	19.37143*	6.49977	.027	1.4338	37.3091
		private school	28.28571*	8.93514	.016	3.6271	52.9444
	county school	national school	24.45833	9.02774	.057	-.4559	49.3725
		extra county school	3.38690	7.18062	.990	-16.4297	23.2035
		sub county school	22.75833*	3.73784	.000	12.4429	33.0738
		private school	31.67262*	7.18062	.000	11.8560	51.4892
	sub county school	national school	1.70000	8.49622	1.000	-21.7473	25.1473
		extra county school	-19.37143*	6.49977	.027	-37.3091	-1.4338
		county school	-22.75833*	3.73784	.000	-33.0738	-12.4429
		private school	8.91429	6.49977	.647	-9.0234	26.8519

	private school	national school	-7.21429	10.47738	.959	-36.1291	21.7006
		extra county school	-28.28571*	8.93514	.016	-52.9444	-3.6271
		county school	-31.67262*	7.18062	.000	-51.4892	-11.8560
		sub county school	-8.91429	6.49977	.647	-26.8519	9.0234
2018 agriculture enrolment	national school	extra county school	-23.85714	12.86393	.346	-59.3582	11.6439
		county school	-23.29167	11.08408	.225	-53.8808	7.2975
		sub county school	-1.39167	10.43150	1.000	-30.1799	27.3965
		private school	11.57143	12.86393	.897	-23.9297	47.0725
	extra county school	national school	23.85714	12.86393	.346	-11.6439	59.3582
		county school	.56548	8.81622	1.000	-23.7650	24.8959
		sub county school	22.46548*	7.98029	.043	.4420	44.4890
		private school	35.42857*	10.97040	.013	5.1531	65.7040
	county school	national school	23.29167	11.08408	.225	-7.2975	53.8808
		extra county school	-.56548	8.81622	1.000	-24.8959	23.7650
		sub county school	21.90000*	4.58925	.000	9.2349	34.5651
		private school	34.86310*	8.81622	.001	10.5326	59.1936
	sub county school	national school	1.39167	10.43150	1.000	-27.3965	30.1799
		extra county school	-22.46548*	7.98029	.043	-44.4890	-.4420
		county school	-21.90000*	4.58925	.000	-34.5651	-9.2349
		private school	12.96310	7.98029	.484	-9.0604	34.9866
	private school	national school	-11.57143	12.86393	.897	-47.0725	23.9297

		extra county school	-35.42857*	10.97040	.013	-65.7040	-5.1531
		county school	-34.86310*	8.81622	.001	-59.1936	-10.5326
		sub county school	-12.96310	7.98029	.484	-34.9866	9.0604
2019 agriculture selection	national school	extra county school	-26.42857	13.75782	.311	-64.3966	11.5394
		county school	-25.25000	11.85430	.213	-57.9648	7.4648
		sub county school	-4.94167	11.15636	.992	-35.7303	25.8470
		private school	12.71429	13.75782	.887	-25.2537	50.6823
	extra county school	national school	26.42857	13.75782	.311	-11.5394	64.3966
		county school	1.17857	9.42885	1.000	-24.8426	27.1997
		sub county school	21.48690	8.53482	.092	-2.0670	45.0408
		private school	39.14286*	11.73271	.009	6.7636	71.5221
	county school	national school	25.25000	11.85430	.213	-7.4648	57.9648
		extra county school	-1.17857	9.42885	1.000	-27.1997	24.8426
		sub county school	20.30833*	4.90814	.001	6.7631	33.8535
		private school	37.96429*	9.42885	.001	11.9431	63.9854
	sub county school	national school	4.94167	11.15636	.992	-25.8470	35.7303
		extra county school	-21.48690	8.53482	.092	-45.0408	2.0670
		county school	-20.30833*	4.90814	.001	-33.8535	-6.7631
		private school	17.65595	8.53482	.239	-5.8979	41.2098
	private school	national school	-12.71429	13.75782	.887	-50.6823	25.2537
		extra county school	-39.14286*	11.73271	.009	-71.5221	-6.7636

		county school	-37.96429*	9.42885	.001	-63.9854	-11.9431
		sub county school	-17.65595	8.53482	.239	-41.2098	5.8979
2020 agriculture selection	national school	extra county school	-33.50000	15.94056	.225	-77.4918	10.4918
		county school	-30.37500	13.73503	.181	-68.2801	7.5301
		sub county school	-6.79167	12.92636	.985	-42.4651	28.8817
		private school	15.92857	15.94056	.855	-28.0632	59.9203
	extra county school	national school	33.50000	15.94056	.225	-10.4918	77.4918
		county school	3.12500	10.92477	.999	-27.0245	33.2745
		sub county school	26.70833	9.88891	.058	-.5825	53.9991
		private school	49.42857*	13.59415	.003	11.9123	86.9449
	county school	national school	30.37500	13.73503	.181	-7.5301	68.2801
		extra county school	-3.12500	10.92477	.999	-33.2745	27.0245
		sub county school	23.58333*	5.68684	.001	7.8891	39.2775
		private school	46.30357*	10.92477	.000	16.1541	76.4531
	sub county school	national school	6.79167	12.92636	.985	-28.8817	42.4651
		extra county school	-26.70833	9.88891	.058	-53.9991	.5825
		county school	-23.58333*	5.68684	.001	-39.2775	-7.8891
		private school	22.72024	9.88891	.151	-4.5706	50.0110
	private school	national school	-15.92857	15.94056	.855	-59.9203	28.0632
		extra county school	-49.42857*	13.59415	.003	-86.9449	-11.9123
		county school	-46.30357*	10.92477	.000	-76.4531	-16.1541

		sub county school	-22.72024	9.88891	.151	-50.0110	4.5706
2021 agriculture selection	national school	extra county school	-27.14286	17.62501	.538	-75.7833	21.4976
		county school	-36.79167	15.18642	.115	-78.7022	5.1189
		sub county school	-15.20833	14.29231	.825	-54.6514	24.2347
		private school	7.85714	17.62501	.992	-40.7833	56.4976
	extra county school	national school	27.14286	17.62501	.538	-21.4976	75.7833
		county school	-9.64881	12.07920	.931	-42.9843	23.6866
		sub county school	11.93452	10.93388	.811	-18.2401	42.1092
		private school	35.00000	15.03066	.141	-6.4807	76.4807
	county school	national school	36.79167	15.18642	.115	-5.1189	78.7022
		extra county school	9.64881	12.07920	.931	-23.6866	42.9843
		sub county school	21.58333*	6.28778	.007	4.2307	38.9360
		private school	44.64881*	12.07920	.003	11.3134	77.9843
	sub county school	national school	15.20833	14.29231	.825	-24.2347	54.6514
		extra county school	-11.93452	10.93388	.811	-42.1092	18.2401
		county school	-21.58333*	6.28778	.007	-38.9360	-4.2307
		private school	23.06548	10.93388	.221	-7.1092	53.2401
	private school	national school	-7.85714	17.62501	.992	-56.4976	40.7833
		extra county school	-35.00000	15.03066	.141	-76.4807	6.4807
		county school	-44.64881*	12.07920	.003	-77.9843	-11.3134
		sub county school	-23.06548	10.93388	.221	-53.2401	7.1092

*. The mean difference is significant at the 0.05 level.

Source: Field data(2022).

The Tukey post hoc test is generally the preferred test for conducting post hoc tests. From the results, there are statistically significant differences between the years of agriculture selection. Multiple comparison table shows which year differed in agriculture selection for the 5 different categories of schools, that is where there is (*) can be interpreted as the one causing the mean difference between the two selected mean which is significant. For instance in 2016, there was significant difference between agriculture selection in extra county schools with sub-county and private schools. The variation or difference between extra county and sub-county selection was caused by more students selecting agriculture while few students selected agriculture in private schools. Data provided show that, subcounty schools are more and most of the sub county school students select agriculture since they do not have many options of technical subjects to choose from. Students who enroll for education in subcounty schools are rural or community children who have also been exposed to farming and hence are most likely to select agriculture.

According to the Quality Assurance Officers, Sub county schools do not offer many optional applied and technical subjects and therefore apart from business studies, most students are left with agriculture subject to take so as to fulfil the education policy requirement gap in subject selection. Students who fear the mathematical concepts in Business studies opt for agriculture subject. According to him, the introduction of agricultural TVETs in the Sub counties made students to realize opportunities to register for agricultural course in tertiary institution. They therefore selected agriculture with intensions to start a journey to career development in agriculture sector. The current findings do not agree with that for Makori *et al.* (2019) that

intended to determine the number of form four students in Kisii and Nyamira counties that study agriculture and found that national and extra county schools have significantly higher selection rates than schools on the county and sub-county levels. Students admitted in sub county schools are in most cases from humble backgrounds. Such children can carry out and manual work which is considered dirty to other students.

Omojowo *et al.,* (2015) study had similar reports that students are prepared to take agriculture science as a study because it is easy to handle and pass during the final examinations than the other technical and applied subjects. However, many do not want to pursue agriculture as a career. In both public and private schools, students register for KCSE agriculture Subject. Barau, *et. al*., (2016) examined the willingness to pursue career in agriculture in secondary schools in Sokoto Metropolis Nigeria and found that most of the students were willing to pursue career in agriculture. The willingness to carry out agricultural activities can be observed from the increasing selection of students in agriculture subject in all types of schools under study.

Marcia's identity status theory as cited by Sitt (2016) posits that, two important processes take place as adolescents are forming their identity. The first process is exploration or crisis process in which adolescents are exploring with different components of identity including occupation. They then commit to a chosen identity. The status theory further explained that youth with an achieved status explore an aspect of identity and make commitment to it as cited by Sitt, (2016). Students who selected agriculture at secondary school and registered for agriculture program in tertiary institutions have an achieved agricultural status. Their journey started with exploring agriculture subject at form one in secondary school and selecting

agriculture as an applied subject for Kenya Certificate of Secondary Education and, they thereafter made a commitment by registering to progress in training for agriculture career in tertiary institutions. Since the current study sought to understand trends in selection and progression in agriculture career among students of tertiary institutions it is also important to understand that developing a strong identity stimulates direction that shapes the other stages (McLeod, 2018).Once students select agriculture subject, it is assumed that they will automatically progress into agriculture career by choosing agriculture programs at tertiary level of education. Kenya as country is not fully food secure and it aims at achieving food security for its nations.

This can only be realized if its population is directly involved in food production. According to Pelco & Ball (2018), awareness of occupational identity of a population is helpful to the Ministry of agriculture who are involved in the policies and career development of youths. In the current 8, 4, 4 Syllabus, secondary school students are exposed to agriculture content and practical activities before selection of the subject, hence they explore the subject without any commitment for two years before subject selection. Once they select agriculture, they make a commitment and they should be encouraged to stick to it. The Competency Based Curriculum allows learners to explore agricultural activities from a tender age when they are still in primary school allowing a longer period of time to learn skills and technologies needed in agricultural production. They are therefore expected to develop better skills needed to support agriculture sector.

. Porfeli and Lee (2012) suggested that educating students of the existing workforce and preparing them with knowledge and skills while still young is necessary because identity stimulates career progression among youths, while according to (Praskova, Creed, & Hood, 2015) it's an indicator for the sense of purpose to progression in

agriculture career. Career education is therefore a need among the students especially to those intending to select subjects.

It is important for the youths to realize the value of the subjects taught in class so that they plan to put the ideas into practice while at home. It is a fact that youths are in the midst of discovering career possibilities and roles to which they will commit (Xu & Lee, 2019).

Ongang'a (2016) contend that subjects of study in secondary schools are chosen, especially so in emerging countries. When students start Form Three in Kenya, the Ministry of Education (MOE) mandates them to enroll for a minimum of seven and a maximum of nine subjects. Given the vital importance that agriculture plays in Kenya's economy, understanding the factors that have led to this rising trend is essential. Across Bungoma Kakamega county students register for agriculture subject every year and the trend keep on increasing. The majority of research conducted in this field indicate a worldwide decline in agricultural program selection. This study sought to establish the selection trends in agriculture subject students in secondary schools and revealed that agriculture subject selection at KCSE in Bungoma County was higher than Kakamega County across the years except 2016, although the selection had a positive trend for both counties. Selection of agriculture subject in secondary school is important. This is because, having educational opportunities in secondary school have an impact on students' career choices (Mberia & Midigo, 2018). As a result, one's career path can be understood as the actualization of one's occupational self-concept, which is often shaped by both internal and external sources of input (Kimberly, Eleanor, & Sean, 2016).

CHAPTER FIVE

FINDINDS ON PROGRESSION TRENDS IN AGRICULTURE CAREER AMONG STUDENTS IN TERTIARY INSTITUTIONS OF BUNGOMA AND KAKAMEGA COUNTIES, KENYA FROM 2016 – 2021.

5.1: Introduction

The findings in this chapter are in line with objective two of the study which sought to establish the trends in progression in agriculture career among agriculture subject students from secondary schools of Kakamega and Bungoma counties of Kenya to agricultural programs in tertiary institutions. The chapter presents a discussion on the response rate for respondents. Comparison of progression trends of students in Universities and TVETS per county and across Bungoma and Kakamega Counties.

5.2 Progression in agriculture career in Kakamega County

Students who selected agriculture subject in secondary school and proceeded agricultural Colleges to study agriculture programs were operationalized to have progressed in agriculture career. Data on enrolment in agriculture subject in Kakamega County was obtained as indicated in Table 5.1. Further breakdown of data was done to show agriculture students' progression in terms of frequency and Percentages and later a progression ratio was computed.

Table 5. 1: Progression in Agriculture Career in Kakamega County

Year	Agric Progression Kakamega	inKakamega Progression	Percentage Progression in Kakamega County
2016	11,784	313	
2017	12,874	105	0.9
2018	14,114	332	2.6
2019	14,901	342	2.4
2020	16,001	466	3.1
2021	17,155	491	3.1

Source: KUCCPS data retrieved (2022)

Table 5.1 shows that there were few students who progressed in agricultural programs as compared to those that sat for KCSE exams in Kakamega County. From the findings, it emerged that there were only 0.9% of students who progressed from 2016 to 2017 in agriculture career, 2.6% progressed from 2017 to 2018, 2.4% progressed from 2018 to 2019, 3.1% progressed from 2019 to 2020 and 3.1%progressed from 2020 to 2021. A researcher argues that, youth with an achieved status have explored an aspect of identity and have committed to it (Sitt, 2016). Another researcher affirms that developing a strong identity develops a sense of direction that shapes the other stages (McLeod, 2018). It is expected that, once students select agriculture subject, it's assumed that they will automatically progress into agriculture career by choosing agriculture programs at tertiary level of education.

Decades of year's research posit that, well-developed career identity leads to more self-awareness while poorly developed career identity tends to lead to confusion and

less awareness of self in regards to others and the world (Marcia, 1980). According to the Quality Assurance and Standards officer of education, some students who select agriculture subject at secondary school drop agriculture and select other programs at tertiary institutions. This is an indication of poor career development process and the products are incompetent as it regards to job performance. This scenario leads to confusion and less self-awareness as it regards the developed professionals.

5.3 Trends in yearly progression of agriculture career in Kakamega county.

Further trend of the growth or decline in placement was also established. The computation was important because it displayed the progression behavior of students across the years of study and the findings presented as shown in Figure 5.1.

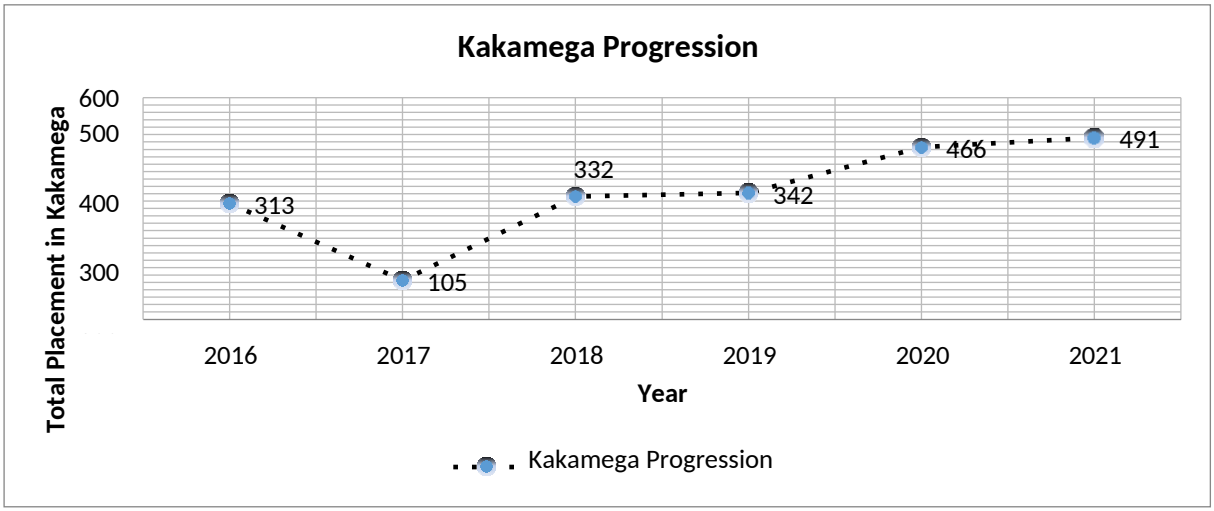

Figure 5.1: Trends in yearly Progression in agriculture career in Kakamega County

Source: KUCCPS data retrieved (2022)

From Figure 5.1, it is clear that there was a high placement of students to pursue agricultural programs in 2016, which declined in 2017 to 105 students only. However, from 2017 to 2021, there was an increase of students such that in 2018, they increased to 332, and 342 in 2019, 466 in 2020 and 491 in 2021. The overall progress io

indicated an increase in percentage placement to tertiary institutions from 2016 to 2021. There was therefore an increase of 56.8% from 2016 to 2021.This is positive Progression.

Further data breakdown was computed to distinguish between the numbers of students in universities and those who progressed to TVET institutions from agriculture students in Kakamega County across the years. The findings are shown in Table 5.2. The analysis was important because it informed the researcher of the county tertiary institutions to which most agriculture students are placed, implying that they contribute more to progression in agriculture in the county.

Table 5. 2: Kakamega County Progression to TVET and Universities

Year Enrolled	Kakamega Progression	Universities	National TVETs	% Universities	% TVET
2016	313(15.3)	234(74,8)	79(25.2)	74.8	25.2
2017	105(5.1)	12(11.4)	93(88.6)	11.4	88.6
2018	332(16.2)	85(25.6)	247(74.4)	25.6	74.4
2019	342(16.7)	133(38.9)	209(61.1)	38.9	61.1
2020	466(22.7)	122(26.2)	344(73.8)	26.2	73.8
2021	491(24.0)	208 (42.4)	283(57.6)	42.4	57.6
Total	2049(100.0)	794	1255		

Source: KUCCPS data (2022)

From the Table 5.2, the number of students who progressed to universities, 234(74.8%) in the year 2016 was higher than those who progressed to TVETS, 79(25.2%). However, those who progressed to TVETS, 93(88.6%) in 2017 were more than those in universities 12(11.4%). They were 247(74.4%) in TVET as compared to

85(25.6%) in universities in 2018, 209(61.1%) TVETS in 2019 compared to 133(38.9%) for universities, 344(73.8%) for TVETS verses 122(26.2%) for universities in 2020 and finally 283(57.6%) TVETS verses 208(42.4%) for those in universities. In general, the number of students who progressed to the TVET institutions across the years was higher than those who progressed to the universities. The total number of students who progressed to tertiary institutions in Kakamega County between 2016 and 2021 were 2049. Between 2016 and 2021, the highest number, 491(24.0%) was encountered in 2021 while the least 105(5.1%), was in the year 2017. The total number of students who progressed to the universities for the six years was 794 out of which, the highest progression to universities 208(26.2) was encountered in 2021 while the least 12(1.5) was encountered in the year 2017. For TVET progression, the total number of students who have progressed to TVET institutions for the last six years were 1255 out of which the highest progression 344(27.4) was encountered in the year 2020 while the least 79(6.3) was encountered in the year 2016.This indicates a general increment in progression of agriculture students. The implication is that there is a positive progression in agriculture subject in both Universities and TVETS.

Further analysis on progression trends universities and TVET for Kakamega County Students was carried out across the six years as indicated in Figure 5.2.

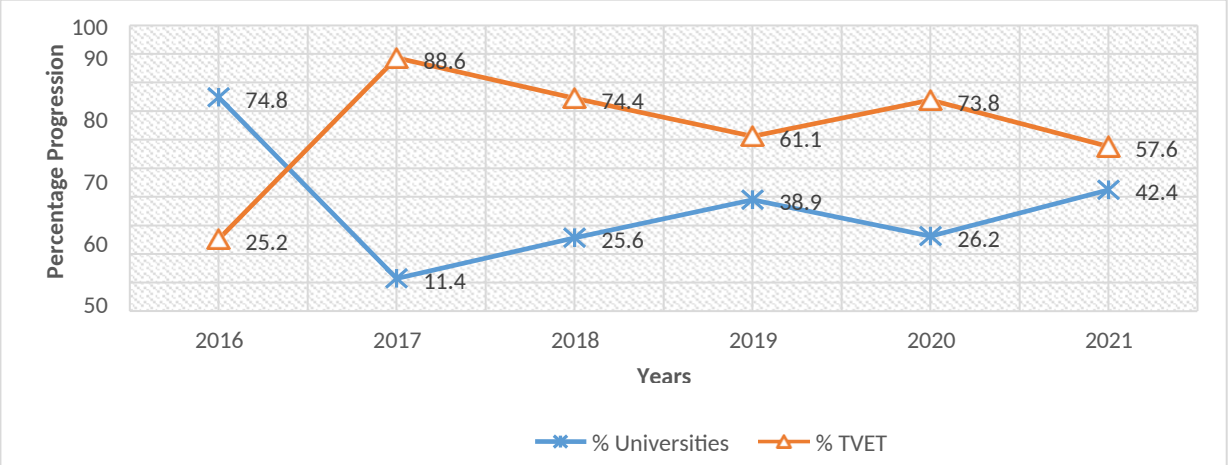

Figure 5.2: Progression Trends in Universities and TVETs in Kakamega County

Source: KUCCPS data (2022)

The findings on percentage progression in Kakamega County as Presented in Figure 5.2 shows that in 2016, there was a high percentage progression to universities, 74.8% compared to TVETS institutions, 25.2%. However, in the year 2017, the number of students who progressed to TVET institutions increased to 88.6% while that of the university dropped to 11.4%. A steady increased was thereafter observed for the university progression, from 2017 to 2019, after which it slightly declined to 26.2% from 38.9% from 2019 to 2020 but again rose from 2020 to 2021 from 26.2% to 42.4%. For the TVET progression, there was a steady decline from 2017 to 2019, that is from 88.6% to 61.1% and thereafter a slight increase from 61.1% in 2019 to 73.8% in 2020 and again a decline to 57.6% in 2021. This indicates that there is progression to TVETs as well as to universities although there exists a gap between them since, year after year. as the progression to the TVETs increase, progression to the universities decrease The findings implies that most students like agriculture but they qualify to enroll for agricultural programs offered in TVETS than in universities

hence the enrollment in TVETs remain higher. Anytime the students qualify to join agriculture programs in the universities, those joining the TVETS reduce in number but are still more than those joining universities agriculture programs. This has kept the percent progression in TVETs higher than that of the universities. According to Chemjor (2016), agriculture in Kenya is given a prominent place in tertiary colleges as a technical discipline that prepares students for employment, such as at Bukura College, Egerton University, and Kabete School of Agriculture and Veterinary Technology. To generate qualified experts in the field, the practical part of the subject is emphasized. Agriculture, like other science and art areas, is given a high priority in training curricula, particularly for teacher students and agricultural professionals. As a result, the country spends a lot of time and money teaching agriculture at medium and upper levels of education.

5.4 Progression in agriculture career in Bungoma county, Kenya

Progression in Bungoma county was obtained by taking the number of students who were placed in tertiary institutions out of the total number of students who sat for KCSE examinations in the previous years multiplied by a hundred (100%.). The findings are presented as shown in Table 5.3.

Table 5. 3 Progression in Bungoma County, Kenya

Year	Agric Progression in Bungoma	Bungoma Progression	Percentage Progression
2016	11,118	230	
2017	12,275	85	0.76
2018	14,307	269	2.19
2019	15,730	276	1.93
2020	16,982	369	2.35

2021	17,436	430	2.53

Source: KUCCPS Data @022)

The findings show that in 2017, only (0.76%) of the students who sat for KCSE agriculture examination progressed to tertiary institutions. The percentage progression was (2.19%) in 2018 and 1.93% in 2019. Progression in 2020 and 2021 was at (2.35%). These findings imply that there was low progression in agriculture among students in Bungoma County. Garwe (2015) sought to establish the trends in student progressions in agricultural degree programs in Zimbabwe and found out that despite the significance of agriculture in Zimbabwe, there were unfavorable and low trends in progression in agriculture-related programs. Such trends were also observed from the comparisons between total students enrolled for KCSE agriculture subject and those that were placed for agriculture programs from the two counties across the years of study.

5.5 Trends in yearly placement of agriculture students in agriculture programs

From the data presented in Figure 5.3 on progression in Bungoma county frequency counts, a growth or decline graphical presentation to explore the trend in placement across the year is displayed in Figure 5.3.

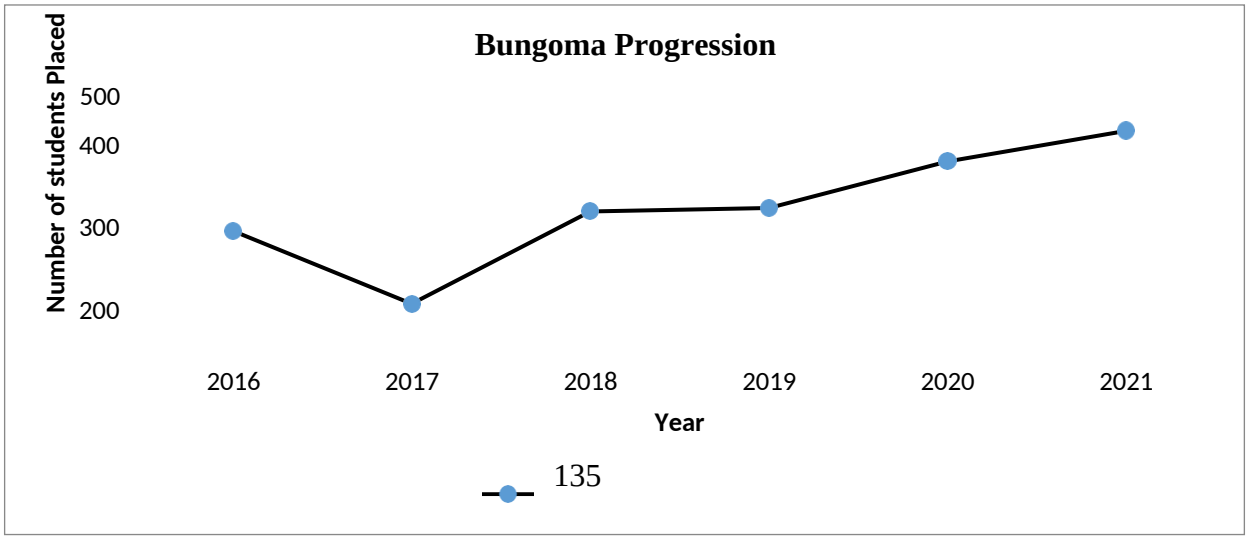

Figure 5.3: Trends if Yearly Progression in Agriculture Career in Bungoma County

Source: KUCCPS data (2022)

The findings in Figure 5.3 shows that between 2016 and 2017, there was a drop in the number of students who progressed in agricultural programs from 230 to 85, which represents a drop of 63.0%. However, from 2017 to 2021, there was a steady increment in the progression such that the highest progression increase occurred between 2017 and 2018 from 85 to 269 indicating an increase by 216.5%. The lowest increase in progression occurred between 2018 and 2019 from 269 to 276 indicating an increase by 2.5%. In general, there was an increase of students' progression by 87% from 2016 to 2021 from 230 to 430. This implies that in general, there is an increase in progression of students who take agricultural programs in Bungoma County. In some years the gap closes up. A researcher argues that, youth with an achieved status have explored an aspect of identity and have committed to it, (Stitt, 2016). With proper career guidance, students who select KCSE agriculture subject are expected to persist with it to career training. It was expected that more students would progress in this great subject to career training.

5.6 Percentage Progression of students in agriculture career in TVET and Universities in Bungoma county, Kenya

Further analysis was carried out in order to explore the progression to university and TVET institutions. A percentage progression was presented as shown in Table 5.4.

Table 5.4 Percentage Progression Trend to Universities and TVET in Bungoma County

Year Enrolled	Bungoma Progression	Progression to universities	Progression to TVETs	% Universities	% TVET
2016	230(13.9)	185(24.5)	45(5.0)	80.4	19.6
2017	85(5.1)	8(1.1)	77(8.5)	9.4	90.6
2018	269(16.2)	57(7.6)	212(23.4)	21.2	78.8
2019	276(16.6)	151(20.0)	125(13.8)	54.7	45.3
2020	369(22.2)	119(15.8)	250(27.6)	32.2	67.8
2021	430(25.9)	234(31.0)	196(21.7)	54.4	45.6
Total	1659(100.0)	754(100.0)	905(100.0)		

Source: KUCCPS data (2022)

From the findings in Table 5.4 it emerged that the total number of students who progressed to tertiary institution from 2016 to 2021 were 1,659. The highest percentage, 25.9% was in the year 2021 while the least, 5.1% was in 2017. For university progression, the total number of students who progressed from 2016 to 2021 were 754 out of which the highest number was 234(31.0%) in the year 2021 while the least was 8(1.1%) in 2017. Total number of students who had progressed with agricultural programs to TVET institutions for the 6 years were 905 with the highest progression, 250(27.6%) occurring in 2020 while the least, 45(5.0%) occurring in 2016. A comparison of the two progression shows that the total number of students who progressed to TVET institutions, 905 was higher than those who progressed to the universities, 754 in Bungoma County. Implying that there is higher percentage progression to TVETS than to universities agricultural programs.

Further, the percentage progression between university and TVET across the years was also carried out and the findings also presented graphically as shown in Figure 5.

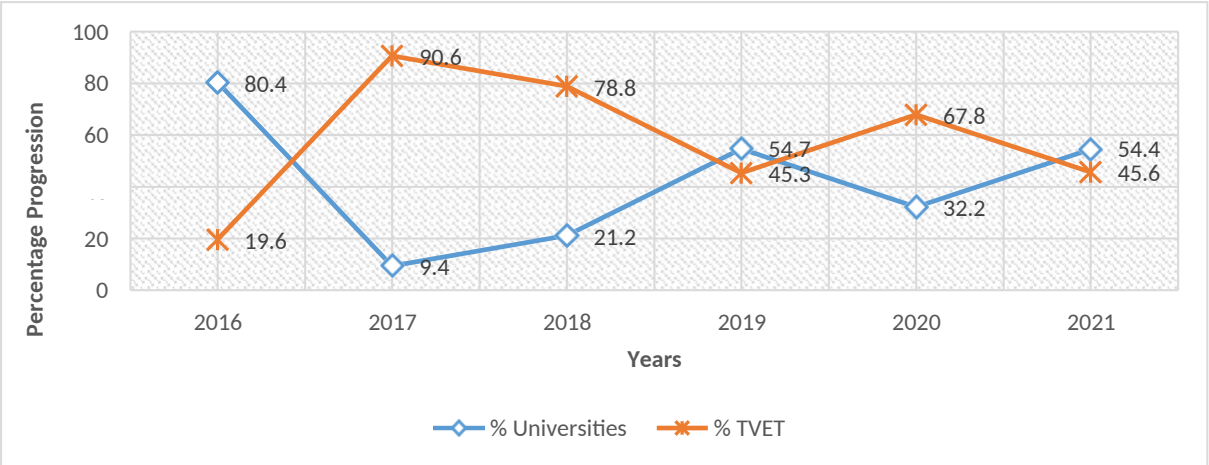

Figure 5. 4 Progression Trend in Universities and TVETs in Bungoma County

Source: KUCCPS data (2022).

The findings from Figure 5.4 shows that, in the year 2016, the total number of students who progressed to universities, 80.4% was high than to those who progressed to TVETS, 19.6%. However, in the subsequent years, there was high progression to the TVET institutions except for 2019. For instance, in the year 2017, percentage progression to the TVET institutions was 90.6% while universities was 9.4%, This declined in TVETS in the year 2018 to 78.8% while that of the university increased to 21.2%. The findings show that in 2019, university progression increased to 54.7% while that of TVETs decreased to 45.8%, increased to 67.8% in the year 2020 and again decreased to 45.6% in the year 2021. For university progression, the percentage decreased to 32.2% in 2020 and again increased to 54.4% in 2021.This implies that although the percentage of students who progress in agriculture to TVETs is higher, the gap between the agriculture students who qualify to progress in agriculture programs offered in TVETs and in universities is narrowing over the years. The

percentage between those who enroll in TVETs and those who enroll in universities is closing up hence positive progression. According to Chemjor (2016), agriculture in Kenya is given a prominent place in tertiary colleges to prepares students for employment, such as at Bukura College, Egerton University, and Kabete School of Agriculture and Veterinary Technology. To generate qualified experts in the field, the practical part of the subject is emphasized. Agriculture, like other science and art areas, is given a high priority in training curricula, particularly for teacher students and other agricultural professionals. As a result, the country spends a lot of time and money teaching agriculture at the medium and upper levels of education.

5.11 Total progression in agriculture career in Bungoma and Kakamega counties

Data on progression from both Bungoma and Kakamega counties across the years and data on placement of agriculture students from the two counties in universities and agricultural colleges was obtained from Kenya Universities and Colleges Central Placement. It was analyzed and the findings presented in Table 5.5 sub-sections.

Table 5. 5 Total Progression in Bungoma and Kakamega Counties, Kenya

Year	Total KCSE selection in Agriculture subject Bungoma and Kakamega	Total Placement in Bungoma and Kakamega	Percentage Progression in Bungoma and Kakamega
2016	22,902	543	
2017	25,149	270	1.2
2018	28,421	601	2.4
2019	30,631	618	2.2
2020	32,983	735	2.4
2021	34,591	921	2.8

Source: KUCCPS data (2022)

From Table 5.5, there is an indication that very few students progress in agricultural programs after secondary school. For instance, there were only 1.2% of the students that progressed in agricultural programs out of those who sat for their secondary examination in the year 2016. From those that sat for examination in the year 2017, only 2.4% progressed to tertiary institutions. As indicated in the findings, 2.2% progressed in agricultural programs in 2020 form 2019, 2.4% in 2021 from 2020, 2.8% in 2022 from 2021. According to the quality assurance officer Bungoma county educators and parents still influence students to select agriculture subject at high school for purposes achieving the mean grade for university entry while students do not want take up the careers in agriculture. They forget the fact that, what secondary school pupils aim to become is fundamentally based on what they want to achieve with their life's work (Mberia & Midigo, 2018). These decisions are influenced by elements such as the perception of an ideal profession, mentorship possibilities, and educational chances that secondary school kids are exposed to (Mberia & Midigo, 2018). It therefore means that students make decisions to identify themselves with certain careers and or occupations at early stage and start exploration and learning the subjects to understand what the sector entails before progressing with it to the next level of Career training. If a student is manipulated to select agriculture for some reasons, they drop it after national examinations and choose another area of study away from agriculture as they join college to pursue career training. The general increase in progression for agriculture subject also played a role in the general positive progression trend observed in agriculture. According to the County Quality Assurance and Standards officer, the number of agriculture students kept increasing as the total KCSE progression. It is therefore expected that the trend will continue increasing year

after year.

5.8 Percentage Progression in Kakamega and Bungoma Counties

A trend analysis was carried out for Percentage progression in Kakamega and Bungoma Counties. The findings are presented as shown in Figure 5.5

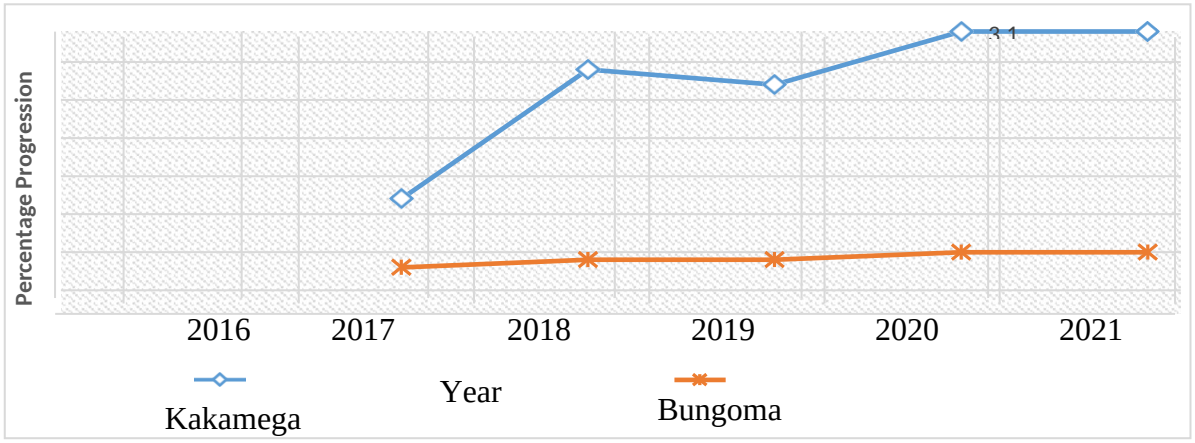

Figure 5.5: Percentage Progression in Kakamega and Bungoma
Source: KUCCPS data (2022)

From the findings in Figure 5.5, it can be observed that generally, the percentage progression for agriculture students from Kakamega County was higher than that for students from Bungoma County. For instance, in 2017, Kakamega County had 0.9% progression compared to that of Bungoma which was less than 0.1. In 2018, progression for students from Kakamega County further increased by 2.6% but decreased in 2019 to 2.4% but again increased to 3.1% in 2020 and 2021. That for Bungoma County increased to 0.1% in 2018 and 2019 and thereafter to 0.2% in 2020 and 2021.This implies that in both counties, agricultural students' progression is positive though not at the same rate. More students progress in agriculture programs in Kakamega than in Bungoma.

5.10 Progression to Agricultural Programs to TVETS in Bungoma and Kakamega Counties

Further analysis was carried out understand the progression to TVETs among Kakamega and Bungoma Counties students. The findings are presented as shown in Figure 5.6

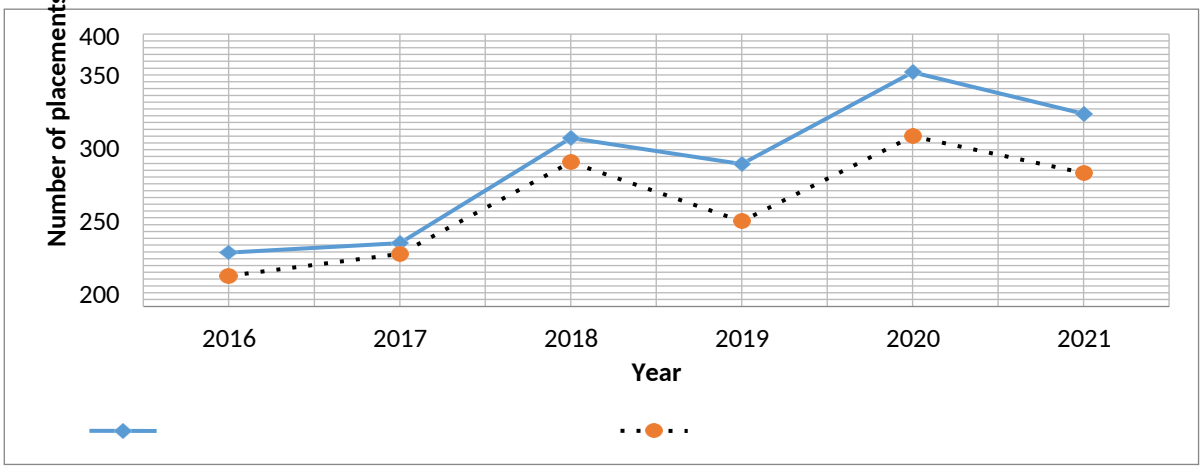

Figure 5. 6 Progression of Students to TVETS among Bungoma and Kakamega Counties

Source: KUCCPS data (2022)

The findings from Figure 5.6 show that there was generally higher progression to TVETS in Kakamega County than Bungoma County across the years. However, there were drops in the years 2019 and 2021 in both Counties although they maintained a positive trend from 2016 to 2021. Implying that more agriculture students from Kakamega County progressing with agricultural programs to TVETs than those from Bungoma County. The progression trend is increasing hence positive in both counties.

5.13 *Objective two: To establish trends in progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya from 2016 – 2021*

In line with the second objective of the study which sought to establish the trends in progression in agriculture career among agriculture subject students from secondary schools of Kakamega and Bungoma counties of Kenya to agricultural programs in tertiary institutions. The study sought to answer following research question;

What are the trends in progression in agriculture career in tertiary institutions of Kakamega and Bungoma Counties, Kenya from 2016 – 2021?

Descriptive statistics for each of the two groups as defined by the pair of variables defined as enrollment in KCSE and tertiary institutions was performed to show the means and standard deviations. The results for the analysis are displayed in Table 5.6.

Table 5.6: Paired sample statistics for agriculture enrolment between KCSE and Tertiary Institutions

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Total KCSE agriculture enrolment in Kenya	279258.3333	6	36162.00357	14763.07614
	Total Agriculture enrolment in universities	271.3333	6	140.06808	57.18255
Pair 2	Total KCSE agriculture enrolment in Kenya	279258.3333	6	36162.00357	14763.07614
	Total Agriculture enrolment in National TVESTs	360.0000	6	185.03513	75.54028
Pair 3	Total KCSE agriculture enrolment in Bungoma	14641.3333	6	2553.40037	1042.42134
	Bungoma agriculture progression to Universities in Kenya	125.6667	6	83.07025	33.91329
Pair 4	Total KCSE agriculture enrolment in Kakamega	14471.5000	6	1981.28653	808.85684
	Kakamega agriculture progression to Universities in Kenya	132.3333	6	81.10405	33.11059
Pair 5	Total KCSE agriculture enrolment in Bungoma	279258.3333	6	36162.00357	14763.07614
	Student agriculture progression national TVETs in Bungoma	150.8333	6	81.16013	33.13348
Pair 6	Total KCSE agriculture enrolment in Kakamega	279258.3333	6	36162.00357	14763.07614
	Student agriculture progression national TVETs in Kakamega	209.1667	6	105.35733	43.01195

Source: KUCCPS data(2022)

Table 5.6 shows descriptive statistics for each of the two groups as defined by the pair of variables. For instance in pair 1, N = 6 where 6 stands for the number of years the data was collected, the total KCSE agriculture enrolment in Kenya has the mean of 279258.33 with a standard deviation of 36162.00. The total agriculture enrolment in the universities has a mean of 271.33 with a standard deviation of 140.07. The total

KCSE agriculture enrolment in Kenya has a mean of 279258.3333 and a standard deviation of 36162.0 while the total agriculture enrolment mean to TVETs is 360.000 students with a standard deviation of 185.04. Implying that enrollment in agriculture does not match the KCSE enrollment. The total KCSE agriculture enrolment in Bungoma has a mean of 14641.3 with a standard deviation of 2553.4 while Bungoma agriculture progression to university in Kenya is 125.667 with a standard deviation of 83.07025.

The total KCSE agriculture enrolment in Kakamega has a mean of 14471.5 with a standard deviation of 1981.28653 while Kakamega agriculture progression to University in Kenya is has a mean of 132.333 with a standard deviation of 81.10405.

The total agriculture enrolment in Bungoma has a mean of 279258.333 and standard deviation of 36162.004 while students' agriculture progression to TVETs has a mean of 150.8333 and a standard deviation of 81.16013. The total KCSE agriculture enrolment in Kakamega has a mean of 279258.33 and a standard deviation of 36162.00 while agriculture students' progression to national TVETs in Kakamega has a mean of 209.1667 and a standard deviation of 105.357.

The above analysis imply that more students of KCSE agriculture enroll for agriculture courses in TVETs standard deviation (185.0) than in universities standard deviation (140.0). More students from Kakamega county standard deviation (105.35) join national TVETs for agriculture courses meaning higher progression in Kakamega county than those in Bungoma county standard deviation (81). More agriculture students of Bungoma county standard deviation (83.0) progress in agriculture courses to the university than those from Kakamega county Standard deviation (81.1). Findings in Table 5.6 showed that, a paired sample t-test failed to reveal a statistically

reliable difference between the mean number of the total KCSE agriculture enrolment in Kenya (Mean = 279258.33, SD = 36134.52) and the total agriculture enrolment in the universities (Mean = 271.33, SD = 140.06808).

Table 5.7 shows the correlation between the two variables of enrolment for observation in 6 years. The p-value for the correlation coefficient is also given whereby if the p-value is less than or equal to alpha value (0.05), then the correlation is significant

Table 5.7: Paired sample correlation between KCSE enrolment and Placement in Tertiary Institutions

		N	Correlation	Sig.
Pair 1	Total KCSE agriculture enrolment in Kenya & Total Agriculture enrolment in universities	6	.198	.707
Pair 2	Total KCSE agriculture enrolment in Kenya & Total Agriculture enrolment in National colleges(TVESTs)	6	.889	.018
Pair 3	Total KCSE agriculture enrolment in Bungoma & Bungoma student agriculture progression to Universities in Kenya	6	.384	.453
Pair 4	Total KCSE agriculture enrolment in Kakamega & Kakamega student agriculture progression to Universities in Kenya	6	.154	.771
Pair 5	Total KCSE agriculture enrolment in Bungoma & Bungoma Student agriculture progression national TVETs in Bungoma	6	.837	.038
Pair 6	Total KCSE agriculture enrolment in Kakamega & Kakamega Student agriculture progression national TVETs in Kakamega	6	.916	.010

Source: KUCCPS Data (2022)

The results shows that total KCSE agriculture enrollment in Kenya and total agriculture enrolment in universities scores was weakly and positively correlated ($r = 0.198$, $p = 0.707$). Findings in Table 5.7 indicate that there is higher enrollment in KCSE agriculture enrolment than enrolment in agriculture programs in universities. There is sufficient evidence to conclude that the total KCSE agriculture enrolment and total agriculture enrolment in the universities is different for a case of pair 1. The same differences can be observed in the other pairs.

Paired sample t-tests to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment were performed for the six pairs of

enrolment. The results were indicated in Table 5.8.

Table 5.8: Paired samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Total KCSE agriculture enrolment in Kenya - Total Agriculture enrolment in universities	278987.00	36134.52	14751.86	241066.15	316907.85	18.912	5	.000
Pair 2	Total KCSE agriculture enrolment in Kenya - Total Agriculture enrolment in National colleges(TVESTs)	278898.33	35997.67	14695.99	241121.10	316675.57	18.978	5	.000
Pair 3	Total KCSE agriculture enrolment in Bungoma - Bungoma agriculture progression to Universities in Kenya	14515.67	2522.68	1029.88	11868.27	17163.06	14.095	5	.000

Pair 4	Total KCSE agriculture enrolment in Kakamega - Kakamega agriculture progression to Universities in Kenya	14339.17	1970.45	804.43	12271.30	16407.03	17.825	5	.000
Pair 5	Total KCSE agriculture enrolment in Kenya - Student agriculture progression national TVETs in Bungoma	279107.50	36094.09	14735.35	241229.04	316985.92	18.941	5	.000
Pair 6	Total KCSE agriculture enrolment in Kenya - Student agriculture progression national TVETs in Kakamega	279049.17	36065.53	14723.69	241200.71	316897.62	18.952	5	.000

Source: KUCCPS Data (2022)

The results also shows that the average difference between total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the universities is significant ($t(5) = 18.912$, $p < 0.05$).

A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Kenya (Mean = 279258.33,

SD = 36134.52) and the total agriculture enrolment in TVET (Mean = 360.00, SD = 185.03513). The results also shows that total KCSE agriculture enrollment in Kenya and total agriculture enrolment in TVET scores was strongly and positively correlated ($r = 0.889$, $p = 0.018$). The results also shows that the average difference between total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the TVET is significant ($t(5) = 18.978$, $p < 0.05$).

A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Bungoma (Mean = 14641.33, SD = 2553.40) and Bungoma agriculture enrolment in the universities in Kenya (Mean = 125.67, SD = 83.07). The results also shows that total KCSE agriculture enrollment in Bungoma and Bungoma agriculture progression to the universities in Kenya scores was weakly and positively correlated ($r = 0.384$, $p = 0.453$). The results also shows that the average difference between total KCSE agriculture enrolment in Bungoma and Bungoma agriculture progression to the universities in Kenya is significant ($t(5) = 14.095$, $p < 0.05$).

A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Kakamega (Mean = 14471.50, SD = 1981.28) and Kakamega agriculture progression to the universities in Kenya (Mean = 132.33, SD = 81.10). The results also shows that total KCSE agriculture enrollment in Kakamega and Kakamega agriculture progression to the universities in Kenya scores was weakly and positively correlated ($r = 0.154$, $p = 0.771$). The results also shows that the average difference between total KCSE agriculture enrolment in Kakamega and Kakamega agriculture progression to the

universities in Kenya is significant ($t(5) = 17.825$, $p < 0.05$).

Pelco & Ball (2018) argues that awareness of occupational identity statuses of a population and understand the theory of operation is helpful to instructors who are involved in the career development among youths. These researchers posit that individuals who have explored and are committed to a career may benefit by exploration of the chosen career. Those who are exploring but are not yet committed to it should be exposed to real activities of similar careers. Those who are in low exploration and have not yet commitment should be assisted to identify their skills and interests. And those with low exploration and committed to a career may should be assisted to reconsider their career choice and before exploration (Pelco & Ball, 2018). It is therefore import for each youth to have an opportunity to explore and later come up with correct choice of occupational identity suitable for them to develop as future careers. In secondary school students are exposed to agriculture content and practical activities before selection of the subject hence they explore the subject without any commitment. Once they become aware of their skills and interests, they select agriculture and hence make commitment, At this stage it is expected that students explore agriculture as a career and progress in it to college by selecting a program in agriculture,

There is evidence, for instance from the works of Andrea, Julia, Nicole, Shashank, and Thomas (2017), Jackson and Wilton (2017), and Steve (2016), indicating people intentionally pursue educational paths that bring them to their chosen professions. Others talk about the rewarding monetary benefits of their occupations, while others talk about the personal fulfilment, job security, social impact, and interestingness of their work (Weiss, 2012). Yet, many things happen in the cultural surroundings of

people's lives that influence their assumptions and perspectives on their careers.an impact on students' career choices (Mberia & Midigo, 2018). This means that before entering a certain field of employment, each individual must create a profile outlining the specific qualities, abilities, and knowledge necessary to succeed in that line of work (Kazi & Akhlaq, 2017). Students' career goals are the driving force behind their secondary school aspirations (Mberia & Midigo, 2018).Young people purpose to commit themselves to specific careers and stick to it as they progress in their areas of study.

Pelco & Ball (2018) claim that instructors involved in the professional development of young people can benefit from understanding occupational identity statuses and the theory of operation. According to Ochuodho, J. O. (2018) students admitted to degree programs and universities that are not of their choosing. Struggle to change the course or discontinue their studies leaving some courses without students. This leads to discontinuation of certain courses, which then become extinct. So, there is a need for the current study to devise motivational strategies to ensure progression in agriculture among secondary school students who choose this subject.

Similarly, encouraging professions in agriculture can be particularly challenging if students have negative impressions and if agricultural careers are perceived as production agriculture comprised of tough to influence tasks that pay poorly. This would indicate that students are unaware of the vast array of occupations accessible in agriculture (Dobbins, *et al* 2002). The introduction of TVETs in every sub county acted as a motivation to study agricultural programs. Some students can now enroll for certificate courses while others enroll for diploma courses Students realized opportunities to progress in agriculture after failing to meet the qualifications to join universities. The qualification framework also indicates that students can progress to

bachelors’ degree after completing diploma course.

CHAPTER SIX

FINDINGS ON THE RELATIONSHIP BETWEEN SELECTION FACTORS AND SELECTION OF AGRICULTURE SUBJECT AMONG SECONDARY SCHOOL STUDENTS IN KAKAMEGA AND BUNGOMA COUNTIES

6.1 Introduction

This chapter sought to determine the factors motivating students' selection of agriculture subject in secondary schools in Kakamega and Bungoma Counties, Kenya. First, the demographic characteristics of respondents were presented as shown in section 6.2. The rest of the findings are presented in the subsequent sections.

6.2 Demographic characteristics of respondents

The study sought to find out the demographic characteristic of the students in both counties of Kakamega and Bungoma in terms of gender, age, course and the year of the study. The results findings are given in Table 6.1

Table 6. 1 Demographic Characteristics of Tertiary Institution students in Bungoma and Kakamega Counties

Variable		Frequency	Percent
Gender	Female	59	36.4
	Male	103	63.6
	Total	162	100.0
Age	18-21	83	51.2
	22-25	62	38.3
	26-30	13	8.0
	Above 30	4	2.5
	Total	162	100.0
Course	Certificate in general agriculture	53	32.7
	Diploma in general agriculture	90	55.6
	Degree (Education extension)	19	11.7
	Total	162	100.0
Year of study	year one	48	29.6
	year two	85	52.5

	year three	26	16.0
	year four	3	1.9
	Total	162	100.0

Source: Field data (2022)

The results in Table 6.1 shows that 103(63.6%) of the students pursuing agriculture course are males compared to 59(36.4%) of females. Gender plays a role in the selection of subjects in both secondary school level and programs tertiary education level. Social norms and stereotype around career choices influences gender-based choices. Agriculture is generally considered a male dominated field which hinders the choice of the subject among females.

On the other hand, the findings shows that 83(51.2%) of agriculture students are at the ages between 18 and 21 which is the ages of students at secondary school level. The number of students decreases as the ages increase as they progress from secondary school level to tertiary level. Age can have an impact on choice of agriculture subjects in secondary school and tertiary institution because as the age increases, the interest, career goals and educational needs changes. At early ages of secondary education, students tend to explore different area of interest from a wide range of courses offered which can include agricultural subjects. At the college level, they are focused in pursuing a specific career such as advanced training, agri-business or research in agriculture education.

The results also shows that 90(55.6%) of the students enrolled in agriculture courses are taking Diploma in general agriculture, followed by 53(32.7%) in certificate in general agriculture and lastly 19(11.7%) have enrolled in Degree in education and agriculture extension. The results further shows that 85(52.5%) of these students are in the second year of study, followed by 48(29.6%) of students in the first year.

6.3 Analysis of Likert scale used in the current study Questionnaires

The study used a five-point Likert scale to collect Likert type data on the study variables. The scale was Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD). Though the study researcher considered individual Likert scale items as yielding ordinal data, when more Likert-scale items are used to measure a concept on a summative scale, the resulting Likert type data can be considered to be an interval scale (Carifo and Perla, 2007). According to Benard (2006), when a researcher uses an ordinal scale of five or more ranks, it can be treated as if it were an interval-level scale. Likert type questions were applied in this concept to collect data for this study with items used to collect Likert type data on one variable in a summative scale thus allowing the use of parametric test. To satisfy the Likert scale assumption of equidistance, the study adopted Carifo and Perla, (2007) equidistance of 8. Since each variable was measured using different Likert scale items (for example 3 - 13 items) on an attitudinal scale of 1-5, the resulting summative score ranged from 10 to 30. Applying an equidistance of 5 results to the following scale which was used in the study for objectives that is 5 <strongly disagree <10, 10 <Disagree <15, 15 < Neutral <20, 20 <Agree <25 and 25 <strongly agree <30. For individual items with a low of 1 and a high of 5, the same scale was adopted as 1 <strongly disagree <2, 2 < disagree <3, 3 < Neutral<4, 4 <agree <5 and >5 strongly agree.

6.4 Communication Factors Motivating Students to select Agriculture Subject in Bungoma and Kakamega Counties, Kenya

The study sought to establish whether communication factors motivated students' selection of agriculture subject in Kakamega and Bungoma Counties Kenya. Therefore various analysis were carried out. First, a general analysis of the factors was carried out and presented the findings across a five-point Likert scale (1-5) where

1(one) indicated ‘strongly disagree’ while 5 (five) indicated that the students ‘strongly agreed’ with the mentioned factors. The findings are presented as in Table 6.2 using frequency counts, means and standard deviations.

Table 6.2: Selected Motivational Factors for Selecting Agriculture Subject in Bungoma and Kakamega Counties, Kenya.

Communication Factors	SD (1)	D (2)	N(3)	A(4)	SA (5)	M	SD
Family demand	7(4.3)	44(27.2)	20(12.3)	41(25.3)	50(30.9)	3.51	1.296
Peers	20(12.3)	52(32.1)	37(22.8)	45(27.8)	8(4.9)	2.57	1.097
Friends	31(19.1)	51(31.5)	40(24.7)	37(22.8)	3(1.9)	2.81	1.123
Parents	2(1.2)	6(3.7)	3(1.9)	80(49.4)	71(43.8)	4.31	0.790
Teachers	8(4.9)	8(4.9)	20(12.3)	71(43.8)	55(34.0)	3.97	1.054
Instructors	36(22.2)	4(2.5)	30(18.5)	52(32.1)	40(24.7)	3.35	1.455
Overall mean and Standard deviation						3.42	1.136

Source: Field Data, 2022

From the findings presented in Table 6.2, it emerged that majority of the students, 91(56.2%) agreed that family demand motivated them to select Agriculture subject while 51(31.5%) disagreed. However, 20(12.3%) remained neutral or undecided. A high mean on family demand (M=3.51, SD=1.296) was realized although with a high standard deviation implying that whereas the rating on family demand was high, there were variation in the responses.

Peers as a motivation to select agriculture subject, was agreed by 40(24.7%) of the students while a higher number 82(50.6%) of students disagreeing on friends’ motivation. However, 40(24.7%) of the students remained neutral. A low mean of 2.57 and high standard deviation of 1.097 implies that majority of friends do not

highly motivate students to select agriculture subject, although there was a high variation in the responses indicating that some did motivate them. An almost same responses to peers were obtained for friends' motivation rating. The findings shows that majority of the students 52(32.1%) disagreed, followed by 20(12.3%) who strongly disagreed that peers motivated them to take agriculture subject. Therefore, cumulatively, 82(50.6%) of the students indicated that they were not motivated by peers to select agriculture subject. However, 45(27.8%) agreed, 8(4.9%) strongly agreed hence cumulatively 53(32.7%) agreed that they were motivated by friends to select agriculture subject A total of 37(22.8%) remained neutral of peer motivation. There was a low mean (M=2.81, SD=1.123) with high standard deviation on friends rating, implying that friends were lowly rated as motivating factors, although with some variation indicating that some students approved of friends' motivation. It can however be noted that friends were not a strong motivator to selection in agriculture subject among students. Parental motivation was high (M=4.31, SD=.790) with low standard deviation, which is in line with the majority of the students, 80(49.4%) who agreed as well as 71(43.8%) who strongly agreed that parents motivated them to select agriculture. On the contrary, 2(1.2%) strongly disagreed, 6(3.7%) disagreed on parental motivation while 3(1.9%) remained neutral. It can be noted that parental motivation was the highest communication factor that motivated students to select agriculture subject. The second highest rated communication factor motivating students to select agriculture was teacher motivation (M=3.97, SD=1.054). Majority of the students, 71(43.8%) agreed while 55(34%) strongly agreed that teachers motivated them to select agriculture subject. Therefore, this was reflected in a cumulatively 126(77.8%) of the students. Finally, the third ranked factor was instructor motivation (M=3.35, SD=1.455) although with high standard deviation

implying high variation in the responses. A total of 52(32.1%) agreed while 40(24.7%) strongly agreed that instructors motivated them to select agriculture subject. Therefore cumulatively, 92(56.8%) students were motivated by instructors to progress in agriculture. However, 8(4.9%) of them disagreed and 8(4.9%) strongly disagreed leading to cumulatively 40(24.7%) disagreeing while 30(18.5%) remaining neutral on the same. The overall mean on communication factor was 3.42 with a small standard deviation (1.136) implying that the rating on communication factor was high hence regarded as one of the potential factors that motivated students to select agriculture subject.

6.5 Individual factors motivating students to select agriculture subject in Bungoma and Kakamega county, Kenya

Individual factors identified and selected for rating on student's agriculture subject selection entailed age, gender and academic performance. Students rated these factors on a five-point Likert scale and the results presented in Table 6.8 using frequency counts, percentages, means and standard deviations

Table 6. 3: Individual Factors for Selecting Agriculture in Bungoma and Kakamega Counties, Kenya

Individual factors	SD (1)	D (2)	N(3)	A(4)	SA (5)	M	SD
Age motivated you to take agriculture	56(34.6%)	32(19.8%)	44(27.2%)	21(13%)	9(5.6%)	2.35	1.233
Gender motivated you to take agriculture	37(22.8%)	60(37%)	26(16%)	26(16%)	13(8%)	2.49	1.232
Academic performance motivated you to take agriculture	2(1.2%)	4(2.5%)	3(1.9%)	66(40.7%)	87(53.7)	4.43	0.763

Overall mean and Standard deviation	3.76	1.076

Source: Field Data (2022)

From Table 6.3, findings indicate that majority of the students, 66(40.7%) agreed and 87(53.7%) strongly agreed that academic performance motivated them to take agricultural course. Cumulatively, 153(94.4%) of the students agreed that academic performance motivated them to take agriculture subject. Those who strongly disagreed, 2(1.2%), disagreed 4(2.5%) or remained neutral, 3(1.9%) were very few. A high mean and low standard deviation (M=4.43, SD=.763) were recorded thus implying that students highly attributed their selection of agriculture subject to academic performance.

Other factors had rating that was less than 3.0 on the five-point Likert scale. For instance, majority of the students, 56(34.6%) strongly disagreed while 32(19.8%) disagreed that age motivated them to select agriculture subject. Cumulatively, 88(54.4%) disagreed that aged motivated them. However, 44(27.2%) remained neutral, 12(13%) agreed and 9(5.6%) strongly agreed that age motivated them. Comparatively, majority of the students disagreed that age motivated them. A low mean (M=2.35, SD=1.233) and high standard deviation were realized, implying that age played a very small role in their motivation to select agriculture subject.

Finally, from the findings on gender, majority, 60(37%) of the students disagreed, 37(22.8%) strongly disagreed that gender motivated them to select agriculture subject. Cumulatively, 97 (59.8%) of the students disagreed that gender motivated them to select agriculture subject. A number of students, 26(16%) remained neutral, 26(16%) agreed and 13(8%) strongly agreed that gender motivated them to select agriculture

subject. A low mean and high standard deviation (M=4.43, SD=0.763) were recorded, thus implying that agriculture subject selection was less motivated by gender of the students. This is similar to Mkong et al, (2021) who examined the factors that influence students' choices and preferences for agricultural sub-sector and found that gender has a substantial impact on choosing agriculture as a university major. Training institutions always have an academic criterion for selection students.

From the aforementioned findings, it emerged that academic performance of the students under individual factors was the main factor that motivated students to select agriculture subject. However, age and gender did not emerge as motivating factors. Manyasi (2021) posits that among man factors mentioned by researchers as influential factors to majoring in agriculture, academic factor is key. Students claimed that before other elements are considered, pre - university academic background, has a substantial impact on choosing agriculture as a university major. A student must have obtained grades that meet the requirement criteria for entry in the agricultural program. According to the Chair of Departments in universities and the Head of Departments in Agricultural colleges in Bungoma and Kakamega counties, grades criteria as entry requirement has turned back many learners with intentions of enrolling for a program in the school of agriculture. Eremie and Okwulehie (2018) research also stated that opportunity factors such as education had influence to the choice of career. Students who attain the expected academic credentials are given opportunities to progress in education programs to tertiary institutions.

According to Kidane and Worth (2012), an individual's character shapes their academic and professional interests. Students' grades are dependent on a variety of factors, including their age, attendance, and how well they do in class. An individual, is made of several characteristics that are mentored and fixed in the person to make a

whole human and with time, the characteristic help to shape the academic and profession interests.

6.6 Basic tests of statistical assumption of fitness of data.

Diagnostic tests were performed to check the fitness of data in meeting the basic tests of statistical assumptions.

6.6.1 Test for Normality of data

Normality test was done at 95% confidence interval. If the p-value is less than 0.05, then the null hypothesis is rejected and there is evidence that the data tested is not from a normally distributed population. If the p-value is greater than 0.05, then the null hypothesis stating that the data did not come from a normally distributed population is accepted. Kolmogorov-Smirnov (KS) goodness-of-fit test and Shapiro-Wilk (SW) test for normality was done to test the hypothesis;

$$H_0 : the\ data\ is\ not\ drawn\ \ from\ a\ normal\ distribution$$
$$H_1 : the\ data\ is\ drawn\ \ from\ a\ normal\ distribution$$

The findings are as shown in Table 6.4.

Table 6.4: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Selected motivational factors	.151	162	.216	.933	162	.106
Selection of agriculture subject	.245	162	.165	.916	162	.086

a. Lilliefors Significance Correction
b. Source: Field data (2022)

The Kolmogorov-Smirnov (KS) results in Table 6.4 indicate that data collected on selected motivational factors (df = 162, p = 0.216), and selection of agriculture (df = 162, p = 0.165) were normally distributed as $p\text{ - }values \geq 0.05$ and therefore

statistically significant at 5% level of significance. The results implies that we reject the null hypothesis that the data does not form the normal distribution and conclude that it is normally distributed. On the other hand, the Shapiro-Wilk (SW) results in Table 6.4 shows that the data collected on selected motivational factors (df = 162, p = 0.106), and selection of agriculture (df = 162, p = 0.086) were normally distributed as $p\text{-}values \geq 0.05$ and therefore statistically significant at 5% level of significance. The results implies that we reject the null hypothesis that the data does not form the normal distribution and conclude that it is normally distributed.

The SW results confirmed the KS results that the data came from normally distributed population and was normally distributed. This means that the tests of normality were significant and therefore parametric test should be used for analysis.

6.6.2 Multicollinearity Tests for testing correlation between predictor variables

Multicollinearity exists when there is the presence of strong correlation between or among predictor variables and can result to increase in the standard errors with the beta coefficients, limit the value of R and make it difficult to determine the importance of each predictor in the model. Assessment of Multicollinearity was done using the tolerance value and Variance inflation factor (VIF). Tolerance value ranges between 0 and 1 where a value below 0.1 indicates serious Multicollinearity problem. The VIF statistic is the inverse of tolerance value and has no definite cut-off points but if the VIF value lies between 1– 10, then there is no Multicollinearity. If the VIF value is less than 1 or more than 10, then there is Multicollinearity. The results of Multicollinearity test are presented in Table 6.5

Table 6.5: Multicollinearity Tests

	Tolerance	VIF

1	(Constant)		
	Selected motivational factors	.796	1.256
	Selection of agriculture subject	.896	1.116

Source Field data (2022)

The results in Table 6.5 shows that the tolerance values are all above 0.5 and are closer to the maximum value of 1 than to minimum value of 0 which indicates the absence of Multicollinearity. On the other hand, the VIF values are all close to 1 than 10 indicating the absence of collinearity and absence of bias in the model.

6.6.3 Heteroscedasticity/ Homoscedasticity (variance errors) in Predictor variables

Homoscedasticity is a situation where the variance errors across all levels of the predictor variable are the same while heteroscedasticity is the absence of homoscedasticity that is the variance errors vary across the all the observations. Failure to correct heteroscedasticity invalidates statistical tests of significance such as regression analysis and increase the chance of wrong inference. This study used Levene statistic to test the null hypothesis that the variance of the explained variable are equal across all levels of explanatory variables. The results are presented in Table 6.6.

Table 6.6: Test for Heteroscedasticity/ Homoscedasticity in Variables

	Levene Statistic	df1	df2	Sig.
Selected motivational factors	11.151	1	160	.201
Selection of agriculture subject	15.681	1	160	.113

Source: Field data (2022)

The Levene statistics is significant when $p < 0.05$ which would lead to rejection of the null hypothesis but when $p > 0.05$ we accept the null hypothesis. It's worthy to note

from the results in Table 6.6 that the $p > 0.05$ which implies that we accept the null hypothesis and conclude that the variances of the dependent variable are not steady across different levels of the explanatory variables which fulfils the assumption of homogeneity of variance.

6.4 Selection of selection motivational Factor using Principal Component Analysis

Guided by the theoretical framework, a total of nine items classified as selection factors were subjected to principal component analysis correlation matrix. The factors included; Family demand motivated you to take agriculture (item 1), Friends motivated you to take agriculture (item 2), Peers motivated you to take agriculture (item 3), Parents motivated you to take agriculture (item 4), Teachers motivated you to take agriculture (item 5), Instructors motivated you to take agriculture (item 6), Age motivated you to take agriculture (item 7), Gender motivated you to take agriculture (item 8), Academic performance motivated you to take agriculture (item 9).

The researcher sought to determine the relationship between selected motivation factors and selection of agriculture subjects among secondary school students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

The study sought to answer following research hypothesis;

Ho1: There is no statistically significant relationship between selected motivational factors and selection of agriculture subject in secondary school in Kakamega and Bungoma Counties, Kenya.

In order to answer the research hypothesis, the researcher used principal component analysis since data was normally distributed without collinearity and bias. The findings of the analysis are presented as shown in Table 6.7

Table 6. 7: Correlation Matrix

Items		1	2	3	4	5	6	7	8	9
	1	1.000	.038	.185	.235	-.018	-.034	-.160	-.008	-.204
	2	.038	1.000	.463	.084	-.042	.252	.183	.486	-.041
	3	.185	.463	1.000	.028	.026	.138	.190	.389	-.123
	4	.235	.084	.028	1.000	-.211	.208	-.278	-.055	-.121
	5	-.018	-.042	.026	-.211	1.000	-.265	.286	-.045	.209
	6	-.034	.252	.138	.208	-.265	1.000	-.050	.277	-.036
	7	-.160	.183	.190	-.278	.286	-.050	1.000	.347	.110
	8	-.008	.486	.389	-.055	-.045	.277	.347	1.000	.041
	9	-.204	-.041	-.123	-.121	.209	-.036	.110	.041	1.000

Determinant = 0.255

Source: Field Survey Data

To check for collinearity, we check the value of Determinant, if the value is ≤ 0.0001 then collinearity is too high and if the value is zero, then the solution is not possible. In table 6.7, the Determinant value is 0.255 which indicates the absence of collinearity. Correlation Matrix indicates how each question is associated (correlated) with each of the other questions. Relatively high correlations indicate that two items are associated and will probably be grouped together by the factor analysis. Items with low correlations (e.g., ≤.20) usually will not have high loadings on the same factor. In table 6.4, there are correlation coefficients of 0.2 and above as evidence by the correlation ($r = 0.252, 0.277, 0.389, 0.463, 0.486$) between item 3 and 2, item 6 and 2, item 8 and 3, item 6 and 8. This means that there is high strength of inter-correlations among items that qualifying the principal component method. The other aspect for ensuring factorability was the use of Kaiser Meyer Olkin (KMO) measure of sampling adequacy and Barlett's Test of Sphericity. A KMO value greater than 0.5 and ≤ 0.05

suggests there is substantial correlation in the data. The results of KMO is shown in Table 6.8.

Table 6. 8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.656
Bartlett's Test of Sphericity	Approx. Chi-Square	490.098
	Df	36
	Sig.	.000

Source: Field Survey data (2022)

From the analysis shown in Table 6.8, KMO value is 0.656 which is a minimum value suggested for good factor analysis. Bartlett's Test of Sphericity value is also significant ($p<.05$) indicating that the correlation matrix is significantly different from an identity matrix in which correlation between variables are all zeros. These results implies that the items and data qualify factor analysis.

To show the relation between the variable and all other variables (i.e., the squared multiple correlation between the item and all other items) before rotation we check the communalities values. If many or most communalities are low (< .30), a small sample size is more likely to distort results. The findings of communalities are shown in Table 6.9.

Table 6.9: Communalities Values of the Variables

	Extraction
Family demand motivated you to take agriculture	.667
Friends motivated you to take agriculture	.626
Peers motivated you to take agriculture	.641
Parents motivated you to take agriculture	.452
Teachers motivated you to take agriculture	.574
Instructors motivated you to take agriculture	.629
Age motivated you to take agriculture	.593
Gender motivated you to take agriculture	.670

Academic performance motivated you to take agriculture	.362

Source: Field data (2022)

In Table 6.9, any value < 0.3 (in the extraction column) would suggest that the item would need to be reconsidered. From the results, all of the extraction values are relatively high (> 0.3) so these are considered good extraction.

To determine how many components (factors) to 'extract' a few aspects were considered provided in the output. Using Kaiser's criterion. The study examined only in components that have an eigenvalue of 1 or more. To determine how many components meet this criterion the Total Variance Explained table was examined. Table 6.10 for Total Variance Explaine shows how the variance is divided among the 9 possible factors.

Table 6.10:Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.17	24.084	24.084	2.17	24.084	24.084	2.69	23.990	23.990
2	1.84	20.433	44.517	1.84	20.433	44.517	1.60	17.797	41.786
3	1.21	13.407	57.924	1.21	13.407	57.924	1.45	16.137	57.924
4	.923	10.257	68.180						
5	.677	7.524	75.704						
6	.647	7.192	82.896						
7	.603	6.701	89.597						
8	.506	5.622	95.219						
9	.430	4.781	100.000						

Extraction Method: Principal Component Analysis.

Note that three factors have eigenvalues (a measure of explained variance) greater than 1.0, which is a common criterion for a factor to be useful. When the eigenvalue is less than 1.0 the factor explains less information than a single item would have explained. Based on the cumulative 57.924% of the variability is explained by the first three components. Thus dimensionality could be reduced with at least 42%.

Factors are rotated so that they are easier to interpret. Rotation makes it so that, as much as possible, different items are explained or predicted by different underlying factors, and each factor explains more than one item. This is a condition called simple structure. Although this is the *goal* of rotation, in reality, this is not always achieved. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. Table 6.10 below shows the Rotated Factor Matrix

Table 6.11: Rotated Component Matrix

	Component		
	1	2	3
Gender motivated you to take agriculture	.803		-.143
Friends motivated you to take agriculture	.776	-.133	
Peers motivated you to take agriculture	.719		.340
Age motivated you to take agriculture	.498	.493	-.319
Teachers motivated you to take agriculture		.754	
Instructors motivated you to take agriculture	.378	-.679	-.161
Parents motivated you to take agriculture		-.518	.427
Family demand motivated you to take agriculture			.811
Academic performance motivated you to take agriculture		.152	-.582

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

The Rotated Factor Matrix in Table 6.10 is key for understanding the results of the analysis. Factors are rotated so that they are easier to interpret. Rotation makes it so that, as much as possible, different items are explained or predicted by different underlying factors, and each factor explains more than one item. This is a condition called simple structure. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. The analysis has sorted selected factors of agriculture subject questions (*item 01* to *item 9*) into three somewhat overlapping groups of items. The items are sorted so that the items that have the highest loading (not considering whether the correlation is positive or negative) from factor 1 (three items in this analysis) are listed first, and they are sorted from the one with the highest factor weight or loading (i.e., *item 8(gender)*, with a loading of .803) to the one with the lowest loading from that first factor (item 7(age) with a loading of 0.498). Actually, every item has some loading from every factor, but we requested for loadings less than |.30| to be excluded from the output, so there are blanks where low loadings exist. For instance item 08 "Gender motivated you to take agriculture" has a positive loading from the selection factor, which indicates that the students selecting agriculture do it on gender basis). Usually, factor loadings lower than |.30| are considered low, which is why we suppressed loadings less than |.30|. Kaiser criterion was used to retain all components with eigenvalues above 1 as the default. From the findings, it can be seen that most of the items load quite strongly (above .4) on the first component. Component two has only one item at 0.3 while component 3 has at least two items with loading of 0.3. This supports the conclusion from the Scree plot to retain only two factors for further investigation.

Often, using the Kaiser criterion, it is possible to detect too many components extracted, so it is important to also look at the Scree plot. The most important feature examined on the Scree plot is the change (or elbow) in the shape of the plot. Only

components above this point are retained. This is shown in Figure 6.1

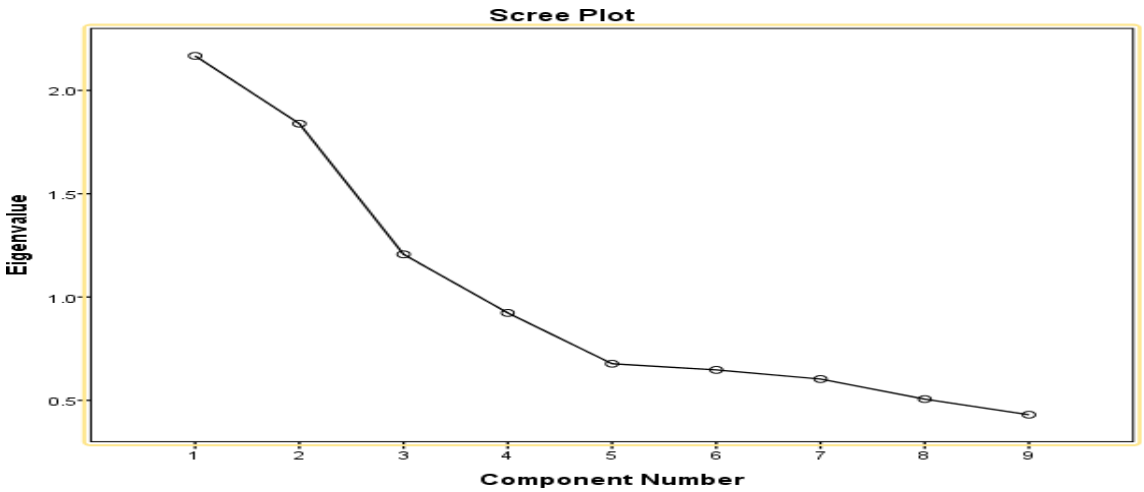

Figure 6. 1 Scree Plot for Selection Factors

An examination of the Scree plot shows that there is quite a clear break between the second and third components. Components 1 and 2 capture much more of the variance than the remaining components. From this plot, it would be recommend retaining (extracting) only two components. There is also another little break after the third component. Depending on the theoretically classified components as communication and individual factors, this is worth exploring the two.

Therefore, in general, Principal component factor analysis with varimax rotation was conducted to assess the underlying structure for the 9 items of the selected factors for agriculture subject Questionnaire. Three factors were requested, based on the fact that the items were designed to index three constructs: friends, peers, and parents. After rotation, ‘friends as a motivator’ factor accounted for 23.99% of the variance, then ‘peer motivator’ factor accounted for 41.786%, and ‘parents motivator’ factor accounted for 55.924%. From these findings, the null hypothesis was rejected and

alternative hypothesis adopted.

Powel (2019) who affirmed that parents are motivators to learners to major in agriculture. Parents' communication influence learners' decision to select agriculture subject and hence academic success is influenced by parental involvement or family as a factor.

According to (Alam, *et al.*, 2011), academic success is influenced by parental involvement or family involvement as a factor. Parental goals and expectation all have a role in how agriculture is taught and learned. According to the heads of agricultural departments in the agricultural tertiary colleges, teachers may teach but students may reject to select agriculture basing on their communication with parents. Manyasi (2021) review, supported the fact that interpersonal communications such as parents, peers and friends are motivator elements to learners to study agriculture. Key informants in the current study claimed that parents are the most influential factors since they pay fees for the students. The parents would stop remitting fees if children

courses deemed marketable with parents. A forth year university student stated that;

"*As much as parents have reasons for controlling our decisions, they should give us a chance to select programs of interest and ability, and wait for the outcome*".

It is important for the parents to understand that it is the children who are learning and the children know their ability. Parents also need to know that days have changed. Careers have changed and therefore career decision making process must also shift to persons who are directly involved. According to (The Economist, 2013). Majority of careers have transitioned from one gender to another as a result of societal, cultural, and economic shifts that have also incorporated contemporary academic developments many historical events, including economic, cultural, environmental, academic, and many others, have altered the professional field of people.

CHAPTER SEVEN

FINDINGS ON THE RELATIONSHIP BETWEEN SOCIO-ECONOMIC FACTORS AND ENVIRONMENTAL FACTORS IN PROGRESSION OF AGRICULTURE CAREER AMONG STUDENTS IN TERTIARY INSTITUTIONS OF KAKAMEGA AND BUNGOMA COUNTIES, KENYA

7.1 Social-economic Factors Motivating Progression in Agricultural

One of the motivating factors hypothesized to be social-economic, entailed parental income, family size, parental education, employment opportunities and diversity in industry. Students were therefore asked on a questionnaire to indicate the extent to which they disagreed or agreed on these items. The findings are presented as shown in Table 7.1, using frequency counts and percentages.

Table 7.1: Social-economic Factors Motivating Progression in Agricultural Program

Socio-Economic	SD (1)	D (2)	N(3)	A(4)	SA (5)	Mean	SD
Parental Income	8(4.9)	25(15.4)	37(22.8)	64(39.5)	28(17.3)	3.49	1.099
Parental education	23(14.2)	24(14.8)	16(9.9)	56(34.6)	43(26.5)	3.44	1.392
Family size	19(11.7)	37(22.8)	38(23.5)	52(32.1)	16(9.9)	3.06	1.191
Employment opportunities	4(2.5)	2(1.2)	6(3.7)	76(46.9)	74(45.7)	4.32	0.816
Diversity in Industry	31(19.1)	32(19.8)	22(13.6)	37(22.8)	40(24.7)	3.14	1.474
Composite mean and standard deviation						**3.49**	**1.194**

Source, Field Survey Data, 2022

From the findings in Table 7.1 on socio-economic factors that motivate students to progress in agricultural programs, employment opportunity rated highest (M=4.32, SD=.0.816). Majority, 76(46.9%) of the students agreed while 74(45.7%) strongly agreed that employment opportunities motivated them to progress in Agricultural courses. Cumulatively, (92.6%) of the students revealed that employment opportunities motivated them to progress in Agricultural courses. However, 4(2.5%) of the students strongly disagreed or disagreed while 6(3.7%) remained neutral. From this finding, it can be noted that employment opportunities are among key factors that motivate students to progress in Agricultural courses. The second socio-economic factor was parental income program. Majority of the students, 64(39.5%) agreed and were supported by 28(17.3%) who strongly agreed that parental income program motivated them to progress in Agricultural courses. However, 37(22.8%) remained neutral, 25(15.4%) disagreed and 8(4.9%) strongly disagreed that parental income program motivated them. A high mean (M=3.49, SD=SD=1.099) implied that the rating approved parental income program as one of the socio-economic factors that motivated students to progress in Agricultural courses. The third highest rated factor among socio-economic factors (M=3.3, SD=1.23) was parental education. The findings shows that majority, 56(34.6%) agreed and 43(26.5%) strongly agreed that parental education motivated them to progress in Agricultural courses. Cumulatively, 99(61.1%) of the students agreed that parental education motivated them to progress in Agricultural courses. However, 16(9.9%) remained neutral, 24(14.8%) disagreed and 23(14.2%) strongly disagreed that parental education motivated them to progress in Agricultural courses. Finally, there were two factors which had a low rating as

factors that motivated students to progress in Agricultural courses. These included family size (M=3.06, SD=1.191) and diversity in industry. The findings further indicates that for family size, cumulatively 56(34.5%) students both disagreed and strongly disagreed while for industry diversity, cumulatively 63(38.9%) of the students disagreed and strongly disagreed. For the case of family size, 38(23.5%) students remained neutral while for industry diversity, 22(13.6%) were neutral. These findings implies that both family size and industry diversity factors did not motivate students to take Agricultural courses.

Basing on the principles impacting agriculture education training, socio- economic elements have influence on students' choice of agriculture as supported by Manyasi (2021). According to Davis (2008), the socioeconomic context influences the decision to pursue agricultural education. The style of life of students is influenced by their socioeconomic background, which may be seen in their parents' financial situation and its relation to parental education, family size, and income. The results in the current study implies that, basing on the job value, employment in the sector of agriculture comes first as rated by students. The current findings are in line with that of Manyasi (2021) review, Obayelu & Fadale's (2019) and Mkong et al, (2021) who examined factors that influenced students' choices and preferences for agricultural programs and reported that career motivated students to choose agriculture. Key informants in charge of departments pointed out that students know what they want and they report to college with fixed minds telling them to allow them register for specific programs. They also pointed out that it is not easy to change students' thought on employment aspirations.

According to Obayelu & Fadale's (2019) having a father who primarily practices

agriculture and supports agricultural education as an economic activity influences choice of agriculture by students. Parents education program motivate students to learn agriculture since they admire the achievements made by their parents. According to key the informants, students' aspirations on choice of career is supported by parents before they come to register for the courses. A chair of department added that students insist on what they discuss with their parents before they report to register for programs.

Eremie and Okwulehie (2018) research found that factors such as family socioeconomic status have significant influence of the students' choice of career. Students look at their parents economic activities and perceive it as mentorship in their life. If parents have associated themselves with agricultural economic activities and were successful, children want to emulate their act. They therefore want to learn more and be experts in the same line of knowledge.

7.2 Environmental Factors Motivating Students Progression in Agricultural Programs.

Students were asked to rate three items on environmental factors as motivation to progression in agricultural programs. These included institutional location, institutional infrastructure and technological infrastructure. The rating was done on a five-point Likert scale and the findings presented as shown in Table 7.2.

Table 7.2: Environmental Factors Motivating Students to progress in Agricultural career N=364

Environmental factors	SD (1)	D (2)	N(3)	A(4)	SA (5)	M	SD
Location of the institution	34(21)	81(50)	32(8.8)	14(8.6)	26(16)	2.33	1.108
Technology infrastructure	10(6.2)	6(3.7)	14(8.6)	163(44.8)	51(31.5)	4.15	1.129

Institutional infrastructures	7(4.3)	9(5.6)	7(4.3)	72(44.4)	67(41.4)	4.13	1.028
Composite mean and standard deviation						**3.54**	**1.088**

Source: Field Survey Data (2022)

From the findings presented in Table 7.2, the highest rated factor was technological infrastructure (M=4.15, SD=1.129) although with high standard deviation. The findings indicates that majority of the students, 81(50%) strongly agreed that technological infrastructure motivated them to take Agricultural courses and were supported by 51(31.5%) students who agreed as well. Cumulatively, 132(81.5%) of the students agreed and strongly agreed that they were motivated by technological infrastructure to progress in Agricultural programs. However, a few students, 14(8.6%) remained neutral, 6(3.7%) disagreed and 10(6.2%) strongly disagreed that they were motivated by technological infrastructure. From this finding, it can be noted that technology highly enhances student's decision in progressing with Agricultural courses. Most students want enroll for agricultural programs in colleges with established technology infrastructures to avoid theoretical instructions in higher education.

The second highly rated item was institutional infrastructure (M=4.13, SD=1.028) with low standard deviation. The findings shows that majority of students, 72(44.4%) agreed and 67(41.4%) strongly agreed that institutional infrastructure motivated them to progress in Agricultural courses. Therefore cumulatively, 139(85.8%) of the students agreed and strongly agreed that institutional infrastructure motivated them to progress in Agricultural courses. There were only 9(5.6%) who remained neutral or disagreed and 7(4.3%) who strongly disagreed. It can be noted that when institutions have good infrastructure, students are motivated to pursue Agricultural courses.

Physical facilities are key motivators of students to enroll and pursue a program in a training institution of choice.

The least rated factor was location of the institution, whose rating was low (M=2.33, SD=1.108). The findings shows that majority of the students, 81(50%) and 34(21%) disagreed and strongly disagreed According to (Kidane and Worth, 2012), influences of the classroom atmosphere on student learning exist and that, the school environment, including factors like security and individualized instruction, affects student performance. Improved school management and student discipline have a positive effect on students' ability to learn and their interest in a career in agriculture respectively that institutional location motivated them to progress in infrastructural courses. Cumulatively, 115(71%) of the students disagreed that institutional location motivated them to take Agricultural courses. However, 26(16%) of the students agreed that institutional location motivated them to take Agricultural courses and were supported by 7(4.3%) who strongly agreed although 14(8.6%) remained neutral on the statement. Manyasi (2021) review supported the findings that situational elements influence the progression in agriculture.

According to the agricultural students, technology offered by different colleges motivate the students who are interested in such technology to register for programs in line with the technology. As long as the technology need is available students travel far to find it. Youths mind more about identity status in what they want than anything else. According to the students, having known the type of infrastructure in a college, they want to own that environment as their college of study. It does not matter how far it is from home. As long as the infrastructures are appealing, they can choose any course to study. Basing on this factor, some students choose to study agriculture as long as the college offer agriculture training.

7.3 Basic tests of statistical assumption

Diagnostic tests were performed to check the fitness of data in meeting the basic tests of statistical assumptions.

7.3.1 Test for Normality of data

Normality test was done at 95% confidence interval. If the p-value is less than 0.05, then the null hypothesis is rejected and there is evidence that the data tested is not from a normally distributed population. If the p-value is greater than 0.05, then the null hypothesis stating that the data did not come from a normally distributed population is accepted. Kolmogorov-Smirnov (KS) goodness-of-fit test and Shapiro-Wilk (SW) test for normality was done to test the hypothesis;

$$H_0 : \textit{the data is not drawn from a normal distribution}$$
$$H_1 : \textit{the data is drawn from a normal distribution}$$

The findings are as shown in Table 7.3.

Table 7.3: Tests of Normality of Data

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Social-economic Factors Motivating Progression in Agricultural Programs	.132	162	.415	.965	162	.218
Environmental Factors Motivating Students Progression in Agricultural Programs	.207	162	.275	.866	162	.178

a. Lilliefors Significance Correction

Source: Field Survey Data (2022)

The Kolmogorov-Smirnov (KS) results in Table 7.3 indicate that data collected on socio-economic factors motivating progression in agriculture programs (df = 162, p = 0.415), and environmental factors motivating students' progression in agriculture

programs (df = 162, p = 0.275) were normally distributed as $p\text{-}values \geq 0.05$ and therefore statistically significant at 5% level of significance. The results implies that we reject the null hypothesis that the data does not form the normal distribution and conclude that it is normally distributed. On the other hand, the Shapiro-Wilk(SW) results in Table 7.3 shows that the data collected on socio-economic factors motivating progression in agriculture programs (df = 162, p = 0.218), and environmental factors motivating students progression in agriculture programs (df = 162, p = 0.178) were normally distributed as $p\text{-}values \geq 0.05$ and therefore statistically significant at 5% level of significance. The results implies that we reject the null hypothesis that the data does not form the normal distribution and conclude that it is normally distributed.

The SW results confirmed the KS results that the data came from normally distributed population and was normally distributed. This means that the tests of normality were significant and therefore parametric test should be used for analysis.

7.7.2 Multicollinearity Tests for correlation in predictor variables

Multicollinearity exists when there is the presence of strong correlation between or among predictor variables and can result to increase in the standard errors with the beta coefficients, limit the value of R and make it difficult to determine the importance of each predictor in the model. Assessment of Multicollinearity was done using the tolerance value and Variance inflation factor (VIF). Tolerance value ranges between 0 and 1 with a value below 0.1 indicates serious Multicollinearity problem. The VIF statistic is the inverse of tolerance value and has no definite cut-off points but if the VIF value lies between 1– 10, then there is no Multicollinearity. If the VIF

value is less than 1 or more than 10, then there is Multicollinearity. The results of Multicollinearity test are presented in Table 7.4

Table 7.4: Multicollinearity Tests for predictor Variables

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Social-economic Factors Motivating Progression in Agricultural Programs	.871	1.429
	Environmental Factors Motivating Students Progression in Agricultural Programs	.723	1.201

Source: Field Survey Data (2022)

The results in Table 7.4 shows that the tolerance values are all above 0.5 and are closer to the maximum value of 1 than to minimum value of 0 which indicates the absence of Multicollinearity. On the other hand, the VIF values are all close to 1 than 10 indicating the absence of collinearity and absence of bias in the model.

7.7.3 Heteroscedasticity/ Homoscedasticity

Homoscedasticity is a situation where the variance errors across all levels of the predictor variable are the same while heteroscedasticity is the absence of homoscedasticity that is the variance errors vary across the all the observations. Failure to correct heteroscedasticity invalidates statistical tests of significance such as regression analysis and increase the chance of wrong inference. This study used Levene statistic to test the null hypothesis that the variance of the explained variable are equal across all levels of explanatory variables. The results are presented in Table 7.5.

Table 7.5: Test Homogeneity of Variance

	Levene Statistic	df1	df2	Sig.
Social-economic Factors Motivating Progression in Agricultural Programs	1.655	1	160	.200
Environmental Factors Motivating Students Progression in Agricultural Programs	11.852	1	160	.001

Source: Field Survey data (2022)

The Levene statistics is significant when $p < 0.05$ which would lead to rejection of the null hypothesis but when $p > 0.05$ we accept the null hypothesis. It's worthy to note from the results in Table 7.5 that the $p > 0.05$ which implies that we accept the null hypothesis and conclude that the variances of the dependent variable are not steady across different levels of the explanatory variables which fulfils the assumption of homogeneity of variance.

7.4 Socio-economic and environmental Factor using Principal Component Analysis

Guided by the theoretical framework, a total of eight items classified as selection factors were subjected to principal component analysis correlation matrix. The factors included; parental income (item 1), family size (item 2), parental education (item 3), employment opportunities (item 4), diversity industry (item 5), location of the institution (item 6), institutional infrastructure (item 7), and technological infrastructure, (item 8.

The researcher sought to determine the relationship between socio-economic factors and environmental factors in progression of agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

The study sought to answer following research hypothesis;

Ho2: There is no statistically significant relationship between socio-economic factors and environmental factors in progression of agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya.

In order to answer the research hypothesis, the researcher used principal component analysis. The findings of the analysis are presented as shown in Table 7.6

Table 7. 6: Correlation Matrix

Item		1	2	3	4	5	6	7	8
Correlation	1	1.000	-.069	.103	.184	.038	.286	.164	-.029
	2	-.069	1.000	.105	.092	-.219	-.200	.106	.137
	3	.103	.105	1.000	.135	.395	.137	-.039	-.062
	4	.184	.092	.135	1.000	-.177	-.131	.371	.054
	5	.038	-.219	.395	-.177	1.000	.200	-.428	-.246
	6	.286	-.200	.137	-.131	.200	1.000	.044	-.021
	7	.164	.106	-.039	.371	-.428	.044	1.000	.363
	8	-.029	.137	-.062	.054	-.246	-.021	.363	1.000

a. Determinant = .323

Source: Field Survey Data(2022)

To check for collinearity, we check the value of Determinant, if the value is ≤ 0.0001 then collinearity is too high and if the value is zero, then the solution is not possible. In Table 7.6, the Determinant value is 0.323 which indicates the absence of collinearity. Correlation Matrix indicates how each question is associated (correlated) with each of the other questions. Relatively high correlations indicate that two items are associated and will probably be grouped together by the factor analysis. Items with low correlations (e.g., ≤.20) usually will not have high loadings on the same factor. In table 7.6, there are correlation coefficients of 0.2 and above as evidence by the correlation ($r = 0.200, 0.219, 0.246, 0.286, 0.371, 0.428$) between item 2 and 5, item 2 and 6, item 3 and 5, item 4 and 7 item 5 and 7. This means that there is high strength of inter-correlations among items that qualifying the principal component method.

The other aspect for ensuring factorability was the use of Kaiser Meyer Olkin (KMO) measure of sampling adequacy and Barlett's Test of Sphericity. A KMO value greater than 0.5 and ≤ 0.05 suggests there is substantial correlation in the data. The results of

KMO is shown in Table 7.7.

Table 7. 7: KMO and Bartlett's Test For qualification for factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.545
Bartlett's Test of Sphericity	Approx. Chi-Square	178.000
	Df	28
	Sig.	.000

Source: Field Survey data (2022)

From the analysis shown in Table 7.7, KMO value is 0.545 which is a minimum value suggested for good factor analysis. Bartlett's Test of Sphericity value is also significant ($p<.05$) indicating that the correlation matrix is significantly different from an identity matrix in which correlation between variables are all zeros. This results implies that the items and data qualify factor analysis.

To show the relation between the variable and all other variables (i.e., the squared multiple correlation between the item and all other items) before rotation we check the communalities values. If many or most communalities are low (< .30), a small sample size is more likely to distort results. The findings of communalities are shown in Table 7.8.

Table 7.8: Communalities Values of the Variables

	Extraction
Parental income motivated you to take agriculture	.564
Family size motivated you to take agriculture	.522
Parental education program motivated you to take agriculture	.764
Employment opportunities motivated you to take agriculture	.533
Diversity in industry motivated you to take agriculture	.711
Institution location motivated you to take agriculture	.618
Institution infrastructure motivated you to take agriculture	.713
Technology infrastructures motivated you to take agriculture	.322

Source: Field data (2022)

In Table 7.8, any value < 0.3 (in the extraction column) would suggest that the item would need to be reconsidered. From the results, all of the extraction values are relatively high (> 0.3) so these are considered good extraction.

To determine how many components (factors) to 'extract' a few aspects were considered provided in the output. Using Kaiser's criterion. The study examined only in components that have an eigenvalue of 1 or more. To determine how many components meet this Criterion the Total Variance Explained table was examined. The Table is shown below.

Table 7.9: Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.020	25.251	25.251	2.020	25.251	25.251	1.961	24.511	24.511
2	1.521	19.018	44.269	1.521	19.018	44.269	1.457	18.212	42.723
3	1.205	15.068	59.337	1.205	15.068	59.337	1.329	16.614	59.337
4	.980	12.247	71.585						
5	.805	10.062	81.646						
6	.619	7.740	89.386						
7	.466	5.827	95.213						
8	.383	4.787	100.000						

Extraction Method: Principal Component Analysis.

Source: Field data (2022)

The Total Variance Explained Table 7.9 shows how the variance is divided among the 8 possible factors. Note that three factors have eigenvalues (a measure of explained variance) greater than 1.0, which is a common criterion for a factor to be useful. When the eigenvalue is less than 1.0 the factor explains less information than a single

item would have explained. Based on the cumulative 59.337% of the variability is explained by the first three components. Thus dimensionality could be reduced with at least 41%.

Factors are rotated so that they are easier to interpret. Rotation makes it so that, as much as possible, different items are explained or predicted by different underlying factors, and each factor explains more than one item. This is a condition called simple structure. Although this is the *goal* of rotation, in reality, this is not always achieved. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. Table 7.10 below shows the Rotated Factor Matrix

Table 7.10: Rotated Component Matrix

	Component		
	1	2	3
Institution infrastructure motivated you to take agriculture	.796	.175	.221
Diversity in industry motivated you to take agriculture	-.774	.242	.232
Technology infrastructures motivated you to take agriculture	.566		
Institution location motivated you to take agriculture		.780	
Parental income motivated you to take agriculture	.178	.673	.283
Family size motivated you to take agriculture	.210	-.543	.428
Parental education program motivated you to take agriculture	-.366	.106	.786
Employment opportunities motivated you to take agriculture	.435		.587

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations.

Source: Survey Field Data

The Rotated Factor Matrix in Table 7.10 is key for understanding the results of the analysis. Factors are rotated so that they are easier to interpret. Rotation makes it so that, as much as possible, different items are explained or predicted by different underlying factors, and each factor explains more than one item. This is a condition called simple structure. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. The analysis has sorted socio-economic and environmental factors of agriculture subject questions (*item 01* to *item 8*) into three somewhat overlapping groups of items. The items are sorted so that the items that have the highest loading (not considering whether the correlation is positive or negative) from factor 1 (three items in this analysis) are listed first, and they are sorted from the one with the highest factor weight or loading (i.e., *item 7(institutional infrastructure)*, with a loading of .796) to the one with the lowest loading from that first factor (*item 7(diversity in the industry*) with a loading of -0.774). Actually, every item has some loading from every factor, but we requested for loadings less than |.30| to be excluded from the output, so there are blanks where low loadings exist. For instance item 07 "institutional infrastructure" has a positive loading from the progression factor, which indicates that the students enrol in agriculture due to institutional infrastructure. Usually, factor loadings lower than |.30| are considered low, which is the reason why it suppressed loadings less than |.30|. Kaiser criterion was used to retain all components with eigenvalues above 1 as default. From the findings, it can be seen that most of the items load quite strongly (above .3) on the first component. Component 2 has only three items at 0.3 while component 3 has at least three items with loading of 0.3. This supports the conclusion from the Scree plot to retain only two factors for further investigation.

Often, using the Kaiser criterion, it is possible to detect too many components extracted, so it is important to also look at the Scree plot. The most important feature

examined on the Scree plot is the change (or elbow) in the shape of the plot. Only components above this point are retained. This is shown in Figure 7.1

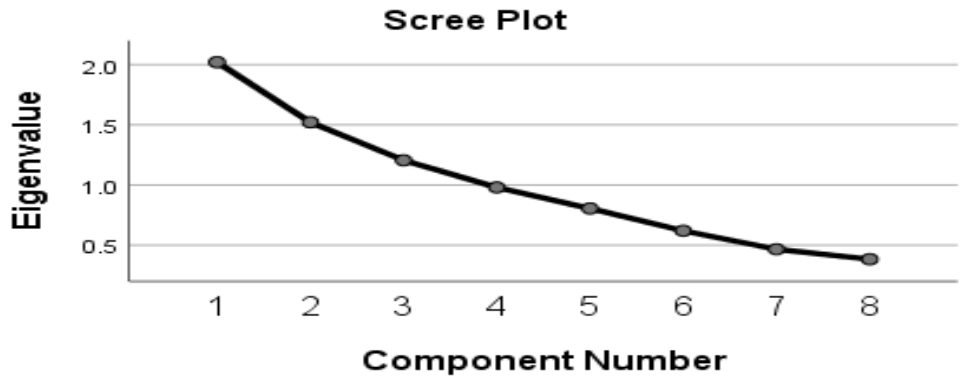

Figure 7. 1 Scree Plot for Selection Factors

Source: Field data (2022)

An examination of the Scree plot shows that there is quite a clear break between the second and third components. Components 1 and 2 capture much more of the variance than the remaining components. From this plot, it would be recommend retaining (extracting) only two components. There is also another little break after the third component. Depending on the theoretically classified components as socio-economic and environmental factors, this is worth exploring the two.

Therefore, in general, Principal component factor analysis with varimax rotation was conducted to assess the underlying structure for the 8 items of the selected factors for agriculture Progression Questionnaire. Three factors were requested, based on the fact that the items were designed to index three constructs: parental income, family size and parental education. After rotation, the first factor (: parental income) accounted for 24.511% of the variance, the second factor (family size) accounted for 42.723%,

and the third factor (Parent education) accounted for 59.337%. From these findings, the null hypothesis was rejected and alternative hypothesis adopted.

Basing on the principles impacting agriculture education training, socio- economic elements have influence on students' choice of agriculture as supported by Manyasi (2021). Students look back on to what their parents have successful achieved as mentorship. According to Davis (2008), the socioeconomic context influences the decision to pursue agricultural education. The style of life of students is influenced by their socio-economic background, which may be seen in their parents' financial context and its relation to parental education, family size, and income. The current findings are in line with that of Manyasi (2021) review, Obayelu & Fadale's (2019) and Mkong et al, (2021) who reviewed factors that influence students' choices and preferences for agricultural programs and reported that income motivated students to choose agriculture. Key informants in charge of departments pointed out that students know what they want and they report to college with fixed minds telling them to allow them register for specific programs. They also pointed out that it is not easy to change students' thought on employment aspirations.

According to Obayelu & Fadale's (2019) having a father who primarily practices agriculture for income and supports agricultural education as an economic activity

influences choice of agriculture by students. Parents education program motivate students to learn agriculture since they admire the achievements made by their parents. According to key the informants, students' aspirations on choice of career is supported by parents before they come to register for the courses. A chair of department added that students insist on what they discuss with their parents before they report to

register for programs.

Eremie and Okwulehie (2018) research found that factors such as family socioeconomic status have significant influence of the students' choice of career. Students look at their parents economic activities and perceive it as mentorship in their life. If parents have associated themselves with agricultural economic activities and were successful, children want to emulate their act. They therefore want to learn more and become experts in the same line of knowledge.

CHAPTER EIGHT

FINDINGS ON STRATEGIES EMPLOYED TO MITIGATE CHALLENGES TO PROGRESSION IN AGRICULTURAL PROPRAMS IN BUNGOMA AND KAKAMEGA COUNTIES OF KENYA

8.1 Introduction

This chapter evaluated the strategies to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya. It informs on the response rate for students from tertiary institutions across Bungoma and Kakamega counties of Kenya, challenges across the counties, across gender and in the programs of study by the students, as well as strategies that were suggested to curb the challenges by the students of agriculture through questionnaires and Key informants during the interviews. The findings are presented in the subsequent sections.

8.2 Challenges to Progression in Agricultural Programs in Bungoma and Kakamega Counties 2016-2021

Whereas students seek to progress in Agricultural programs, they at times encounter some challenges that hinder them from doing this. The study therefore sought to establish these challenges which among others are presented in Table 8.1.

Table 8. 1 Challenges to Progression in Agricultural Programs in Bungoma and Kakamega Counties

Challenges	SD (1)	D (2)	N(3)	A(4)	SA (5)	Mean	SD
Ministry policies on program	27(16.7)	27(16.7)	16(9.9)	44(27.2)	47(29)	3.35	1.472
School policy	32(19.8)	28(17.3)	47(29)	41(25.3)	14(8.6)	2.86	1.245
Parents decision	14(8.6)	42(25.9)	7(4.3)	80(49.4)	19(11.7)	3.30	1.220
Teachers influence	19(11.7)	32(19.8)	7(4.3)	77(47.5)	27(16.7)	3.19	1. 264
Peer compliance	23(14.2)	48(29.6)	26(16)	50(30.9)	15(9.3)	2.19	1.243
Lack of involvement in policy dialogue	17(10.5)	52(32.1)	48(29.6)	47(29)	24(14.8)	3.06	1.277
Lack of modern Agriculture curricular and technology	12(7.4)	53(32.7)	35(21.6)	38(23.5)	24(14.8)	3.06	1.207
Lack of government scholarship in agriculture	18(11.1)	9(5.6)	20(12.3)	81(50)	34(21)	3.64	1.198
Composite mean and standard deviation						**3.08**	**0.429**

Source: Field Data (2022)

Majority of the students, 44(27.2%) agreed while 47(29%) strongly agreed that ministry policies on program selection were a challenge to progression in Agricultural programs. Cumulatively, 91(56.2%) of the students agreed that ministry policies were a challenge to progression in Agricultural Programs. However, 16(9.9%) of them remained neutral on the subject. 27(16.7%) strongly disagreed and 28(17.3%) disagreed cumulatively, 55(34%) of the students disagreed that ministry policies were a challenge. It can be noted from a comparative observation of the findings that ministry policies are a challenge to progression in Agricultural programs, which is

also evidenced by a high mean (M=3.35, SD=1.472) although with a high standard deviation. Apart from the 47(29%) students that were neutral on school/department policy, cumulatively 60(37.1%) of the students disagreed and strongly disagreed that school/department policy was a challenge. However, 41(25.3%) agreed and 14(8.6%) strongly agreed. Therefore cumulatively, 55(33.9%) of the students agreed that school/department policies were a challenge to their progression in Agricultural programs. A low mean (M=2.86) and high standard deviation (STD=1.245) confirmed that school/department policies were not a challenge despite high variation in the response as indicated by the standard deviation. Parental decision gained much approval among majority of students 80(49.4%) who agreed as well as 19(11.7%) who strongly agreed although 42(25.9%) and 14(8.6%) disagreed and strongly disagreed respectively. A total of 7(4.3%) of them remained neutral. A high mean and standard deviation (M=3.30, SD=1.220) indicated that averagely, there was high approval of parental decision as a challenge to progression in agricultural programs. Perhaps, there were parents who did not have interest in agricultural programs and therefore they discouraged their children to pursue these. Results in Table 8.1 further shows that teacher influence played a significant challenge to student's progression in agricultural courses. Majority, 77(47.5%) of the students agreed that teacher influence was a challenge to their progression in agricultural courses and were supported by 27(16.7%) who strongly agreed. Cumulatively, 104(64.2%) students agreed that teacher influence was a challenge to their progression in agricultural programs while 48(29.6%) disagreed or did not approve of teacher influence as a challenge to progression in agricultural courses. A total of 7(4.3%) of them remained neutral on the subject. To affirm these finding, a high mean (M=3.19, STD=1.264) confirmed that teacher influence is a challenge to students progression in agricultural programs.

Another challenge was peer compliance, which had a high rating (M=3.0, STD=1.42). Whereas majority of the students, 48(29.6%) disagreed and 23(14.2%) strongly disagreed on peer compliance, 15(9.3%) strongly agreed and 50(30.9%) agreed on the same. 26(16%) of the students remained neutral on the subject. Cumulatively, 65(40.2%) of the students agreed on peer compliance as a challenge while 71(43.8%) disagreed. It can however be noted that based on the average response, peer compliance remains a challenge. The findings shows that majority of the students, 52(32.1%) disagreed on lack or little of student involvement in policy dialogue as a challenge and were further affirmed by 24(14.8%) who strongly disagreed. Therefore cumulatively, 69(42.6%) of the students disagreed on lack of students engagement on policy dialogue as a challenge. A total of 22(13.6%) remained neutral on the same, 47(29%) agreed and 24(14.8%) strongly agreed on the same. Cumulatively, 71(43.8%) of the students agreed that their involvement on policy dialogue was a challenge to progression in agricultural programs. A low mean (M=3.06, STD=1.277) and a high standard deviation confirmed that little students involvement was not a challenge to progression in agricultural programs. Students further rated lack of modern agricultural curricula and technology as a factor that was not a serious challenge to progression in Agricultural courses (M=3.06, STD=1.207). From the findings, majority of them, 53(32.7%) disagreed and 12(7.4%) strongly disagreed. Cumulatively, 65(40.1%) of the students disagreed that lack of modern agricultural curricula and technology was a challenge to their progression in agricultural program. However, 38(23.5%) of the students agreed while 24(14.8%) strongly agreed hence leading to a cumulative 62(38.3%) approval of lack of modern agricultural curricula and technology as a challenge. It can however be noted that based on the low mean response, lack of modern agricultural curricula and technology is not a major

challenge to progression in agricultural programs. Limited government scholarships in agriculture sector emerged a major challenge as indicated by a high rating (M=3.64, STD=1.198). From the findings, majority, 81(50%) of the students agreed while 34(21%) strongly agreed that limited government scholarships in agriculture sector was a challenge to their progression in agricultural programs. Cumulatively, 115(71%) of the students agreed that limited government scholarships in agriculture sector as a challenge to progression in agricultural programs. However, 18(11%) of the students strongly disagreed, 9(5.6%) disagreed that limited government scholarships in agriculture sector while 20(12.3%) remained neutral. It can be noted from this finding that averagely, the rating was high and therefore limited government scholarships in agriculture sector is a major challenge to students progression in agricultural Programs.

On average, challenges to progression in agricultural program were high (M=3.64, STD= 1.198) implying that students encountered challenges in their quest to progress in agricultural programs. Among the challenges, the major ones included ministry policies on program selection which was the highest implying that whereas students wanted to pursue these programs, the policies on selection hindered them. A Focus group discussion comprising of students from different tertiary institutions claimed that, the mean grade, clusters of subjects together with grades obtained in the cluster subjects could not allow them to apply for agricultural programs of their choice. The key informant heads of department claimed that students end up with programs which were not of their choice. The key informants affirmed that academic achievement policy curbs students' willingness to progress in agriculture program and therefore it is vital for the placement policy makers to understand that students' academic achievement may not match their educational objectives. A decade researcher posits

that Colleges typically select students to join programs based on their level of education and high school achievement, but it is critical for the placement department to understand that a student's choice of college and hence choice of program is far more important than college placement (Chapman, 1981). It is important for the policy makers to hold meetings after every national examination to review this policy depending on performance. This will enable some students to fit into selecting some of the programs that are hard hid and are have been abandoned due to cluster subjects and grades policy. Ochuodho, J. O. (2018) found that students are admitted to degree programs and universities that are not of their choosing. Study of the students admitted to Agriculture programs at the University of Eldoret found that forty percent did not choose these courses; thus, when they arrive at university, they attempt to switch to popular courses or what they claim to be their love. Therefore, limited financial resources make it difficult for students to progress in their agricultural programs. In some cases, parents being sponsors of these students make different decision that hinder them from enrolling in agriculture, hence posing a challenge for the students to progress in agricultural programs. According to Barau et al. (2016) in Sokoto Metropolis, Nigeria, Secondary school students indicated willingness to working in agriculture sections such as poultry industry, may not proceed to select the programs because of the perceived barriers to entering the agricultural sector were a lack of information, a lack of government commitment, and a lack of cash. Students are not sure if the government is committed to creating jobs and providing scholarships at the time of study of after they complete their education. Some of the students have no idea of where jobs can be found.

Parents' decision is also a major challenge to progression in agriculture due to policies of selection put in place by the government. According to the agricultural

students, as long as one has the required qualifications, he or she can join any other college and evade the unfavorable policies of a specific colleges, but its difficulty for them to escape the academic achievement policy of the Ministry of education on program selection.

The students claimed that it could be very difficult for them pursue other programs away from agricultural program if parents declined and want to sponsor them. Similarly, for the students from low economic background homes, lack of scholarships may be a challenge to them if they want to pursue agricultural courses. Powel (2019) affirmed that parents are motivators to learners to major in agriculture at college since they frequently communicate with them and easily influence learners' decision to progress in agricultural programs of interest. Manyasi (2021) supported interpersonal communications as influential elements to learners to study a program in agriculture. Parents' decision is a significant factor in progression in agriculture since they are in control of the education of their Children. As they pay fees, they also have different visions for their children of which, some may be cultural, socio-economic and personal. Some parents claim that it is culture in their generation.

What are the strategies that can be employed to mitigate the challenges facing Students in selection and progression in agriculture career in tertiary institutions In Kenya?

Students of agricultural programs and key informants suggest strategies that can be employed by the ministry of agriculture and ministry education to mitigate the challenges in progression, as indicated in the questionnaires. Students' focus groups rated the suggested strategies. The strategies to the ministry of education are recorded

in table 8.2.

Table 8.2: Suggested Strategies to the Ministry of Education

No	Suggested Strategies
i.	Make Agricultural course business oriented
ii.	Make Agricultural course more practically oriented
iii.	Prioritize staffing for agriculture teachers
iv.	It must be made compulsory like in USA, Ghana and Nigeria
v.	Intensify career guiding and counselling in Agricultural Course
vi.	Lower grading for entry to Agricultural courses
vii.	Providing training equipment and machines which give self-employment after the end of the training

The suggested strategies to be put in place by the Ministry of Agriculture to motivate learners to enrol in agricultural programs also emerged. The aforementioned strategies were recorded and presented as shown in Table 8.3

Table 8. 3: Suggested Strategies to the Ministry of Agriculture

Suggested Strategies	
i.	Creating more job opportunities in Agriculture course
ii.	Providing incentives and scholarships to agricultural students
iii.	Entrepreneurial start up kits for agricultural students
iv.	Legal requirement to set up agro-based industries for self-employment by agricultural students
v.	Putting up more agricultural colleges equipped with relevant resources in line with the course
vi.	Review salary packages for officers in this field

From the above findings, various strategies were suggested by the key informants. The informants' suggestions revolve around making agricultural programs more business oriented, practical and compulsory. It also emerged that improving staffing of teachers, guiding and counselling and provision of equipment and machines by the ministry of education would make students' progress in agricultural programs. Other strategies suggested by the key informants for the ministry of agriculture included creation of more job opportunities, provision of incentives and scholarships, making it legal requirement, equipping the program and reviewing salary package for the teachers.

However, agriculture students' held a focus group discussion and ranked the suggested strategies in order of preference, to mitigate challenges to progression in agricultural programs as;

i) Make Agricultural course more practically oriented

ii) Make Agricultural course business oriented

iii) Providing training equipment and machines which give self-employment after the end of the training

iv) Lower grading for entry to Agricultural courses

v) Prioritize staffing for agriculture teachers

i) Intensify career guiding and counselling in Agricultural course

ii) It must be made compulsory like in USA, Ghana and Nigeria

Members insisted that, the above order must be maintained. A members of the focus group explained that;

"The ministry of education must make the course practical, and business oriented, then provide equipment and agricultural machineries to help graduates to be self-employed. With all that, they can now lower the entry grades and employ more teachers. If they intensify the career guidance then, more students will be attracted to enroll if the ministry of education makes the programs compulsory."

Anquilo-de Asis (2013) conducted research on obstacles and strategic approaches in promoting agricultural education at the University of the Eastern Philippines (UEP) after discovering that agricultural education was in jeopardy and it became impossible to ignore reports of diminishing selection and dwindling market demand for agriculture education graduates. The researcher strong argued that streamlining the approved agricultural education curricula and implementing agricultural

entrepreneurship was a feasible strategy for agricultural education while emphasizing on theoretical and technological transfer by applying the "hands-on activities, mind-on approach" in order to bring learning to the field and make it applicable technology. He added that the changes in agriculture's should allow for interaction between those who generate, consume, and transfer knowledge. This would contribute to the improvement of agricultural education by fostering innovative networks and boosting the capacity of organizations and individuals to transfer and modify data, products, and methods.

According to Calvin and Pense (2013), establishing community-based courses within the curriculum and or attaching a field or practical component to different courses that can be tied to ongoing research and development would strengthen the connection between extension and education. This will improve progression as students are interested in practice.

Alawa. et al. (2020) recommend that among the policies that support agricultural education and training are the development of occupational agricultural colleges to reflect agricultural practices in the forest zone, the recruitment of pedagogically educated professors, and the revision of the land use decree to allow graduates to acquire land for agriculture.. Such practices increase interest and progression as well as progression. According to Pratley (2008), the decline in agricultural program progression in the United States is due to a lack of skilled people, which impacts current and future agricultural secondary programs as well as learner preference.

Adebo and Sekumade (2013) argue that many young Nigerians choose careers that require them to move to the cities in quest of white-collar work. The sheer fervor of agriculture that is not embraced by youths, along with rural-urban drift, has dislocated the nation's agricultural productive capacity, causing the farmer population to age and resulting in poorer per capital productivity and output. Taghibaygi (2015) claims that a

lack of motivation among students prevents them from acquiring the skills and technologies necessary for agricultural vocations and businesses as one of the reasons for agricultural training institutes' limited impact on the development of students' employment chances. Colleges often select students to enroll in their programs based on their level of education and high school performance, but the placement department must realize that a student's choice of college is considerably more significant than college placement (Chapman, 1981).

College selection should always take into account the student's educational goals. This will stop them from streaming away from rural area even after training in land use and agriculture. Atela and Ongang'a (2018), report that students' reflection of agriculture as a career were modest, despite the fact that their career aspirations had little influence on them. He insisted that to improve their morale and attitudes towards agriculture, agricultural educators must demystify agriculture as a science subject. Students should be encouraged to select a career path as early as form one and two in order to develop a positive attitude toward the subject. Professionals in the agricultural industry should make a concerted effort to engage with school officials in gaining access to give career-related information. These professionals should present agricultural careers in a favorable light. In addition to providing written material about vocations and opportunities in higher education, schools can also invite career professionals to their campuses. In addition, he recommended that colleges and universities with programs that prepare professionals for agricultural careers collaborate with schools to disseminate information by producing high-quality media that positively portrays the expansive array of professional opportunities in agriculture and technology and that schools and universities should offer agricultural experiences outside of their regions, such as mentoring programs for high school students.

Manyasi (2021) illustrates that despite the fact that agriculture accounts for 40% of Africa's GDP and 70% of its employment, many nations have reported a decline in agricultural project selection. In spite of bountiful agricultural resources, the rising population in developing countries like Kenya has led to severe food shortages and the establishment of agricultural education programs on food security. In countries with efficient farm laborers, researchers, educators, extension agents, and professionals, agricultural education may play a crucial role in providing a clear context for profitable and sustainable agricultural expansion. Governments should strongly support agriculture education by financing agriculture education research, which will improve students' perspectives, attitudes, and desire to study agriculture. Students' perspectives on agriculture education and the profession must be altered by encouraging everyone to learn farming and participate in Kenya's new Competency-Based Curriculum (CBC) for high school graduation.

CHAPTER NINE

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

9.1 Introduction

This chapter presents a summary of the study findings, conclusions drawn based on the results, recommendations based on the conclusions and suggestions for further research.

9.2 Summary of Findings

The first objective sought to establish selection trends in agriculture subject of students in secondary schools of Kakamega and Bungoma counties, Kenya from 2016 – 2021. It was established that, there was an increment in agricultural students' selection between 2016 and 2021. In general, analysis show that, private schools have the lowest mean of selection of agriculture students and therefore causing low combined mean in agriculture subject selection from 2016 to 2021. The combined mean of agriculture subject selection in the five categories of schools generally increased from the year 2016 to 2021, that is in the year 2016 it was 27.1049, in 2017 it was29.9815, in 2018 it was 35.0123, in 2019 it was 36.9938, in 2020 it was 42.7901 and in 2021 the combine mean was 45.5494. To determine the significance in the means of 5 different categories of school, ANOVA results show that, in 2016, F (4, 157) is 2503.772 and p-value < 0.05 is significant. This implies that the five categories of schools differ significantly in agriculture selection. Similar results can be observed for the consequent years with exemption of F-value which differs. From the results, there are statistically significant differences between the years of agriculture selection. Multiple comparison table revealed the year that differed in agriculture selection for the 5 different categories of schools, that is where there is (*) can be interpreted as the

one causing the mean difference between the two selected mean which is significant. For instance in 2016, there was significant difference between agriculture selection in extra county schools with sub-county and private schools. The variation or difference between extra county and sub-county selection was caused by more students selecting agriculture in sub-county schools while few students selected agriculture in private schools. Data provided show that, subcounty schools are more and most of the sub county school students select agriculture. Therefore, change in type of school, causes a change in agriculture subject

The second objective determined the trends in progression in agriculture career among students in tertiary institutions of Kakamega and Bungoma Counties, Kenya from 2016 – 2021. The analysis imply that more students of KCSE agriculture enroll for agriculture programs in TVETs standard deviation(185.0) than in universities standard deviation (140.0). More students from Kakamega county standard deviation (105.35) join national TVETs for agriculture programs meaning higher progression in Kakamega county than those in Bungoma county standard deviation (81). More students of Bungoma county standard deviation(83.0) progress in agriculture programs to the university than those from Kakamega county Standard deviation (81.1).

A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Kenya (Mean = 279258.33, SD = 36134.52) and the total agriculture enrolment in the universities (Mean = 271.33, SD = 140.06808). The results also shows that total KCSE agriculture enrollment in Kenya and total agriculture enrolment in universities scores was weakly and positively correlated ($r = 0.198$, $p = 0.707$). The results also shows that the average difference between total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the universities is significant ($t(5) = 18.912$, $p < 0.05$). A paired

sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Kenya (Mean = 279258.33, SD = 36134.52) and the total agriculture enrolment in TVET (Mean = 360.00, SD = 185.03513). The results also shows that total KCSE agriculture enrollment in Kenya and total agriculture enrolment in TVET was strongly and positively correlated ($r = 0.889$, $p = 0.018$). The results also shows that the average difference between total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the TVET is significant ($t(5) = 18.978$, $p < 0.05$). A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Bungoma (Mean = 14641.33, SD = 2553.40) and Bungoma agriculture enrolment in the universities in Kenya (Mean = 125.67, SD = 83.07). The results also shows that total KCSE agriculture enrollment in Bungoma and Bungoma agriculture progression to the universities in Kenya scores was weakly and positively correlated ($r = 0.384$, $p = 0.453$). The results also shows that the average difference between total KCSE agriculture enrolment in Bungoma and Bungoma agriculture progression to the universities in Kenya is significant ($t(5) = 14.095$, $p < 0.05$). A paired sample t-test failed to reveal a statistically reliable difference between the mean number of the total KCSE agriculture enrolment in Kakamega (Mean = 14471.50, SD = 1981.28) and Kakamega agriculture progression to the universities in Kenya (Mean = 132.33, SD = 81.10). The results also shows that total KCSE agriculture enrollment in Kakamega and Kakamega agriculture progression to the universities in Kenya scores was weakly and positively correlated ($r = 0.154$, $p = 0.771$). The results also shows that the average difference between total KCSE agriculture enrolment in Kakamega and Kakamega agriculture progression to the universities in Kenya is significant ($t(5) = 17.825$, $p < 0.05$).

The third objective determined the relationship between selection factors and selection of agriculture subjects among Secondary school students in Kakamega and Bungoma Counties. Findings showed that communication factors, highly motivated

students. Generally, the highest mean was recorded for parental motivational factors (M=4.39). However, the overall mean on communication factors is M =3.3 while that of individual factors is M=2.9. Principal component analysis with varimax rotation was conducted to assess the underlying structure for the 9 items of the selected factors for agriculture subject Questionnaire. Three factors were requested, based on the fact that the items were designed to index three constructs: friends, peers, and parents. After rotation, the first factor (friends motivation) accounted for 23.99% of the variance, the second factor (peers motivation) accounted for 41.786%, and the third factor (Parents motivation) accounted for 55.924%. This implies that selection factors positively contributed to the selection of agriculture subject among students in secondary schools.

Objective four of the study also determined the relationship between socio-economic factors and environmental factors in progression motivational factors and progression in agriculture programs in tertiary institutions. After rotation, the first factor (: parental income) accounted for 24.511% of the variance, the second factor (family size) accounted for 42.723%, and the third factor (Parent education) accounted for 59.337%. Socio -economic factors are stronger motivators to progression in agricultural career than environmental factors. From these findings, the null hypothesis was rejected and alternative hypothesis adopted.

The objective five of the study evaluated strategies to mitigate challenges facing students in selection and progression in agriculture career in tertiary institutions of Kenya. Students stated challenges encountered progress during selection and progression in agricultural Programs. However, there were also suggested strategies that could curb these challenges. Among the challenges encountered were Ministry policies, parents' decision, teacher influence, peer compliance and limited government

scholarships in agriculture sector. However, strategies by the Ministry of agriculture and those by the Ministry of education were revealed. The ministry of agriculture could review salary scales and create more job opportunities. The Ministry of education could make agricultural course business oriented and lower entry grades to university or TVET among other issues.

9.3 Conclusion

i)Agriculture subject selection among secondary school students in Kakamega and Bungoma counties has been maintaining a positive trend since 2016. There has also been growth, with a consistent positive growth across the years. Multiple comparison table revealed the year that differed in agriculture selection for the 5 different categories of schools, that is where there is (*) can be interpreted as the one causing the mean difference between the two selected mean which is significant. Some of the factors contributing to the variance in selection are type of schools. It can be concluded that selection is contributed to by change in the type of school.

ii). Whereas there is high selection of agriculture subject, those who progress in agriculture are very few, and of very small percentage compared to the yearly total number of agricultural students who undertake KCSE examinations. There is sufficient evidence to conclude that the total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the universities is different that is, on average the total KCSE agriculture enrolment in Kenya score (278987.00) is higher than the total agriculture enrolment in the universities. The total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the TVET is different that is. on average the total KCSE agriculture enrolment in Kenya score (278898.00) is higher than the total agriculture enrolment in the TVET. The total KCSE agriculture enrolment in Bungoma and

Bungoma agriculture progression to the universities in Kenya is different that is. on average the total KCSE agriculture enrolment in Bungoma score (14515.67) is higher than Bungoma agriculture progression to the universities in Kenya. The total KCSE agriculture enrolment in Kakamega and Kakamega agriculture progression to the universities in Kenya is different that is, on average the total KCSE agriculture enrolment in Kakamega score (14339.17) is higher than Kakamega agriculture progression to the universities in Kenya.

iii). Selection factors positively and statistically contributed to the selection of agriculture subject among students in secondary schools. After rotation, the first factor (friends motivation) accounted for 23.99% of the variance, the second factor (peers motivation) accounted for 41.786%, and the third factor (Parents motivation) accounted for 55.924%. From these findings, the null hypothesis was rejected and alternative hypothesis adopted.

iv). Aforementioned factors, socio economic and environmental factors accounted for a significant amount of variance in progression to agriculture programs. Principal component factor analysis with varimax rotation was conducted to assess the underlying structure for the 8 items of the selected factors for agriculture Progression Questionnaire. Three factors were requested, based on the fact that the items were designed to index three constructs: parental income, family size and parental education. After rotation, the first factor (: parental income) accounted for 24.511% of the variance, the second factor (family size) accounted for 42.723%, and the third factor (Parent education) accounted for 59.337%. Socio -economic factors are stronger motivators to progression in agricultural career than environmental factors. From these findings, the null hypothesis was rejected and alternative hypothesis adopted.

v). The study revealed that there were challenges that hinder agriculture students to progress in agricultural programs. One of the challenges were ministry policies which they felt that are poor and not well aligned to help students to pursue agricultural programs. Another challenge was parents forcing their children to take other courses, simply because they wanted them to or have the resources required. Other challenges such as peer compliance and limited government scholarships hindered children from poor backgrounds from progressing with agricultural programs. However, the ministry of education can also come up with strategies such as lowering entry level grades, making the course more practical, business oriented and increasing staffing for agricultural teachers before making it compulsory, to attract selection and progression in agriculture. The strategies mentioned accounted for 27.9% variance in mitigating challenges, R Square=.279, $F(4, 359) = 34.782$, $p<.05$. This implies that the strategies mentioned can significantly mitigate the challenges to progression in agriculture career. The findings show that creating more jobs ($\beta=.221$, $p<.05$), career guiding and counselling ($\beta=.392$, $p<.05$) and provision of scholarships ($\beta=.137$, $p<.05$) were some of the significant strategies to mitigate challenges facing progression in agriculture career. These findings implies that the mentioned strategies are effective to mitigate challenges to progression in agricultural career.

9.4 Recommendations

The study recommends the need to effect adaption strategies to enhance progression in agriculture career, more specifically basing on the four main objectives of the current study:

i) From Specific objective-1 and conclusion-1, the Ministry of education policies should be well aligned to help students to select agriculture subject. School policies

concerning subject selection should be efficiently designed to increase selection in agriculture subject in secondary schools. It is important for policy makers to re-consider increasing the number of public schools, county and more so sub county schools if the number of students who select agriculture must increase.

ii) From Specific objective-2 and conclusion-2, the Ministry of education policies should be well aligned to enable students to progress/pursue agricultural programs. Is noted that the total KCSE agriculture enrolment in Kenya and the total agriculture enrolment in the universities is different. To fill the gap, the national government and county government should work together to ensure that students are learning agriculture right from a tender age so that they develop agricultural skills that help them to fit in the agricultural programs offered in the colleges of agriculture.

iii). From Specific objective-3 and conclusion-3, Parents should be informed not to force their children to take subjects simply because they want them to or they offer support to them. It is important for them to understand that children are growing up and they would like to identify themselves with specific types of careers. Children understand the paths to take to attain their dream careers in relation to their academic achievements.

iv). From Specific objective-4 and conclusion-4 The output in every academic strive is related mentorship. Socio environments of students should be shaped to help them to make correct decisions since students are mentored by socio backgrounds like parental education, parental income and family size to take progress in agriculture career.

v), From Specific objective-5 and conclusion-5, the national and county government, ministries of education and agriculture should provide scholarships to the students of agriculture. This will act as adaption strategies to sustain selection and progression in agriculture career, and hence improve food security. However, the

ministry of education should formulate strategies such as lowering the entry grades in agriculture science, making the programs more practical by improving on technologies used in production, making the programs business oriented and increasing staff in the school of agriculture. This implies that the strategies mentioned can significantly mitigate the challenges to progression in agriculture career, implying that the mentioned strategies are effective to mitigate challenges to progression in agricultural career.

9.5 Suggestions for further research

This study recommends that, further research in the following areas should be the carried out by future researchers;

i). Future research based on a specific program in the school of agriculture can be carried out to establish selection and progression in these programs and hence understand the future and survival of the program in the school of agriculture.

ii) This study examined the students' selection and progression of agriculture students in agriculture career in Bungoma and Kakamega counties of Kenya. Another research can be carried out in Kenya as a follow-up study of students who progressed in agriculture career from Kakamega and Bungoma counties for them to give their experiences with agricultural programs during progression and answer questions on pertinent issues in agriculture.

iii) The same study can be carried out in three or more separate locations/ sites, so that findings can be harmonized to help researchers in the school of agriculture to formulate a theory on students' progression in agriculture career

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APPENDICES

APPENDIX I: Researcher Introductory Letter

Dear respondent,

I am a PhD student in the school of SAVET, MMUST. I am carrying out a study on **"Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."**. I am using the attached questionnaire, interview schedule and document analysis to collect information for the study. It is my kind request that you fill the questionnaire and respond appropriately to questions providing the relevant information to facilitate the study. Please use the space provided to fill in the information required as objectively and honestly as possible. The information provided will be treated with strict confidentiality for the purpose of this study only.

Thank you Yours faithfully Ann Manyasi

APPENDIX II: Consent to Take Part in Research

Title of study: "Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."

Principal Investigator: Annah N. Manyasi

Masinde Muliro University of Science and Technology, Department of Agribusiness and Extension Management.

KAKAMEGA Tel: 0727171564

I voluntarily agree to participate in this research study.

I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

I understand that I will not benefit directly from participating in this research.

I understand that all information I provide for this study will be treated confidentially.

I understand that in any report on the results of this research my identity will remain anonymous.

I understand that disguised extracts from my interview may be quoted in thesis, conference or journal paper and any presentation in whichever form

I understand that signed consent forms will be in the safe custody of the principal investigator until he finishes his study work

I understand that a transcript of my interview in which all identifying information has been removed will be retained for two years after graduation of the principal investigator

I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

---------- ----------

Signature of participant Date:

I believe the participant is giving informed consent to participate in this study

---------- ----------

Signature Date

APPENDIX III: University/College Agriculture Students' Questionnaire for the Study on "Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya".

Introduction

This questionnaire aims at collecting data which is part of the study on "**Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

SECTION 1.0: DEMOGRAPHIC CHARACTERISTICS.

Please tick (√) where it describes you.

1.1. Your age bracket a). below 18 years[] b). 18-21 years. []

c). 22-25 years. []

d). 26-30 years []

e). above 30 years [ ].

1.2. GenderMale [ ] Female [ ]

1.3. Type of institution. Univerity [ ] Polytechnic [ ] TTI [ ]

Agricultural college [] TVC [ ].

1.4 County of respondent. 1. Kakamega 2. Bungoma.

SECTION 2.0. PROGRESSION IN AGRICULTURE CAREER

2.1. Did you sit for KCSE Agriculture 1. (Yes) 2. (No)

2.2. Which agricultural program did you enrolled at Tertiary

……..……

2.3. Year of study. 1. One 2.Two 3.Three 4.Four

2.4. Name of University / College

……..

SECTION 3.0: FACTORS THAT MOTIVATE STUDENTS TO TAKE AGRICULTURE PROGRAMS

3.1. List the factors that motivated you to take agriculture program.

……

……..

……

……

……

3.2. For each question, choose **one** answer that best describes you. To do this, tick (√) one of the answers under each statement.

1= strongly Disagree (SD), 2= Disagree (D), 3= Not sure (NS), 4= Agree (A), 5= Strongly Agree

Indicate your level of agreement; which of the following factors motivated you to take agriculture Programs.

3.3 Factors for selecting agriculture course.

Communication factors

	1	2	3	4	5
Family demanded I select agriculture					
Friends encouraged me to select Agriculture Course					
Peers who influenced me to select agriculture					

Parents who advised me to select Agriculture Course					
Teachers who classified us into Agriculture course selection					
Public speakers who encouraged me take Agriculture course					

Individual/ Personal Factors

	1	2	3	4	5
Age motivated you to take agriculture					
Gender motivated you to take agriculture					
Academic performance motivated you to take agriculture					

3.4 Factors for Progression to Agriculture Career.

Socio-economic factors

	1	2	3	4	5
Parental income					
Family size					
Parental education program					
Employment opportunities					
Diversity in industry					

Environmental factors

	1	2	3	4	5
Location of the institution					
Institutional infrastructure					
Technology infrastructures					

Socio-cultural factors

	1	2	3	4	5
Family employment culture					
Ethnicity					
Work value					

SECTION: 4.0 CHALLENGES TO PROGRAM SELECTION AND STRATEGIES TO IMPROVE PROGRESSION IN AGRICULTURE CAREER.

4.1 List any challenges hindering learners from selecting agriculture programs as a profession.

……

……

……

4.1 Below are challenges hindering the learners from selecting agricultural education, tick (√) one of the answers under each statement that describes your opinion. **1= strongly Disagree (SD), 2= Disagree (D), 3= Not sure (NS), 4= Agree (A), 5= Strongly Agree**

Indicate your level of agreement;

Challenges	**1**	**2**	**3**	**4**	**5**
Ministry policies on program selection.					
School/ department policy					
Parents decision					
Teacher influence					
Peer compliance					
Lack/little of student involvement in policy dialogue					
Lack of modern agricultural curricula and technology					
Limited government scholarships in agriculture sector					

4.3 Why do you think some students do not select agriculture programs?

……

Thank you for your participation.

APPENDIX IV: Key informant guide for the director of studies in secondary schools for the study on "Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya.

Introduction

This Informant guide aims at collecting data which is part of the study on "**Factors Influencing Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

1.0 DEMOGRAPHIC CHARACTERISTICS.

1.1. Name of the school……..

1.2 Responsibility of respondent……

1.3

County……

SECTION 2.0: SELLECTION OF K.C.S.E AGRICULTURE SUBJECT

2.1. From your experience as a director of studies, some students do not select agriculture subject

1, (Yes) 2.(No.)

Why……

……

……

……

SECTION 2.3 : CHALLENGES AND STRATEGIES

3.1. From your own opinion, do you think most students face any challenges in the selection of applied Courses.

If **Yes,** state the challenges

……

……

……

……

……

If No, why

……

……

3.2. From your experience as Instructor/Teacher of agriculture, what changes/strategies should be put in place by the;

i. Ministry of Education to motivate learners to enrol in agriculture programmes. a)

……

……

…… b)

……

……

……

ii. Ministry of Agriculture to motivate learners to enrol in agriculture programmes. a)

……

…… b)

……

……

……

THANKS FOR YOUR PARTICIPATION.

APPENDIX V: Document analysis for secondary schools in Kakamega/ Bungoma County for the study on "Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya.

Introduction

This Informant guide aims at collecting data which is part of the study on "**Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

NAME OF THE SCHOOL

…….....

COUNTY

……

NUMBER OF STUDENTS ENROLLED	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
TOTAL SCHOOL POPULATION						

NUMBER OF KCSE STUDENTS						
NUMBER OF AGRICULTU RAL STUDENTS						
NUMBE R OF ALL TEACH ERS						
NUMBE R OF AGRIC ULTUR AL TEACH ERS						

SCHOOL INFRUSTRUCTURE

INFRASTRUCTUR EFOR AGRICULTURE ENROLMENT	**T I**	**I**	**A**	**V A**
TEACHERS				
FARM SIZE				
CLASSES				
FARM MACHINARY				

TI-TOTALLY INADEQUATE, I-INADEQUATE, A-ADEQUATE, VA- VERY ADEQUAT

APPENDIX VI: Key informants interview guide for the University/college Chair of Departments for the study on "Students' Selection and Progression in Agriculture Career among Students of Tertiary Institutions of Kenya.

Introduction

This Informant guide aims at collecting data which is part of the study on "**Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

1.0 DEMOGRAPHIC CHARACTERISTICS

Please tick your identity from the below stated;

1,1 Chair of Department (C.O.D) at University

1.2 Head of Department (C.O.D) College./Lecturer

1.3 Name of

1.4 1.4

County……

2.0 : SELECTION AND PROGRESSION.

2.1 What reasons do some students give for dropping agriculture at college/ University even after taking K.C.S.E Agriculture subject .

……

……

3.0: CHALLENGES AND STRATEGIES

3.1. From your own opinion, do you think most students face any challenges in the selection of agriculture

1 (Yes) 2 (No)

If Yes state the challenges

……

……

If **No,** Why……

……

3.2. From your experience as Instructor/Teacher/Lecturer of agriculture, what changes/strategies should be put in place by the;

iii. Ministry of Education to motivate learners to enrol in agriculture programmes.

a)……

……

b)……

……

iv. Ministry of Agriculture to motivate learners to enrol in agriculture programmes. a)

……

b)……

THANKS FOR YOUR PARTICIPATION.

APPENDIX VII: Document analysis for the Chair of department of University/college in Kakamega /Bungoma for the study on "Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya.

Introduction

This document aims at collecting data which is part of the study on "**Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

1.0 DEMOGRAPHIC CHARACTERISTICS

Please tick your identity from the below stated;

1.1 Chair of Department (C.O.D) at University

1.2 Head of Department (C.O.D) College

1.3 Name of the College/

University…….

1.4 1.4

County……

SECTION A; PROGRESSION

2. Please indicate the total number of students enrolled for agriculture in the academic years specified below.

2016-

2017-

2018-

2019-

2020-

2021-

Thank you for your participation

APPENDIX VIII: Key informant guide for the County Quality Assurance officers for secondary schools for the study on "Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya.

Introduction

This Informant guide aims at collecting data which is part of the study "**Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

1.0 DEMOGRAPHIC CHARACTERISTICS.

1.1. Name of the County……..

1.2 Responsibility of respondent……

1.3

County……

……

SECTION 2.0: SELLECTION OF K.C.S.E AGRICULTURE SUBJECT

1. How many schools in Bungoma county and Kakamega county offer agriculture subject?
2. What was the enrolment of students in agriculture subject in the years stated below.

Year	2016	2017	2018	2019	2020	2021
Kakamega County						
Bungoma county						

5. What was the enrolment in KCSE agriculture subject in the stated years?

Year	2016	2017	2018	2019	2020	2021
a) Kakamega County						
b) Bungoma county						

c) What was the enrolment in agriculture in the following selected types of schools:

- **National**

- Extra-county

- **County**

- Sub county

- **Private**

- Boys schools

- **Girls' schools**

- Mixed schools

- **Mixed day and boarding**

- Boarding and Day

6. What is general enrolment trend in agriculture subject in?

a) Bungoma County and Kakamega County……

7. General trends in agriculture subject

8. What is the expected/prediction of enrolment trend in Kenya agriculture subject……..

……

……..

2.1. From your experience some students do not select agriculture subject 1, (Yes) 2.(No.)

Why……

……

……

……

SECTION 2.3: CHALLENGES AND STRATEGIES

3.1. From your own opinion, do you think most students face any challenges in the selection of applied subjects

If **Yes,** state

……

……

If

Why……

……

3.2. From your experience in the field of education what changes/strategies should be put in place by the;

v. Ministry of Education to motivate more learners to enrol in agriculture programmes.

a)……

……

…… b)

……

……

……

vi. Ministry of Agriculture to motivate more learners to enrol in agriculture programmes. a)

……

……

……. b)

……

……

……

THANKS FOR YOUR PARTICIPATION.

APPENDIX IX:Interview guide for the Director of TVET/Colleges for the study on "Students' Selection and Progression in Agriculture Career among Students of Tertiary Institutions of Kenya".

Introduction

This Informant guide aims at collecting data which is part of the study on "**Students' Selection and Progression in Agriculture Career in Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information will help to understand the trends in enrolment of students in agriculture programs at training level of education. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

1.0 DEMOGRAPHIC CHARACTERISTICS 1,1Name- Director of Tertiary education

1.4 County (.Please tick) 1. Kakamega 2. Bungoma

2.0: SELECTION AND PROGRESSION.

2.1. How many of the KCSE agriculture students enrolled for agriculture courses from

a) Kakamega County

20	20	20	20	20	20

16	17	18	19	20	21

b) Bungoma County

2016	2017	2018	2019	2020	2021

2.2. What is the enrolment trend in Agriculture programs in tertiary colleges of?

a) Kakamega County

2016	2017	2018	2019	2020	2021

b) Bungoma County

2016	2017	2018	2019	2020	2021

2.3. What reasons do some students give for dropping agriculture at college/ University even after taking K.C.S.E agriculture

……

……..

3.0: CHALLENGES AND STRATEGIES

3.1. From your own opinion, do you think most students face any challenges in the selection of agriculture subject

1 (Yes) 2 (No)

If **Yes** state the challenges

……

……

……

If **No,** Why……

……

……

3.2. Which changes/strategies should be put in place by the;

vii. Ministry of Education to motivate learners to enrol in agriculture programmes.

a)……

…… b)

……

……

viii. Ministry of Agriculture to motivate learners to enrol in agriculture programmes. a)

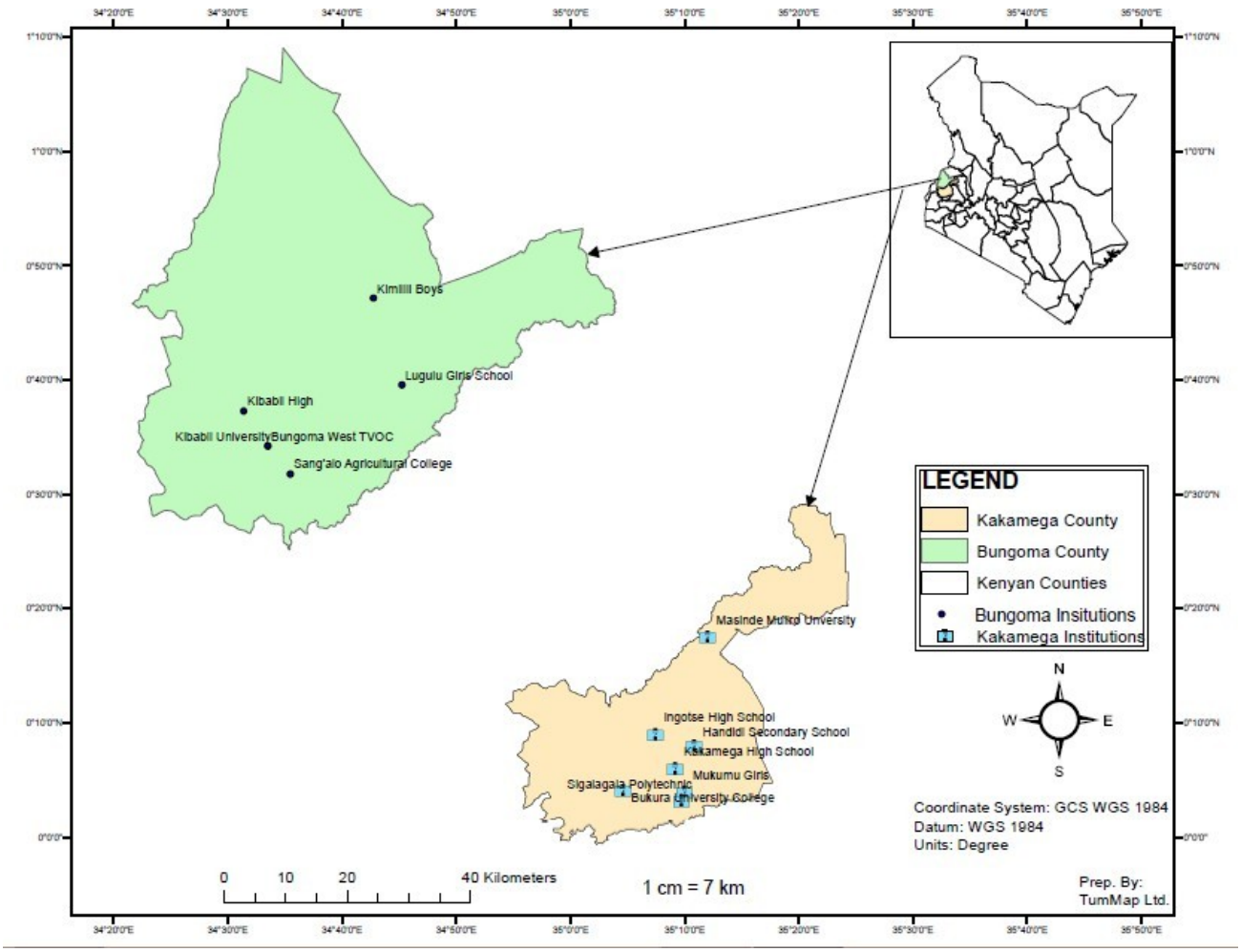
……

…… b)……

……

THANKS FOR YOUR PARTICIPATION.

APPENDIX X: Map of Bungoma and Kakamega Kenya



APPENDIX XI: TABLE OF SAMPLE SIZE

Table 1. Sample size for 3%, 5%, 7% and 10% Precision Levels Where Confidence Level is 95%

Size of Population	Sample Size (n) for (e) of: Precision			
	3%	5%	7%	10%
500	a	222	145	83
600	a	240	152	86
700	a	255	158	88
800	a	267	163	89
900	a	277	166	90
1,000	a	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

a = Assumption of normal population is poor (Yamane, 1967). The entire population should be sampled.

Table 2. Sample size for 5%, 7% and 10% Precision Levels Where Confidence Level is 95% and P=.5.

Size of Population	Sample Size (n) for Precision (e) of:		
	5%	7%	10%
100	81	67	51
125	96	78	56
150	110	86	61
175	122	94	64
200	134	101	67
225	144	107	70
250	154	112	72
275	163	117	74
300	172	121	76
325	180	125	77
350	187	129	78
375	194	132	80
400	201	135	81
425	207	138	82
450	212	140	82

APPENDIX VII:RESEARCH PERMIT FOR NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **532386**

Date of Issue: **10/March/2022**

RESEARCH LICENSE



This is to Certify that Ms.. ANNAH NAWAMBISA MANYASI of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Bungoma, Kakamega on the topic: SELECTION AND PROGRESSION IN AGRICULTURE CAREER AMONG STUDENTS IN TERTIARY INSTITUTIONS OF KENYA for the period ending : 10/March/2023.

License No: **NACOSTI/P/22/16298**

532386

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

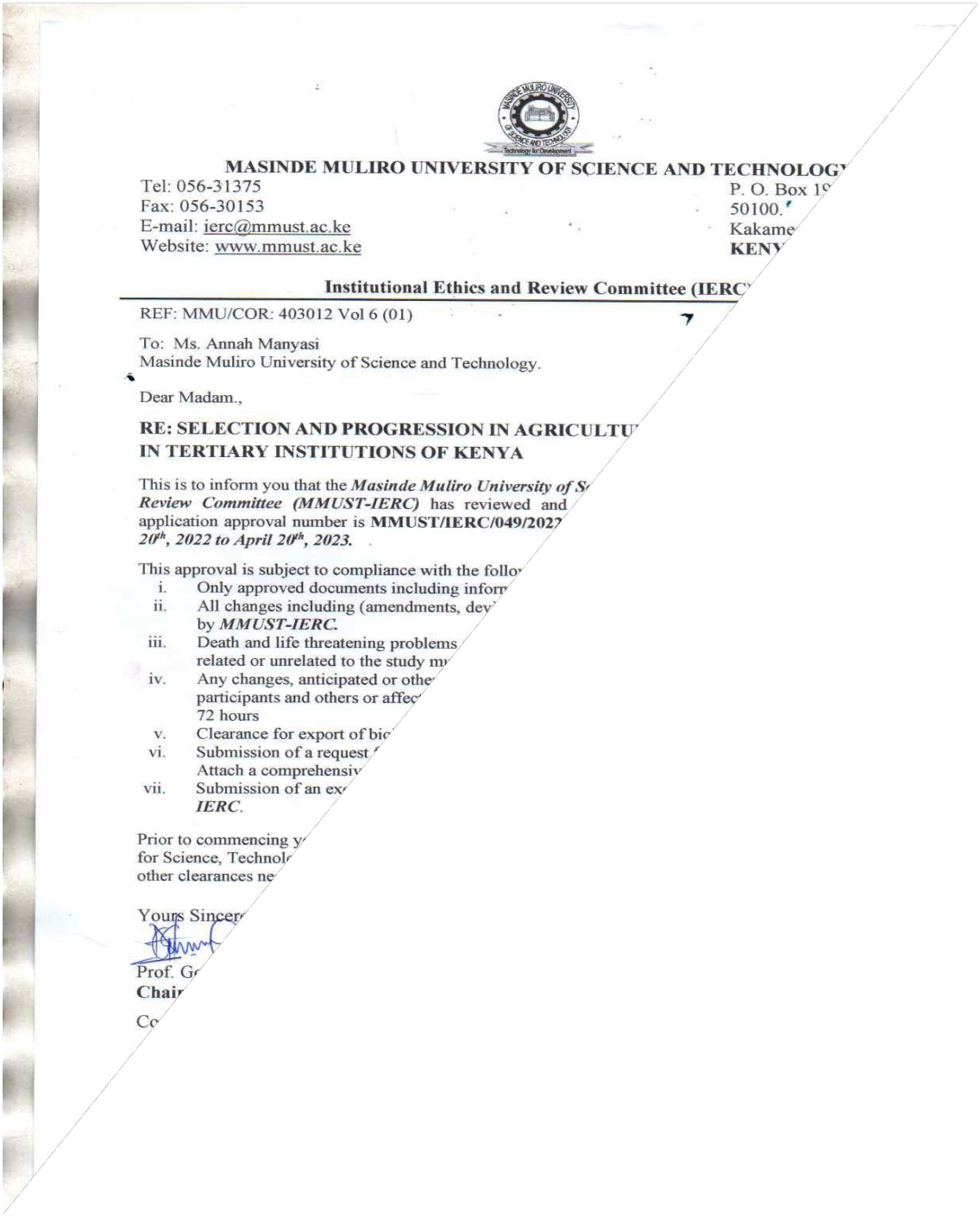
The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
5. The License does not give authority to tranfer research materials
6. NACOSTI may monitor and evaluate the licensed research project
7. The Licensee shall submit one hard copy and upload a soft copy of their final report (thesis) within one year of completion of the research
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice

National Commission for Science, Technology and Innovation
off Waiyaki Way, Upper Kabete,
P. O. Box 30623, 00100 Nairobi, KENYA
Land line: 020 4007000, 020 2241349, 020 3310571, 020 8001077
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

APPENDIX XIII: MMUST ETHICS APPROVAL



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 19
50100.
Kakame
KENY

Institutional Ethics and Review Committee (IERC

REF: MMU/COR: 403012 Vol 6 (01)

To: Ms. Annah Manyasi
Masinde Muliro University of Science and Technology.

Dear Madam.,

RE: SELECTION AND PROGRESSION IN AGRICULTU
IN TERTIARY INSTITUTIONS OF KENYA

This is to inform you that the ***Masinde Muliro University of S***
Review Committee (MMUST-IERC) has reviewed and
application approval number is **MMUST/IERC/049/2022**
20th, 2022 to April 20th, 2023.

This approval is subject to compliance with the follo

i. Only approved documents including inform
ii. All changes including (amendments, dev
by ***MMUST-IERC.***
iii. Death and life threatening problems
related or unrelated to the study m
iv. Any changes, anticipated or othe
participants and others or affec
72 hours
v. Clearance for export of bio
vi. Submission of a request
Attach a comprehensiv
vii. Submission of an ex
IERC.

Prior to commencing y
for Science, Technol
other clearances ne

Yours Sincer

Prof. G
Chai

Co

APPENDIX XIV; KIBABI UNIVERSITY RESEARCH APPROVAL.

KIBABII UNIVERSITY
(Knowledge for Development)
Tel: 020 – 2028660 / 0708-085934 / 0734- 831729
P.O. Box 1699- 50200
Bungoma
Email enquiries@kibu.ac.ke
administration@kibu.ac.ke
Website http://www.kibu.ac.ke

OFFICE OF THE REGISTRAR (ADMINISTRATION & HR)

Ref: KIBU/CR/DVCPPRI/VOL.2 **Date:** 29th March, 2022

Anna Manyasi,
P.O. Box 190 – 50100,
KAKAMEGA – KENYA.

Dear Madam,

RE: APPLICATION FOR DATA COLLECTION IN KIBABII UNIVERSITY

The above subject matter refers.

We acknowledge receipt of your letter dated **23rd March, 2022** requesting for permission to collect data at the University.

We wish to inform you that your request has been granted.

Thank you.

Dr. Charles Wasike, PhD
For: REGISTRAR (ADMINISTRATION & HUMAN RESOURCE)

Noted as Progress
31/3/22

Copy to:
- Vice Chancellor
- Deputy Vice Chancellor (AFD)
- Deputy Vice Chancellor (PPRI)
- Ag. Deputy Vice Chancellor (ASA)

} - To note in File

APPENDIX XV: KAKAMEGA COUNTY COMMISIONER'S APPROVAL

REPUBLIC OF KENYA

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

Telephone: 056 -31131
Email: cckakamega12@yahoo.com
When replying please quote:

County Commissioner
Kakamega County
P O BOX 43 - 50100
KAKAMEGA

Ref: ED.12/1/VOL.VI/46

Date: 10th March, 2022

Ms Annah Nawambisa Manyasi
Masinde Muliro University of Science and Technology
P.O Box 190 – 50100
KAKAMEGA

RESEARCH AUTHORIZATION

Following your authorization vide letter **Ref: No. NACOSTI/P/22/16298** dated 20th March, 2022 by **NACOSTI** to undertake research on "***Selection and Progression in Agriculture Career among Students in Tertiary Institutions of Kenya***" for the period ending 10th March, 2023.

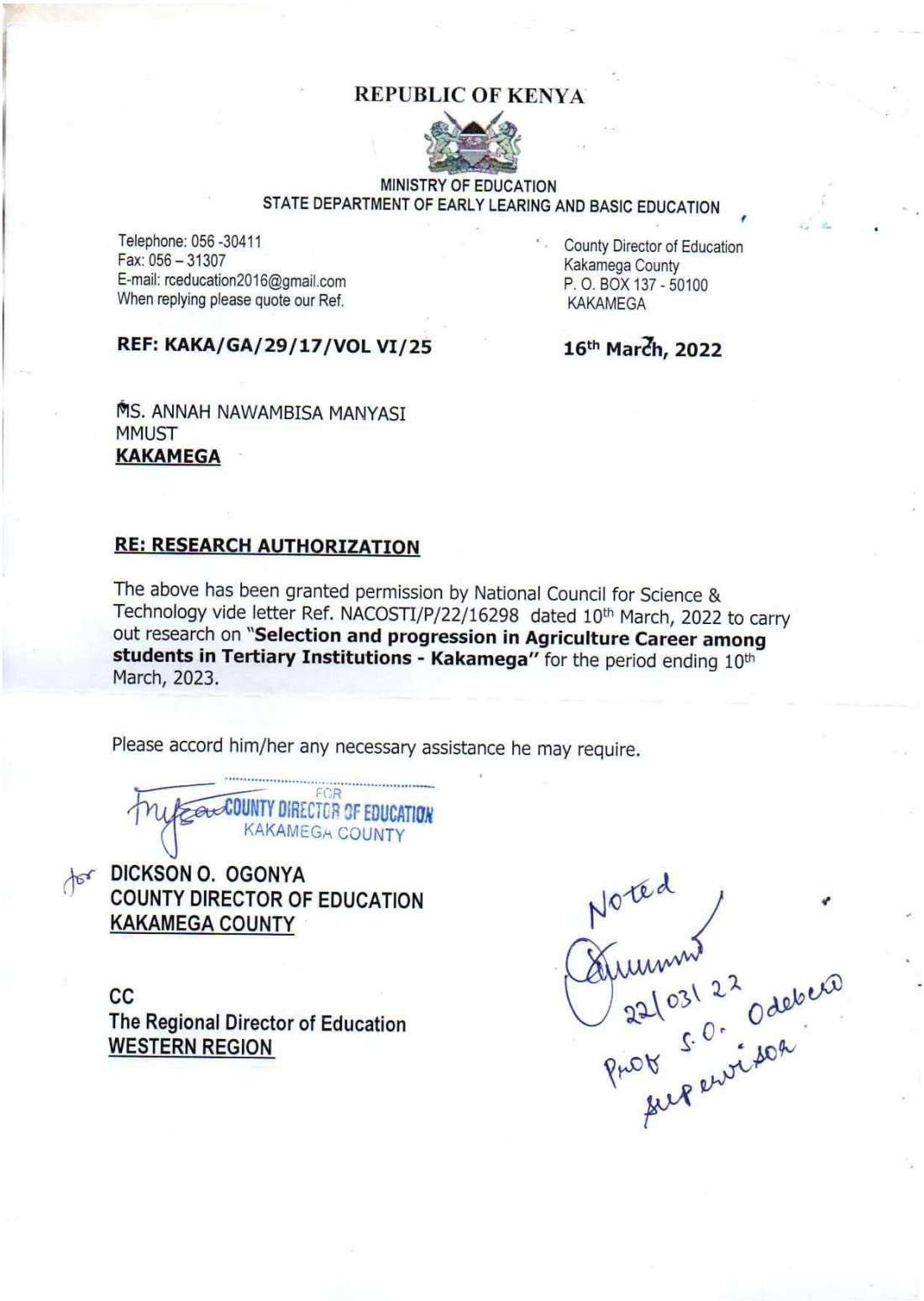
I am pleased to inform you that you have been authorized to carry out the research on the same in this county.

COUNTY COMMISSIONER
KAKAMEGA COUNTY

B. O. NYAMBANE
FOR: COUNTY COMMISSIONER
KAKAMEGA COUNTY

noted
Prof S.O. Odeberi
Supervisor.

APPENDIX XVI; KAKAMEGA COUNTY DIRECTOR OF EDUCATION APPROVAL



REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARING AND BASIC EDUCATION

Telephone: 056 -30411
Fax: 056 – 31307
E-mail: rceducation2016@gmail.com
When replying please quote our Ref.

County Director of Education
Kakamega County
P. O. BOX 137 - 50100
KAKAMEGA

REF: KAKA/GA/29/17/VOL VI/25

16th March, 2022

MS. ANNAH NAWAMBISA MANYASI
MMUST
KAKAMEGA

RE: RESEARCH AUTHORIZATION

The above has been granted permission by National Council for Science & Technology vide letter Ref. NACOSTI/P/22/16298 dated 10th March, 2022 to carry out research on **"Selection and progression in Agriculture Career among students in Tertiary Institutions - Kakamega"** for the period ending 10th March, 2023.

Please accord him/her any necessary assistance he may require.

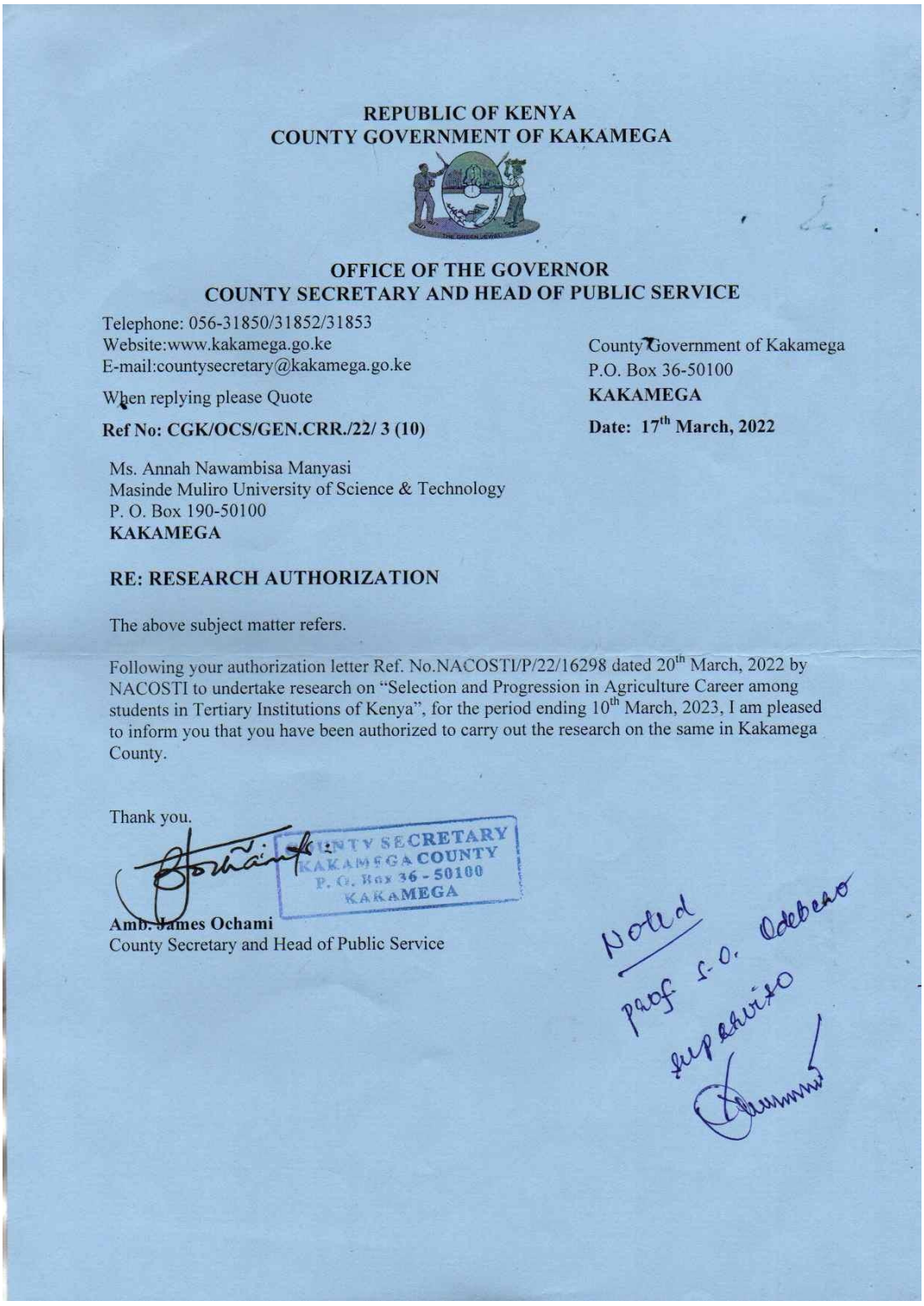
FOR
COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

for **DICKSON O. OGONYA**
COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

Noted
22/03/22
Prof S. O. Odeberi
Supervisor

CC
The Regional Director of Education
WESTERN REGION

APPENDIX XVIII: KAKAMEGA COUNTY GOVERNMENT RESEARCH APPROVAL



REPUBLIC OF KENYA
COUNTY GOVERNMENT OF KAKAMEGA

OFFICE OF THE GOVERNOR
COUNTY SECRETARY AND HEAD OF PUBLIC SERVICE

Telephone: 056-31850/31852/31853
Website:www.kakamega.go.ke
E-mail:countysecretary@kakamega.go.ke

When replying please Quote

Ref No: CGK/OCS/GEN.CRR./22/ 3 (10)

County Government of Kakamega
P.O. Box 36-50100
KAKAMEGA

Date: 17th March, 2022

Ms. Annah Nawambisa Manyasi
Masinde Muliro University of Science & Technology
P. O. Box 190-50100
KAKAMEGA

RE: RESEARCH AUTHORIZATION

The above subject matter refers.

Following your authorization letter Ref. No.NACOSTI/P/22/16298 dated 20th March, 2022 by NACOSTI to undertake research on "Selection and Progression in Agriculture Career among students in Tertiary Institutions of Kenya", for the period ending 10th March, 2023, I am pleased to inform you that you have been authorized to carry out the research on the same in Kakamega County.

Thank you.

COUNTY SECRETARY
KAKAMEGA COUNTY
P. O. Box 36 - 50100
KAKAMEGA

Amb. James Ochami
County Secretary and Head of Public Service

Noted
Prof. S.O. Odebero
Supervisor

APPENDIX XIX :DOCUMENT CONTENT TO KUCCPS.

MANYASI ANNAH N,
MMUST,
P.O. Box 190-50100
Kakamega,
Kenya.
REG NO. SAE/H/01-54991/2020

To

THE CEO,

KENYA UNIVERCITIES AND COLLEGES CENTRAL PLACEMENT SERVICES.

RE: REQUEST FOR DATA/INFORMATION FOR ENROLMENT AND PLACEMENT OF STUDENTS IN AGRICULTURE.

I hereby write to you requesting for data to help me complete my study on "selection and progression in Agriculture among students in Tertiary Institutions of Kenya" approved by the university postgraduate board NACOST.

The objectives that need this information are:

i. To establish the enrolment trends in agriculture subject of students in secondary schools of Bungoma and Kakamega counties from years 2016 – 2021.
ii. To establish the trends in progression in agriculture career among students of Bungoma and Kakamega counties in tertiary institutions of Kenya from years 2016 – 2021.

To do this, I therefore request for the number of students who enrolled for KCSE agriculture subject in Bungoma and Kakamega counties for years 2016 – 2021 as formatted below.

a) Bungoma County

Year of enrolment	2016	2017	2018	2019	2020	2021
Total number of students of Agriculture enrolled						

b) Kakamega County

Year of enrolment	2016	2017	2018	2019	2020	2021
Total number of students of Agriculture enrolled						

APPENDIX XX: MMUST DPS STUDENT DATA REQUEST SUPPORT TO KUCCPS

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)
Tel: 056-30870
Fax: 056-30153
E-mail: deansgs@mmust.ac.ke
Website: www.mmust.ac.ke
P.O Box 190
Kakamega – 50100
Kenya
Directorate of Postgraduate Studies

Ref: MMU: COR/509- SAE/H/01 – 54991/2020 Date: 5th September 2022

The CEO KUCCPS
ACK Gardens,
Ist Ngong' Avenue,
Upperhill,
P. O. Box 105166 – 00101
Nairobi

Dear Sir/Madam,

RE: REQUEST FOR DATA COLLECTION BY ANNAH N. MANYASI - SAE/H/01 – 54991/2020

The above named is our postgraduate student at Masinde Muliro University of Science and Technology taking a Doctor of Philosophy (Ph.D.) in Agricultural Education. She is in the process of collecting data to enable her analyse objective two of her study which requires determination of trends of progression into Agriculture career of students from Bungoma and Kakamega Counties of Kenya.

This is to request that you allow her to get the required information to enable her get the required data to complete her study. The data required is enrolment data of students who sat for KCSE Agriculture subject in Bungoma and Kakamega Counties in the years 2016 – 2021 and were then placed in various universities, agricultural colleges and TVET in Kenya since 2016 – 2021.

Any Assistance accorded to her will be highly appreciated.

Thank you.

Yours faithfully,

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

APPENDIX XXI: AGRICULTURAL STUDENTS FOCUS GROUP DISCUSSION GUIDE

Focus Group Discussion Guide for university and college students for the study on "Factors Influencing selection and Progression in Agriculture Career among Students of Tertiary Institutions of Kenya."

Introduction

This focus group discussion guide aims at collecting data which is part of the study on "**Factors Influencing Selection and Progression in Agriculture Career among Students of Tertiary Institutions of Kenya."** by Manyasi Annah N. a PhD student in the school of SAVET, MMUST. The information is a follow up discussion to help re-orient agricultural train and hence agricultural career development. Your co-operation will be highly appreciated. Thank you.

Yours sincerely, Annah Manyasi N.

Kindly, rank the following suggested challenges and strategies to selection and progression in agricultural career in order of preference for implementation.

A: Suggested Strategies to the Ministry of Education

---

vMake Agricultural course business oriented

ixMake Agricultural course more practically oriented

---

xPrioritize staffing for agriculture teachers

xIt must be made compulsory like in USA, Ghana and Nigeria

xIntensify career guiding and counselling in Agricultural course

xLower grading for entry to Agricultural courses

xProviding training equipment and machines which give self-employment after the end of the training

B: Suggested Strategies to the Ministry of Agriculture

vii) Creating more job opportunities in Agriculture course

viii) Providing incentives and scholarships to agricultural students

ix) Entrepreneurial start up kits for agricultural students

x) Legal requirement to set up agro-based industries for self-employment by agricultural students

xi) Putting up more agricultural colleges equipped with relevant resources in line with the course

xii) Review salary packages for officers in this field

C. Challenges to Progression in Agricultural program in Bungoma and Kakamega Counties

1	Ministry policies on program selection
2	School/ department policy
3	Parents decision
4	Teacher influence
5	Peer compliance
6	Lack/little of student involvement in policy dialogue

7	Lack of modern agricultural curricula and technology	
8	Limited government scholarships in agriculture sector	