EFFECT OF AGRIBUSINESS PROGRAM ON YOUTH PARTICIPATION AND GROWTH OF MICRO AND SMALL HORTICULTURAL ENTERPRISES IN MOROGORO AND PWANI REGIONS, TANZANIA

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented in this university or any other for the award of a degree.

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DEDICATION

This thesis is dedicated to my adorable husband, Juma Athumani Mogela, my beautiful and precious daughter Zarina Juma Mogela, my lovely parents and sibling for their love, prayers, encouragement, and tirelessly support throughout my studies.

May the Almighty Allah bless them abundantly.

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ABSTRACT

Youth unemployment is among the major challenges in many developing countries, including Tanzania. Consequently, the government together with development partners have come up with strategic initiatives to increase youth involvement in the agricultural sector because it is the largest contributor to the country's economy. Despite the efforts, youth participation in agribusiness activities especially the horticultural sub-sector, is still low. Therefore, the aim of this study was to contribute towards the sustainable growth of small and micro horticultural enterprises (MSEs) through enhanced youth agribusiness programs. Specifically, the study characterized various youth horticultural MSEs, evaluated the effect of the youth hands-on agribusiness skills program on youth decision and extent of participation in horticultural MSEs, and finally determined factors influencing the growth of youth horticultural MSEs. A sample of 157 respondents comprising 51 participants and 106 non-participants of the program were selected through a multi-stage sampling procedure. Data was collected using a semi-structured questionnaire through a face-to-face interview. Descriptive statistics indicated that participants of the program were slightly older, had more years of schooling, and more farming experience with higher non-farming income than non-participants. Also, program participants had many years in social groups, higher access to extension services, higher initial start-up capital, and higher sales revenues than non-participants. The Double Hurdle Model (DHM) revealed the presence of positive and significant relationship between participation in the youth hands-on agribusiness skills program on youth decision and extent of participation in horticultural MSEs at 1% and 5% levels. Having family members in agribusiness, farming experience and access to farming inputs positively influenced youth decision to establish horticultural MSEs, while respondents' place of birth and land access had a negative impact. On the other hand, being head of household, non-farming income, credit access, and distance to output markets had positive effect on the extent of participation, while years in social groups, marital status, and age had a negative influence. Finally, the Multiple Linear Regression results revealed that household size, extension contacts, and MSEs located in the residential areas contributed to MSEs' growth positively, while education level, sole proprietor ownership, credit access and land access reduced the growth of youth MSEs. This study recommends for the need to invest in youth hands-on agribusiness programs since they have noticeable and desirable economic gains. Also, effective policies and strategies on agribusiness sector should be put in

place to enhance the easy accessibility of crucial productive resources to improve the general outlook of the sector so that it becomes more appealing to young people.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ASDP	Agriculture Sector Development Program
ASDS	Agriculture Sector Development Strategy
CAADP	Comprehensive Africa Agriculture Development Program
DADP	Districts Agriculture Development Projects
DHM	Double Hurdle Model
ENABLE	Empowering Novel Agri-Business-Led Employment
ESRF	Economic and Social Research Foundation
FARNPAN	Food, Agriculture and Natural Resources Policy Analysis Network
HODECT	Horticultural Development Council of Tanzania
IITA	International Institute of Tropical Agriculture
ILFS	Integrated Labour Force Survey
MAIH	Mali Agribusiness Incubation Hub
MATI	Ministry of Agriculture Training Institute
MoA	Ministry of Agriculture
MoF	Ministry of Finance and Planning
MSEs	Micro and Small Enterprises
NAP	National Agricultural Policy
NBS	National Bureau of Statistics
NSYIA	National Strategy for Youth Involvement in Agriculture
OECD	Organization for Economic Co-operation and Development
SPSS	Statistical Package for the Social Sciences
SUA	Sokoine University of Agriculture
SUGECO	Sokoine University Graduates Entrepreneurs Cooperative
TAHA	Tanzania Horticultural Association
TZS	Tanzanian Shilling
UN	United Nation
USD	United States Dollar
URT	United Republic of Tanzania
VICOBA	Village Community Banking
YDF	Youth Development Fund
YDP	Youth Development Policy

CHAPTER ONE

INTRODUCTION

1.1 Background information

Globally, youth unemployment stood at 13%, three times 4.3% of adults (International Labour Organization-ILO, 2018). Moreover, global projections indicate an increase in the youth unemployment rate by 0.2% in 2020 and 2021 (ILO, 2020). In Africa, youth makes up to 40% of the working age, but 60% are unemployed (World Bank, 2019). To reduce this, international and local strategic initiatives have been implemented to provide youth with employment opportunities in various sectors, including agriculture. In many developing African countries, agriculture is the main engine for economic growth and the biggest employer for the bulk of the population. The sector is still the backbone of these economies and forms a significant portion of the total GDP at an average of 15% (OECD/FAO, 2016). Agriculture is a source of global food, and more than half of the labour force earn a living therein. Consequently, the governments of these countries mostly focus on increasing youth participation in agriculture to eradicate youth unemployment.

However, agriculture has not been embraced fully by young people compared to older people. Youth perceive agriculture as an old-fashioned career and mainly for the rural population. They view agriculture as a dirty occupation and hence are not interested in earning a living therein (Muthomi, 2017). Several programs have been established in many African countries to increase youth involvement in the agricultural sector. To mention a few, the Empowering Novel Agri-Business-Led Employment (ENABLE) youth program established by the Africa Development Bank (AfDB) and the International Institute of Tropical Agriculture (IITA). Other similar initiatives include; Mali Agribusiness Incubation Hub (MAIH), established by the World Vegetable Center, Integrated Agriculture and Agribusiness Programs (IAA) in Morocco, and Youth Employment in Agriculture Programs (YEAP) in Nigeria. These programs have trained youth on various agribusiness value chains to increase their involvement in this sector. Nevertheless, youth unemployment remains remarkably high and poses a great threat to social and food security in many countries in Africa.

In Tanzania, youth are estimated to be around 14.8 million, and 11.7% of the economically active group are unemployed. This problem is more critical in urban (17.4%) than in rural areas (8.2%) due to available pulling factors such as social amenities and improved services in the urban centers (National Bureau of Statistics-NBS, 2015).

Specifically, secondary and university graduates suffer more from the greatest burden of unemployment than other groups. For instance, out of 800,000 graduates entering the labour force annually, only 5% get employment in the formal sector (Ministry of Finance-MoF, 2018). To reduce this problem, the government and development partners have developed strategic initiatives to engage rural and urban youth in the agricultural sector. This is due to the fact that, youth can provide a tremendous opportunity for developing an agricultural-based economy if properly harnessed (National Agricultural Policy-NAP, 2013). As much as this is the case, youth are more interesting in agricultural enterprises with quick returns and one of such enterprises in Tanzania is horticulture.

In Tanzania, the horticultural sub-sector is one of the fastest-growing agricultural sub-sectors with an average growth rate of 10.5% per annum (Tanzania Horticultural Association-TAHA, 2018). The sub-sector employs more than 2.5 million people and plays a substantial role in income diversification (*ibid*). This sector was also a top priority in the National Export Strategy and the Kilimo Kwanza Strategy for agriculture growth (Horticultural Development Council of Tanzania-HODECT, 2010). In 2019, the export value of fruits and vegetables reached USD 779 million compared to USD 412 million generated in 2015. This contributed almost 38% of foreign income earned from the agricultural sector (Ministry of Agriculture-MoA, 2020). In relation to this, various agribusiness initiatives have been implemented to increase participation of youth in the horticultural sub-sector. For instance, in 2011, the Sokoine University of Agriculture (SUA) launched a program to engage graduates in agribusiness for self-employment. At a 14% interest rate, USD 10,000 to USD 130,000 loans were provided to graduates who were members of Sokoine University Graduates Entrepreneurs Cooperative (SUGECO) to support their agribusiness projects (Gulamiwa, 2015). Moreover, in 2013 the government introduced the Youth Development Fund (YDF), which accounts for 10% of the collected revenue by the local government authorities to support youth agripreneurs (MoF, 2018). In addition, through governmental budget allocations, for instance, in the 2018/19 financial year, USD 434,330 was issued to support youth agribusiness projects (MoF, 2019).

In relation to above, several United Nations (UN) agencies support various youth projects in Tanzania to scale up the horticultural sub-sector as part of broader youth-focused programs. One of the projects of interest in this study was the "Youth Hands-on Agribusiness Skills Program". This was another program established in 2016 by SUGECO at Mkongo village in Rufiji District, 190 km from Dar es Salaam. The project was funded by the Food

and Agriculture Organization (FAO) with a total budget of USD 396,000. It was implemented in 4 years, from 2016 to 2019, in four regions: Dodoma, Singida, Morogoro, and Pwani. In this program, the method of training was 80% practical and 20% theory. Practical sessions were conducted using demonstration farms of an open field with drip irrigation systems and greenhouse technologies. This program was aimed at changing youth perception of agribusiness in order to see it as a profitable and exciting career as well as bridging the agribusiness and entrepreneurship skills gap to enhance self-employment, job creation and enterprise development. This was necessary for the youth to realize the existing and accessible opportunities within the agribusiness sector. Participants of the program were trained for 14 days. Almost 800 youths benefited from the program in the country since its establishment.

Specifically, in 2016 about 225 youth participated in the training whereby 52% were trained on horticultural value chains while others were under beekeeping, poultry, rabbit, and goat farming. Participants under the horticultural group were trained on nursery establishment, fertilizer application using the fertigation process, good agronomic practices, and proper identification of production calendars. Participants were also trained on entrepreneurship skills such as business and production plans, marketing, financial literacy, record keeping, and leadership management. At the end of the program, participants were facilitated with start-up kits with improved seeds varieties, drip irrigation kits, fertilizers, and pesticides. They were also connected to some formal financial institutions, extension officers, and connected to potential output markets. Training participants were also exposed and trained on proper ways to access land and funds allocated by their local authorities to support their projects. So far, little is known about the effectiveness of such programs in enhancing youth decision to participate in horticulture enterprise and the effect of the training and agribusiness support to the growth of established horticultural enterprises in the country. Thus, this study investigated whether the implemented hands-on agribusiness intervention program has met its expectations of enhancing youth engagement in horticultural subsector and growth of the established horticultural enterprises in the Morogoro and Pwani Regions.

1.2 Statement of the problem

In Tanzania, various interventions have been implemented to reduce youth unemployment, as it is believed that youth can provide an opportunity for increased economic development. These include forming youth groups to obtain productive resources and establishing incubation centers and entrepreneurship programs to help and enable youth to

acquire basic and necessary skills useful in developing their businesses. Some of the interventions have focused on hands-on agribusiness programs in horticulture. Despite the efforts, youth participation in the horticultural sub-sector in Tanzania is still low. Also, newly established youth enterprises face various impediments that hinder their growth. In most cases, the newly formed MSEs fail to maintain profitability and do not grow into medium enterprises. There is no clear information on the contributions of agribusiness intervention programs toward the establishment and growth of youth-owned horticultural MSEs in the country. Therefore, this study sought to bridge this knowledge gap by determining the extent of youth participation in horticultural MSEs and the effects of the youth agribusiness program on the growth of horticultural enterprises in the Morogoro and Pwani regions in Tanzania.

1.3 Objectives

1.3.1 General objective

The general objective of this study was to contribute toward the sustainable growth of youth horticultural MSEs through an enhanced agribusiness intervention program in Tanzania.

1.3.2 Specific objectives

  i.   To characterize various youth horticultural MSEs in Morogoro and Pwani regions.

 ii.   To evaluate the effect of the youth hands-on agribusiness skills program on youth decision and extent of participation in horticultural MSEs in the Morogoro and Pwani regions.

iii.   To determine factors influencing the growth of youth horticultural MSEs in the Morogoro and Pwani regions.

1.4 Research questions

  i.   What are the characteristics of youth horticultural MSEs in Morogoro and Pwani regions?

 ii.   What is the effect of the youth hands-on agribusiness skills program on youth decision and extent of participation in horticultural MSEs in the Pwani and Morogoro regions?

iii.   What are the factors influencing growth of youth horticultural MSEs in the Pwani and Morogoro regions?

1.5 Justification of the study

In Tanzania, the agricultural sector has the potential to create youth employment opportunities up to 65.2% compared to 34.8% of other sectors (Integrated Labour Force Survey-ILFS, 2014, pg.80). This substantiates the significance of the sector towards the provision of sustainable employment opportunities in rural and urban areas, ensuring food security, and a means of reducing massive migration among the youth from rural to urban centers. Besides, youth constitute 84.5% of the country's labour force participation rate (ILFS, 2014, pg.77). In this case, special effort has been placed on youth involvement in the agricultural sector because it is an ever-increasing group of labor market entrants that experience unemployment challenges than other working age. Specifically, various initiatives have been implemented in the fast income-generating agricultural subsector, including the horticultural subsector. In addition, the subsector is regarded as a labour-intensive undertaking with adequate employment opportunities along its production chain. Unlike the production of staple crops, horticultural varieties take a maximum of 90 days to be harvested with minimum capital and land requirements of not more than 2 hectares (Adesina & Favour, 2018). Also, the sub-sector enhances the generation of quick and considerable income at an average of 3 to 4 times throughout the year. However, up to this far, there is no clear information on the effectiveness of such initiatives on youth participation and the growth of horticultural MSEs. Both policymakers and development partners need to be informed on what has been achieved and what has not from the implemented interventions. This is crucial in understanding how best they can design future intervention programs to fit the highly heterogeneous youth's needs.

Moreover, the findings of this study are expected to contribute to the attainment of local and international strategies such as the National Strategy for Youth Involvement in Agriculture (NSYIA, 2016-2021), which aims at tracking youth involvement in agriculture graduates in specific for agriculture transformation. This study is also anticipated to contribute to the achievement of the Comprehensive Africa Agriculture Development Program (CAADP) agendas. The CAADP member countries are committed to providing 30% of employment opportunities to youth in agricultural sector, hence halving poverty by 2025 through inclusive agricultural growth and transformation. These goals are in line with Agenda 2030 and the Sustainable Development Goals (SDGs).

1.6 Scope and limitations of the study

This study was conducted in Morogoro and Pwani regions in Tanzania. Cross-sectional data was used by taking only youth who were the first participants of the hands-on agribusiness skills program in 2016 against the non-participants. The sample unit for this study was youth with 18 to 35 years, owners of horticultural MSEs producing fruits and/or vegetables and operated for at least three years from 2017. The results, therefore, can only find limited applications to youth engaging in other agribusiness undertakings in other regions.

1.7 Operational definition of terms

Agribusiness – Refers to commercialization of horticultural sub-sector from input provision, on-farm production to marketing of horticultural products.

Agri-preneurs – Refer to commercially oriented youth farmers engaging in horticultural farming and developing horticultural products for their wellbeing and social development.

Growth – Refers to changes in the size of an enterprise in a given time measured in numerical values in terms of sales turnover.

Horticulture – Refers to the science of growing fruits, vegetables, spices and flowers. In this study, horticulture will stand for production of fruits and vegetables for selling.

Initiative – Refers to a plan to solve the youth unemployment problem or increase youth undertakings in profitable agribusiness activities.

Intervention – Program designed to produce a specific change to improve the living standards of youth. In this study, intervention refers to the youth's hands-on agribusiness skills program.

Micro and Small Enterprises (MSEs) – SMEs nomenclature also stands for MSEs (Ministry of Industry and Trade, 2002, pg.3). MSE will be used to refer to a horticultural enterprise engaging not more than 49 employees and having a landholding between 0.25 acres to 5 acres.

Participation – This is the youth's active and voluntary involvement in a specific program to meet their social, cultural and economic needs.

Perception – Refers to the judgment that youth develop from awareness or understanding of a particular thing.

Youth – UN defined youth as anyone between 15 to 24 years, while ILO proclaimed to be those individuals in an age bracket of 15 to 35. In Tanzania, Youth is any person with 15 to 35 years (National Youth Development Policy, 2007). In this study, youth will refer to individuals in an age bracket of 18 to 35.

CHAPTER TWO
LITERATURE REVIEW

This chapter discusses the literature on horticultural production and potential opportunities for youth in the horticultural sub-sector in Tanzania. Also, it discusses various implemented interventions to increase youth participation in agriculture, youth perception of the agricultural sector, factors influencing youth decision and level of participation in the agribusiness sector, factors influencing the growth of youth MSEs, and shortcomings of the reviewed literature. In addition, the section discusses the theoretical and conceptual framework used in this study.

2.1 Horticultural production in Tanzania

The horticultural sub-sector is one of Tanzania's most dynamic and vibrant agriculture sub-sectors. According to TAHA (2011), the sub-sector is the fastest-growing agriculture sub-sectors and has registered tremendous growth in the past four (4) years. Horticultural production started when individuals planted necessary garden crops on their small plots of land. Moreover, the sub-sector experienced higher growth rates as a result of emerging big and urbanized cities. According to Dolan and Humphrey (2000), the increased production of non-traditional horticultural products has increased health awareness of the importance of healthy eating, especially fruits and vegetables. In Tanzania, the production of fresh vegetables attained its highest output level in 1990, producing 1 million tonnes, but after two years, the total output declined to 800,000 tonnes (Mashindano *et al.,* 2011; Mashindano, 2013). However, in 1994 and 2001, production increased with fluctuating trends until 2008, when the sector started to gain its constant momentum (*ibid*).

Furthermore, the horticultural sub-sector is recognized as an important sub-sector for economic growth, society revitalization, and contributor to poverty alleviation. The sector is characterised by the production of highly valued and high-volume horticultural varieties that range from fruits, flowers, and vegetables. Most grown varieties include; Asian vegetables, baby corn, baby marrow, beetroots, beans, cabbage, carrots, baby carrots, cauliflower, eggplant, kale, leeks, onions and shallots, okra, peas, potatoes, spinach, and tomatoes (TAHA, 2011). Moreover, tomato production is estimated to be higher at 51%, followed by cabbage at 16.3% and onions at 14.2% (URT, 2017). The major producing regions are grouped into three zones; the Southern highlands include Morogoro, Iringa, Mbeya, and Ruvuma regions. The Northern zone; includes Arusha, Kilimanjaro, Tanga, and Manyara regions, and Coast (Pwani) region, and Zanzibar represents the Coastal zone (TAHA, 2011).

In addition, the horticultural sub-sector is highly dominated by small-scale farmers occupying almost 70 to 85% (MoA, 2020) with plot sizes between 0.1 to 2 hectares (HODECT, 2010). However, the production of highly valued horticultural products is dominated by not more than 30 larger-scale producers with at least 30 acres located in Arusha and Moshi regions which mainly export the produce outside the country (Tanzania Horticultural Sector Outlook, 2015). Both local and international markets account for 85% of the total sector volumes, while the exportation of fruits and vegetables constitutes approximately 10 to 20% (Match Maker Associates, 2017).

In 2016, the horticultural production was noted to have increased from 5.9 million tonnes to 6.6 million tonnes in 2019 (Ministry of Agriculture, 2020) compared to 500 tonnes to 900 tonnes in 2010 and 2011 (Mashindano, 2013). The main export destinations are the East African regional market, the European Union (EU), and the Middle East. The production of horticultural varieties is a vital component of the agricultural sub-sector in the economy that offers employment opportunities to the majority, including women, at an average of 65% to 70% (TAHA, 2011). This resulted from cultural factors that allowed women to manage small plots of land around their homes. Apart from employment creation, horticultural production contributes significantly to food security, nutrition improvement, and economic growth (Gulamiwa, 2015; Islam, 2017). The sub-sector contributes highly to the development of processing industries in the country, such as processed fruit juices, dried fruit, canned vegetables and fruit, vegetable and fruit-based dressings, and sauces such as jam and chutney.

2.2 Potential opportunities for youth in horticultural sub-sector

The horticultural sub-sector offers massive employment opportunities along its value chain in favor of unemployed youth. Moreover, from the FAO report (2017), Tanzania was among the top 18 of the world's biggest horticultural producers from position 20 in 2002. Unfortunately, it was not among the top 20 world exporters (Mashindano, 2013). This may provide employment opportunities for young people to engage effectively in the horticultural sub-sector to boost the exportation of high-value horticultural produce to global markets. This can be achieved through investing in the production and productivity of highly demanded horticultural crops such as avocado, beans, and herbs on new farms.

Besides, the horticultural subsector ensures quick and sustainable income generation throughout the year. According to Groenbech (2016), the horticultural sub-sector provides higher incomes than staple crops due to the diversification of multiple vegetables and fruit grown on different plots of land in different seasons. For instance, small-scale horticultural

growers in Kenya could earn five times higher than non-horticultural producers (Weinberger & Lumpkin, 2007). Therefore, the expansion of horticultural production will lead to massive income-generating opportunities for the unemployed youth population, from input provision and on-farm production to trading (Sumari, 2017). However, small-scale growers' lack of proper and modern storage, cooling, and processing facilities leads to post-harvest losses estimated to reach 40% in the domestic market and 10% during exportation (TAHA, 2011). Many horticultural varieties, such as tomatoes, avocados, and mangoes, are highly perishable; hence, small-scale horticultural producers are forced to accept lower farm gate prices offered by traders and middlemen (Mroto *et al.,* 2018). This is another considerable opportunity for self-organized youth groups to develop proper post-harvest handling techniques to overcome post-harvest challenges. This can be done by investing in technologies and modern equipment such as seed cleaning, storage, packing, and cold chain transportation. To cement on that, the country's annual production of fruits and vegetables is 2.75 million tonnes, but only 4 percent is being processed (United States International Trade Administration, 2019). This also justifies the presence of significant opportunity in the processing of fruits and vegetables for the domestic and external markets.

Moreover, the available fertile arable land of about 44 million hectares is another opportunity for increased horticultural production (NBS, 2015). This can also provide a good chance for the established youth agribusiness projects that need land for their productivity. Another added advantage for youth to engage in the sub-sector is the availability of various horticultural training and research institutions that provide competent skills needed in this sector. This includes the Sokoine University of Agriculture (SUA) in Morogoro, the World Vegetable Centre, and the Horticultural Tengeru Institute in the Arusha region, the Selian Agricultural Research Institute, and the Mikocheni Research Institute in Dar es Salaam. These institutions support horticultural growers and processors with research-related services for increased competence and compliance with international standards. Besides, the Match Maker Associates (2017) identified public and private initiated programs and strategies to expand the development of the horticultural sub-sector in the country. Among others is the National Horticultural Development Strategy (2012–2021), Potatoes Development Strategy (2016–2025), The Post-Harvest Management Strategy (2017–2026) as well as the Seeds of Expertise for the Vegetable Sector of Africa (SEVIA).

Apart from the mentioned opportunities and initiatives to influence the growth of the horticultural sub-sector in the country, there are still some notable challenges that limit youth

participation in the horticultural sector. According to the Horticultural Development Council of Tanzania (HODECT, 2012), some of the factors limiting youth employability within the horticultural sub-sector include limited access to credits by small scale producers. Young people do not have the collateral needed to secure funding from formal financial institutions. Besides this, other factors are poor and inadequate extension services, and quality farming inputs, lack of market linkages because the majority of domestic exporters do not have enough experience to secure assured and high-quality markets in the economy such as supermarket within the highly competitive market. Young people also lack the skills required in horticultural production. Another constraint is weak business environment for the local producers in the local markets. Following this, different interventions have been initiated to increase youth engagement in agriculture value chains to reduce these challenges.

2.3 Implemented interventions to increase youth participation in agriculture

Agribusiness intervention programs are the doable approaches to increase youth participation in agriculture hence reducing the rate of youth unemployment. Increasing economic engagement of the youthful population in agricultural value chains is significant for achieving food security in developing countries, including Tanzania (Mroto *et al.,* 2018). Moreover, youth involvement in agribusiness is significant for sustaining the Tanzanian population, which continues to grow by 3.1% per annum (MoF, 2018/2019).

Youth are many, energetic, courageous with a fresh mindset that can generate new ideas, they are faster in adapting to new technologies, and possess the highest degree of creativity compared to the elders (Msigwa & Kipesha 2013; Nyabam *et al.,* 2018). In this case, developing youth agribusiness requires an appropriate support framework and relevant technologies that can attract and motivates youth engagement in agribusiness activities for income generation. Most youths are resource-poor and lack access to agricultural inputs such as land, finance, and output markets. Moreover, there are cultural inhibitions to venturing into some types of agribusinesses, especially for girls. In this case, the government of Tanzania has formulated several initiatives to increase rural and urban youth participation in the agribusiness sector to boost productivity and reduce the problem of youth unemployment.

2.3.1 Past interventions on youth participation in agriculture

In Tanzania, strategic policy initiatives and programs to increase youth participation in agriculture can be traced back to the 1970s, when agriculture was introduced in primary and secondary schools (Food, Agriculture and Natural Resources Policy Analysis Network-

FARNPAN, 2012). This initiative was backed by the introduction of education for self-reliance to support the 1967 Arusha Declaration (Gulamiwa, 2015). The purposes were mainly to disseminate agricultural knowledge to students and prepare them for village life. The initiative also integrated both theories and practical skills by establishing demonstration farms operated by the students to engage them in various agricultural activities such as planting, weeding, livestock rearing, poultry, and harvesting. In 1996, this initiative was successive by absorbing many school leavers who failed to proceed with further education. However, technically, the programs failed to produce the intended objective of transforming students from skills and knowledge acquired to become better farmers. Moreover, it failed to change youth perceptions of agriculture as the majority migrated to urban areas in the hope of getting better-paying jobs (FARNPAN, 2012).

2.3.2 Current interventions on youth participation in agriculture

These initiatives were characterized by the government's efforts toward the establishment of agricultural training institutes, including the Ministry of Agriculture Training Institute (MATI), Livestock Training Institute (LITI), and Moshi Cooperative College (FARNPAN, 2012). The purpose was to update the knowledge and skills of farmers, including young farmers, extension officers, and agricultural professionals. This initiative was followed by the introduction of the Agriculture Sector Development Strategy (ASDS) in 2001. The strategy recognized youth's potential abilities and contribution to increasing productivity within the agriculture sector. ASDS aimed to improve the profitability and incomes of young farmers in rural dimensions. Furthermore, the ASDS identified rural-urban youth migration as the major constraint to the growth of the agriculture sector. In addressing this issue, the strategy established Agricultural Sector Development Programme (ASDP) in 2003, whereby the local government authorities were required to implement District Agricultural Development Projects (DADPs). DADPs provided grants and technical support to small agricultural projects in villages through capacity building to smallholders, including youth.

To accelerate the achievements of the ASDP of 2003 that resulted from ASDS, Kilimo Kwanza Strategy was launched in 2009. This initiative aimed to modernize and influence the growth of the agriculture sector from 4 to 10%. The sector recognized the unique contribution and potential of the agriculture sector on poverty eradication in the country. Furthermore, the Kilimo Kwanza strategy recognizes the contribution of the youth to its achievements as described in its 8th pillar for science, technology, and human resources.

Kilimo Kwanza resolution incorporated youth issues in agriculture through the introduction of loans and provision of lands to graduates venturing into agricultural entrepreneurship, provision of full scholarships for agricultural students pursuing higher education, and development of incentives programs to attract, train and retain youth in agriculture. Lastly, the resolution aimed at gender mainstreaming by developing programs to strengthen the position of women in agriculture. The initiative received enormous political support within and outside the country from the private sectors and development partners (FARNPAN, 2012). However, it was criticized by many people, youth specifically, that the introduced initiative was only a political campaign for the government since not so much has changed since its establishment.

2.3.3 Policy-related interventions on youth participation in agriculture

In 1996, the government established the Youth Development Policy (YDP) to facilitate the implementation of youth development programs and skills provisions to increase their economic empowerment. However, in 2007 the 1996 YDP was revised, and the focus was on introducing and promoting entrepreneurship for self-employment. The Small and Medium Enterprises (SMEs) policy was also established in 2002 to foster job creation and income generation by creating new SMEs and improving the performance of the existing ones. Empirical studies indicate the contributions of these enterprises all over the world in innovations, employment, and income generation (Kipsiele & Waiganjo, 2015). This is also a case for Tanzania, whereas SMEs comprise about 95% of all businesses, employ 30% of the population, and contribute to one-third of the country's GDP (Momba, 2013). Furthermore, SMEs stimulate growth in urban and rural areas, and they are established in rural settings to add value to agro products (Baragwiha, 2013). Moreover, in 2016 the World Bank approved about USD 70 million to finance and support the SME sector by linking smallholder farmers to the agribusiness sector to boost their incomes and create employment.

Another policy is the National Employment Policy (NEP) 2008 that enhanced equal access to employment opportunities for marginalized and vulnerable groups, including youth. Furthermore, the Tanzania Development Vision 2025, both the Five Years Development Plans (2011/12 – 2015/16) and (2016/17 – 2020/21), are also known for promoting employability amongst the youths. A recent strategy to increase youth participation in agriculture and agribusiness activities is the National Strategy for Youth Involved in Agriculture (NSYIA 2016 – 2021) (MALF, 2016). This strategy aims at tracking youth involvement in agriculture, especially graduates for agriculture transformation. Among the

13

critical issues identified under the vision of NSYIA was the facilitation of land acquisition and agricultural investment for youth, the facilitation of youth to acquire financial resources to invest in agriculture, and the promotion of technical and entrepreneurship skills for the youth in the country (*ibid*).

2.3.4 Private sector interventions on youth participation in agriculture

Apart from government-initiated interventions to engage youth in agribusiness, other interventions have been initiated by multinational organizations, NGOs, and other developmental stakeholders. In 2017, Heifer International established the East African Youth Inclusion Programme (EAYIP), which runs for five years in Tanzania and Uganda. Eleven (11) Agricultural Hubs were established in Tanzania in Mufindi, Iringa rural, Njombe TC, Njombe DC, Mbozi, Busokelo, Wanging'ombe, Mbeya rural, Rungwe, and Mafinga districts to provide youth with technical skills on value additions. To make the horticultural sector more vibrant and competitive in 2017, Feed the Future established "Feed the Future Tanzania Mboga na Matunda". This project targeted the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), including Morogoro, Iringa, Mbeya, Songwe, and Zanzibar. The project benefited 50,000 people, including women and youth, with easy land access, financial services, and market information (Feed the Future, 2017).

2.4 Empirical analyses on youth perception, participation, and growth of MSEs

2.4.1 Youth perception of the agricultural sector

Concerning the agricultural sector, literature has documented different perceptions of youth in the agribusiness sector. Some works have revealed positive acceptance, while others have indicated a contrasting view of the youth in this sector. In most cases, youth perceive agriculture as the main occupation for uneducated, poor, and older population. They also believe that the sector is designated mainly for rural households. Youth have a negative mindset and view the sector as a dirty occupation, labor-intensive, requiring the highest level of devotion hence not attracted to practice (Muthomi, 2017). For instance, Abdullah and Sulaiman (2013) indicated that youth perceptions of agriculture influence their participation decision. A five-point Likert Scale revealed that attitudes and acceptance scored 4.3612 and 4.6725, respectively, had a positive and significant relationship to youth interest in becoming agri-preneurs in Malaysia. When it comes to employment and job searching, youth will always place agriculture as their last option in their list of preferred jobs.

Cheteni (2016) pointed out that low self-esteem possessed by young people is one of the factors that reduce their level of participation in agriculture. As a result, some of the

educated and experienced youth in rural areas, especially those around 20 years and above, spend few hours working on the farm and allocate much of their energy to non-farming occupations (Maïga *et al.,* 2015). One of the most mentioned reasons for the negative perception of agriculture is lower profitability than formal sectors (Yami *et al.,* 2019). This has always been associated with fewer returns compared to the investment made (time and energy) and systemic risks arising from unpredictable weather changes. Moreover, socio-cultural factors also play an important role in attracting or discouraging youth from engaging in agriculture. Abdullah and Sulaiman (2013) noted that these factors affect youth attitude and acceptance of becoming agri-preneurs. Yami *et al.* (2019) pointed out that socio-cultural factors such as education level, household responsibilities of youth, and expectations of family members, communities, and media plays a critical role in shaping youth aspirations in considering agribusiness for self-employment. They further indicated that the lack of role models who have succeeded in agriculture is among the factors that lessen youth interest in agriculture.

In this case, literature has empirically tested different factors influencing youth perception of the agricultural sector. These factors are categorized into socio-cultural or socio-economic factors, as mentioned in the previous paragraph, institutional factors, and economic factors. For rural youth, environmental factors such as inadequate land, poor harvests, and soil degradation were also mentioned to reduce youth involvement in agriculture (Akpan, 2010). The level of education attained is considered one of the socio-cultural factors that influence youth perception of agriculture. For instance, Mwendwa (2016) and Kising'u (2016) found a lower participation rate in agricultural projects among degree holders than primary and secondary graduates. Out of 76 respondents, only 4% had degree certificates, while primary and secondary graduates were 38% and 33% (Kising'u, 2016). A similar study by Mwendwa (2016) indicated that of 318 respondents, 11% had a university education (degrees and postgraduates), 26% had primary education, and 38% had secondary education. Graduates often believe that their academic status will be devalued in their communities once they engage in and practice agricultural related activities (Yami *et al.,* 2019). They believe that farmers are less respected compared to their counterparts in the formal sectors (Akpan *et al.,* 2015; Twumasi *et al.,* 2019). Similarly, the Nigerian government introduced integrated farming schemes and fresh graduates' loan schemes to attract youth in agriculture. However, their response and participation rate declined from time to time (Akpan, 2010). Also, despite the Kenyan government's efforts to motivate youth to engage in agribusiness through various

incentives to youth farmers, such as loans, youth were less attracted to venture into this sector (Kipsiele & Waiganjo, 2015; Muthomi, 2017).

In relation to that, Zakaria *et al.* (2014) used descriptive statistics and discovered that 54.8% of 292 students did not prefer agribusiness to self-employment. Only 8.6% preferred agribusiness for self-employment after graduation. These findings concur with findings obtained by Yami et al. (2019). Among the challenges considered to be the major limitation for the youth to venture into agribusiness were; difficulties in accessing start-up capital and high borrowing costs. In addition, a chi-square analysis indicated a statistically significant relationship between students' attributes (age, marital status, place of domicile, parental educational background of students, practical agricultural experience, and risks tolerance) and intention to venture into an agribusiness for future employment (Zakaria *et al.,* 2014).

In explaining factors influencing youth participation in agriculture in the Nkonkobe Municipality in South Africa, Cheteni (2016) used a binary logistic model and observed that program availability and resources statistically affected youth participation. In addition, 58% of 140 of the surveyed youth had no interest in farming. They argued that it was hard for them to engage in agriculture activities while their siblings worked in the formal sectors in the cities. Hence, this study concluded that youth perceived farming as a lousy carrier. Most youths have a negative mentality toward agriculture from the moment they are in secondary school, and most of them aspire to take white-collar jobs in the formal sectors in urban areas. For instance, Ayanda *et al.,* (2012) indicated that 72% of university agricultural students in Nigeria did not prefer agribusiness to self-employment. This study observed that 57% of its participants opted for banks and international organizations as their preferred areas for future employment. However, these formal sectors (private and public) offer few employment positions for the youth Okojie (2003), resulting in many of them working in non-formal sectors without job security (Kararach *et al.,* 2011). In relation to institutional factors, Akpan *et al.* (2015) used the Logit model and pointed out that years in social organizations, access to ICT services, nature of land ownership, and youth access to state-owned agricultural programs positively determined youth decision to engage in agricultural activities.

Contrarily, a study by Nyabam *et al.* (2018) had different observations on youth perception of agriculture. Using descriptive statistics, they found that 94.2% of respondents who participated in the International Institute of Tropical Agriculture (IITA) agribusiness model agreed that agriculture is a profitable venture. Besides, 62% of the participants viewed agribusiness as a vital source of income generation and not a lower-status activity as viewed

by others. Lack of capital and government support was the major constraints limiting effective youth participation in agriculture. Moreover, to cement the positive acceptance of agribusiness as an avenue for entrepreneurship amongst youth, the Youth Employment in Agriculture Programs (YEAP) established in 2013 in Nigeria created employment opportunities for about 750,000 young farmers and agripreneurs (Etela & Onoja, 2017). This program changed youth's perception of agribusiness as an essential career for improving their living standards through value addition on agricultural produce (Yami *et al.,* 2019).

In a similar way, to evaluate the effectiveness of the Basic Student Entrepreneurial Programme (BSEP) for entrepreneurship development in Malaysia, Mohamed *et al.* (2012) used Chi-square analysis to understand the relationship between participant origin, presence of family members already involved in entrepreneurial activities and educational background in motivating youth to engage in agri-preneurship after graduation. Although this program could not produce successful graduates' entrepreneurs, 97% of the participants acknowledged that the BSEP program was influential for them to venture into agri-preneurship. This is similar to the findings of Bosompem *et al.* (2017), revealing that 67% of 190 agribusiness students from the University of Cape Coast, Ghana were ready and willing to have self-employment in the agribusiness sector. In this work, results generated from the Logit model indicated that the mother's level of education, student living in farming communities, accessibility of transportation facilities for agribusinesses, and accessibility of market for agro-products to be best estimators of agricultural students' willingness to venture into agribusiness sector.

2.4.2 Factors influencing youth participation in agribusiness sector

There is also an increasing body of literature discussing determinants or factors influencing youth decision to participate in agriculture and agribusiness activities. These factors have been classified into demographic, economic, social-cultural, and institutional factors. Wa¨rneryd (1988) characterized these factors into demographic factors: age, sex, previous experience, and influence of role models. Personality traits include self-efficacy, confidence, locus of control, risk-taken tendencies, professional attraction, and contextual factors that include education and environment. These factors have been studied and tested differently in empirical works in several parts of the world to investigate their contribution or effect on one's intention to become an entrepreneur. Akpan (2010) found out that youths' decision to participate in agricultural activities is a function of society's cultural, political, environmental, and economic situation. Okojie (2003) observed that most youths are under

pressure from family members, particularly parents. As for them (parents), employment means working in a salaried and well-paid job. Mohamed *et al.* (2012) used the chi-square analysis and determined the relationship between student intentions to consider agri-preneurship for self-employment. They found out that student origin, presence of family members in entrepreneurship, and educational background had statistical significance on student intention to venture into agri-preneurship. Youth education level, household responsibilities, expectations of family members, society, and friends were also identified as social-cultural factors influencing youth decision to participate in agribusinesses (Yami *et al.,* 2019).

Zakaria *et al.* (2014) used Chi-square analysis and found out that personal attributes like age, marital status, place of domicile, parental education background of the student, practical experience, and risk tolerance were statistically significant in the intention of agricultural students to take agribusiness for future employment. However, the gender of the participant, main parental occupation, and program issued at the university were statistically insignificant. In this study, only intention to participate was considered to determine the decision to participate, while the level of participation of the surveyed students in agribusiness-related activities was also not indicated. Contrarily, Akpan *et al.* (2015) used both the Logit and Poisson regression models to evaluate the decision and participation of rural youth in agriculture production in the Southern region of Nigeria. Using the number of hours spent in agriculture production as the dependent variable, they noted that youth age, number of extension visits, years in social organizations, and purpose of farming positively affected youth participation rate in agricultural activities.

Another study by Etim and Udoh (2018) used the univariate Probit model and found out that social-economic factors such as education, experience, income level, and membership in social groups positively impacted youth's willingness to engage in agricultural activities in Akwa Ibom State, Nigeria. Age was found to have a dual effect on young youth against older youth. This observation matches with the findings of Bosompem *et al.* (2017). Moreover, Mbah *et al.* (2016) used factor analysis and binary logistic regression to analyze social-economic factors influencing rural youth participation in farming in Nigeria. Results indicated that sex, age, marital status, level of education, household size, experience, farm size, type of agriculture, principal occupation, group membership, and extension services positively influenced youth decision to participate in agricultural activities.

In accessing social-economic factors influencing youth decision to engage in agriculture in Yatta Sub-county in Kenya, Mwendwa (2016) noted that land access, access to financial services, access to the available markets, and access to extension services influenced youth decision to participate in agriculture. On the other hand, Yami *et al.* (2019) observed that the low level of agricultural outputs and returns are among the economic factors that hinder youth ambitions to undertake agribusiness as a profitable career. Cheteni (2016) used a binary logistic model to analyze the exogenous determinants apart from socio-economic factors influencing youth participation in agriculture in Nkonkobe Municipality in South Africa. The study discovered that youth programs and resource availability influenced youth decisions to participate in agricultural activities. Business start-up is one of the critical economic factors determining youth engagement in agribusiness activities. Njeru and Gichimu (2014) commented that in Africa and Latin America, financial institutions place youth in the portfolio of high-risk customers because of their inability to design attractive and well bankable business ideas that can attract financiers.

In many cases, access to information on the current agricultural opportunities is also a significant factor for youth participating in agricultural activities. This was observed by Kising'u (2016) that awareness of agribusiness programs was one of the factors influencing youth decision to participate in agriculture activities. Kimaro *et al.* (2015) found that age, sex, marital status, education level, family background, credit facilities, land access, knowledge of agriculture, lack of alternative jobs, and perception to be the factors associated with rural youth participation in farming activities in Kahe District in Tanzania. Another study by Ohene (2013) used the Logit model to identify the determinants of farmers' participation in the Youth in Agriculture Program (YiAP) in the Eastern Region of Ghana. The results revealed that education, household size, farm size, farm income, access to credit, location, and FBO membership positively influenced participation decisions. However, age and distance from farmers' residents to the YiAP site negatively influenced farmers' participation. Twumasi *et al.* (2019) used the Double Hurdle Model and discovered that access to credit, access to land and youth course of study at the tertiary institution, gender, and youth perception of farm income have a positive effect on youth decision and intensity to engage in farming activities.

2.4.3 Factors influencing growth of youth MSEs

The definition of enterprise/firm growth has varied throughout time. For instance, Penrose (1995) defined firm growth in two different ways. First, she defined firm growth as

an increase in a specific amount, e.g., growth of certain parameters such as sales, production, or exports. Secondly, Penrose related firm growth as a specific development process, like biological processes, increasing size, or quality improvements. Parallel to Penrose's classification, Hutzschenreuter and Hungenberg (2006) defined firm growth by considering quantitative and qualitative aspects. Quantitative growth refers to an increase in measurable parameters representing firm size. In contrast, qualitative growth corresponds to improvements in less quantifiable criteria, such as the quality of products or the quality of customer relationships.

Micro and Small enterprises play a significant contribution to the economic development of both developed and developing countries. This is due to their flexibility in terms of establishment, capital requirements, and management compared to the large enterprises but they are limited to growth (Ministry of Industry and Trade, 2002). The growth of SMEs reflects the ability of an enterprise to increase its size, which leads to an increase in absolute profit (Glick *et al.*, 2005). Moreover, the success of a small business is an indicator of the achievements of the established businesses towards the intended goals. However, the SME sector faces a mixture of success and failure, and various empirical studies have indicated that out of five, three SMEs collapse (Sharu & Guyo, 2013). In Tanzania, 60% of start-up businesses were reported to survive in the first five years (Jumanne, 2015). Moreover, the World Bank (2009) also reported that 68% of SMEs in the US exit from business within five years, and only 13 to 19% survived.

The failure of SMEs is not limited to youth-owned enterprises that have failed to attain the intended objectives in their initial years of establishment. In this case, literature has been expanding in explaining factors influencing SMEs' success and those limiting their growth. Hove and Tarisai (2013) used the Logit model and discovered that internal factors such as business plan, SWOT analysis, marketing strategies, mission and vision of the business, as well as finance had an impact on the growth and survival of agribusiness SME. Furthermore, Sharu and Guyo (2013) used the multivariate regression analysis and found that entrepreneurship skills, market access, government policies, and credit access had statistical significance on the growth of youth-owned SMEs in Nairobi County in Kenya. Darroch and Clover (2005) used principal component analysis and discovered that lack of access to services, start-up capital, management skills, lack of access to tender contracts, compliance costs associated with Value-Added Taxes (VAT) and labor legislations, liquidity stress, lack of collateral and institutional support were factors constrained the growth of SMME in

Kwazulu-Natal in South Africa. Ngugi and Bwisa (2013) revealed that technology, product quality, access to finances, and market availability had little influence on the growth of One Village One Product (OVOP) SMEs. Also, Kipsiele and Waiganjo (2015) identified managerial skills and marketing access to be the growth limiting factors for youth-owned agribusinesses in Yatta Sub County in Kenya.

Odhiambo (2013) noted that entrepreneurial training, leadership style, social networks, and owner's managerial skills had significant contributions to MSE's performances. Peter (2014) identified entrepreneurship training, access to credits, access to markets, and business competition as factors affecting the performance of the youth-owned enterprises. A study by Maliwichi *et al.* (2010) observed that lack of capital, lack of managerial skills, and lack of market access as the factors affecting the performance of small-scale agribusinesses in Limpopo province in South Africa. However, these studies have only revealed the factors influencing MSE performance, which are different from those affecting growth. Mwangudza (2016) discovered a strong relationship between credit accessibility, government policies, and technical skills in the growth of youth entrepreneurship in Nairobi County in Kenya. Moreover, the costs of licensing and registration, and mentorship programs significantly influenced the growth of youth-owned enterprises. However, Evans (1987) stressed that business failure could have different implications. MSE might indeed have failed to operate due to several factors. Among others is the voluntary decision of the business to close its operations. Moreover, the business might decide to merge with other businesses, and the last one is for the business to be acquired by another company.

Other studies have empirically evaluated factors affecting SMEs' growth by considering gender aspects. As pointed out by FAO (2015), gender is an important dimension that influences opportunities to build and utilizes the capacities of youth in agriculture. This is important to various stakeholders in the economy, including financial providers, to design commercial facilities that will favor the marginalized groups in the society, women, and youth in particular. Statistics and past studies indicate that males own most of the MSEs, and they experience higher performance than those owned by females. The World Bank (2012) reported that women face more constraints in production activities than men because women bear the burdens of household activities even when they have enterprises to run. However, a report from the United Republic of Tanzania (2005) indicated that about one-third (1/3) of SMEs operated in the country are managed by females. Apart from being large in number within the informal sectors and small businesses, women face high competition while earning

small subsistence incomes. Birdi and Mokaya (2017) identified the critical institutional factors affecting women-led SMEs in the Arusha region. The identified factors included business locations, poor and bad traditional practices against women entrepreneurship, lack of guidance and business counseling, failure to balance business and home chores, lack of business skills and management, and complicated registrations and licensing procedures.

Veena and Nagaraja (2013) compared male and female entrepreneurs and observed that female-owned firms are smaller and likely to choose sole proprietorship as a legal form of ownership. Also, female entrepreneurs are underrepresented in manufacturing and mostly found in service industries. Rosa and Sylla (2018) used the multivariate analysis to compare the performance of most female-owned and majority male-owned SMEs. The results indicated that the gender aspect had an impact on all measures of MSE performance. Sales returns and profit were lower for most female-owned MSEs than their male counterparts. Only innovation was likely to be higher for most female-owned MSEs than males. Understanding the gender impact on SMEs' growth is essential to help entrepreneurs, financial providers, business advisers, and policymakers to make policy and business decisions (Rosa & Sylla, 2018).

2.5 Shortcoming of previously reviewed literature

According to Davis (1989), there is a relationship between the intention to start a business and the actual decision for business establishment. In this scenario, fewer individuals usually start their businesses even though they might have indicated their initial intention to do so (Nabi & Holden, 2008). For instance, a study by Robertson and Wilkinson (2005) in the United Kingdom indicated that 33% of students revealed their intention to start their business once done with their studies. However, a follow-up study by Harding (2007) discovered that only 7% of the graduates had started their businesses. In this case, various literature reviewed concentrated only in the determination of youth intention and willingness to participate in agricultural and agribusiness related activities (Akinwekomi *et al.,* 2017; Bosompem *et al.,* 2017; Dimelu *et al.,* 2020; Etim & Udoh, 2018; Maritim, 2020; Mbah *et al.,* 2016; Mohamed *et al.,* 2012; Ng'atigwa *et al.,* 2020; Ohene, 2012; Withanage & Damayanthi, 2019; Zakaria *et al.,* 2014). They only stressed on the finding the entrepreneurship spirit among the youth and failed to indicate their actual participation in those activities. Yet the intention to do something and the actual engagement must be considered as two separate things guided by two different decisions.

Contrarily, a study by Akpan *et al.* (2015) used the Logit and Poisson regression models to determine participation decisions and the extent of participation among rural youth in agricultural production Southern region of Nigeria. In this study, the dependent variable measuring the extent of participation was the total number of hours spent by youth in their agricultural activities. Also, another similar study by Twumasi *et al.* (2019) used the Double Hurdle Model to examine factors influencing youth decision to participate and the intensity of participation in agriculture in Ghana. In this study, the intensity was measured by the youth's amount of capital invested in agriculture activity. Generally speaking, these two studies were carried out in Nigeria and Ghana, which differ from Tanzanian economies in terms of geographical, demographic, institutional, social, and economic characteristics.

This study will fill this gap by empirically evaluating the youth decision and extent of participation in horticultural MSEs, specifically in Tanzania, after attending the youth hands-on agribusiness program. The dependent variable measuring the extent of youth participation will be the size of initial start-up capital invested by youth in horticultural MSEs. Furthermore, to assess the effect of the program attended by youth on the growth of their MSEs, the Evans (1987) growth model was used. This was assessed for both participants and non-participants of the agribusiness program. The amount of sales revenues generated by these enterprises from the establishment to date was used as a growth indicator.

2.6 Theoretical framework

2.6.1 MSE's growth theories

A theoretical framework for this study was centered on the growth theories, specifically the "Active Learning" theory. Enterprises' growth can either be Organic or Inorganic. Organic growth occurs when an enterprise grows internally through expanding its existing production or by introducing a new production line. Inorganic growth is when the enterprise grows by acquiring another enterprise (Davidsson *et al.,* 2006; Evans, 1987). In describing enterprises' growth, several theoretical models were proposed. These theories include Traditional Neo-Classical theories, Proportionate theories, and Learning theories.

Traditional Neo-classical Economics: This theory views an enterprise as a production function, assuming that a firm's growth results from technological changes, wage rates, and changes in the price of products produced. This model is based on the perfect competitive market assumption that an additional labor unit will be added until the value of the marginal product of the last labor is equal to the wage paid (McPherson, 1996). However,

this model has not contributed much to the size distribution of an enterprise; instead, it focused on the factors affecting the demand and supply of the products produced by the firm. Also, it has not indicated the unit of analysis that can describe the growth of an enterprise (Davidsson, 2006).

The Proportionate Effect: Also referred to as Gibrat's (1931) theory, based on a stochastic approach that considered enterprise growth to be dynamic. This theory raised exciting debates on the analysis relating size and age to firm growth. Gibrat's theory assumes that growth occurs mainly by chance. Small and young firms were viewed to have growth opportunities similar to larger ones. This is because the growth pattern is random throughout the production year. The difference in the firm's growth rate is assumed to depend on the observable industry and unique firm characteristics. In this case, Gibrat's theory concluded that growth is independent of age and size. However, t empirical evidence such as Derese (2014), Evans (1987) and McPherson (1996) revealed an inverse relationship between firm size and age on firm growth. This relationship is contrary to Gibrat's theory which concluded that smaller firms tend to grow faster than larger enterprises.

The Passive Learning Theory: This theory was put forward by Jovanovic's (1982) due to the shortcomings of Gibrat's (1931) theory. In this context, firms with able managers grow over time, expanding each period when their managers observe that their guesses about their managerial efficiency have understated their actual efficiency. Jovanovic's model predicts that the annual growth rate of a firm will be a function of the accuracy of the manager's predictions regarding its ability and the price of the product. The theory advocates for the inverse relationship between age and the size of an enterprise on growth. This implies that small and young firms are more viable and vibrant for growth than larger enterprises. Concerning firm size, bigger firms grow more slowly, controlling for firm age. Bigger firms have small values of the cost parameter (that is, they are more efficient). Such firms have less and less room for further increase, given that the information distribution has a lower bound. In addition, this theory postulates that key growth determinants are managerial efficiency and learning by doing. When entering the industry, new and young firms start by learning about their actual efficiency (McPherson, 1996). According to Jovanovic, firms differ in size not because of possessing huge capital but because some discover they are more efficient than others. The efficient ones will survive and grow, while the inefficient ones will fail and exit the market. The model allowed for entry, growth, and exit decisions based on the manager's predictions of their ability and product price (Jovanovic's, 1982).

24

The Active Learning Theory*:* The Passive Learning model was also criticized for having an efficiency parameter implying that a manager's ability is fixed. Managers' efficiency level cannot be changed even though they may still have chances of acquiring new knowledge and skills through learning. To cater to this weakness (Ericson & Pakes, 1995) extended the model into an active learning model to accommodate capital formation to alter the efficiency parameter. The active learning model advocates for investments in human and physical capital as a means of increasing managers' efficiency. Those firms with managers possessing greater stocks of human capital should be more efficient and, therefore, should grow relatively faster (McPherson, 1994).

The active learning theory fits the study because training programs attended by enterprise owners play a significant role in human capital development that contributes directly into enterprises' growth. Training gives enterprise owner's opportunity to develop new skills and accumulate the needed knowledge that increases their efficiency level. Such programs are crucial in terms of behavioral change that influence owners and business characteristics (Kessy & Temu, 2010). Training enables entrepreneurs to acquire business competencies for running their enterprises, thus widening their managerial capacities. Thus, to enhance our knowledge of this relationship, this study dwells on the active learning theory to discuss the effect of youth hands-on agribusiness skills program on youth participation and the growth of horticultural enterprises. Usually, youth agribusiness programs aimed at expanding youth innovations and capabilities, increasing production efficiency, and cost reduction (Tambwe, 2015). All of these are thought to have an impact on youth decision to engage in horticultural enterprises. Moreover, skills obtained from participating in such programs contribute positively to the growth of youth-owned enterprises. Through agribusiness training programs, youth can access new information and learn how to apply it to their daily operations resulting in increased productivity. Also, young entrepreneurs will be exposed to various organizational management structures, entrepreneurship skills such as business and production plans, marketing, financial literacy, record keeping, and leadership management, establishment and formation of profitable social networks, which are necessary for the growth of established businesses enterprises.

2.7 Conceptual framework

In this study, youth decision to engage in horticultural enterprises was assumed to be influenced by socio-economic factors, institutional, and youth enterprise characteristics. These factors may influence youth decision to establish horticultural enterprises or not.

Provided that youth decided to establish horticultural MSEs, then these factors could also explain their participation level in such enterprises. On the other hand, youth are resources poor; therefore, those who had a chance to participate in the youth hands-on agribusiness skills program were expected to benefit from access to entrepreneurship skills (business plan, marketing, financial literacy, and record-keeping), production inputs (seeds varieties, fertilizers, pesticides, and drip irrigation kits), access to output markets and access to extension services. Youth who attended the agribusiness program were further expected to overcome some production barriers that limited their productivity; hence they could experience positive growth in their established enterprises compared to those who did not. In addition, it was also assumed that moderating factors such as the government policies and financial institutions play important roles that support the establishment and growth of youth-owned MSEs. This is achieved through formulation of the youth development policies, provisions for start-up loans, and financial management training. The expected outcome of participation in the hands-on agribusiness skills program was the growth of youth horticultural MSEs through increased sales revenues, as indicated in Figure 2.1.

Socio-economic factors	***Institutional factors***	***Enterprise characteristics***
Age, Sex, Education level, Household size, Marital status, Non-farm occupations, Presence of family member in agribusiness, Farming experience	Membership in social groups, Access to information on agribusiness programs, Distance to the incubation center	Location, Employment size, Farm size, Enterprise ownership, Age of an enterprise, Number of business enterprises owned

Government Policies
Financial Institutions

Participated

Not participated

Agribusiness Intervention
Agribusiness training, Access to start-up kit, Credit access, Access to extension services, Access to output market, Land access.

Extent of participation

Growth of MSE
- **Sales turnover**

Figure 2. 1: Conceptual framework

CHAPTER THREE
METHODOLOGY

This chapter discusses the methods and materials used in this study. It provides an insight into the study areas, including a map of the study areas, sampling procedures, data collection, and analytical frameworks.

3.1 Description of the study areas

This study was conducted in two regions of Tanzania's mainland, Morogoro and the Pwani (Coastal) region. Morogoro Region occupies 70,624 square kilometers (8.2% of Tanzania Mainland) with six districts; Morogoro Rural, Morogoro Urban, Gairo, Kilombero, Kilosa, and Mvomero (URT-PHC, 2012). The region lies between latitudes 5° 58' South of the Equator and between longitude 35° 25' and 35° 30' East Greenwich. According to NBS (2016), there were 2,209,072 inhabitants in the Morogoro region. In addition, agriculture is the region's main economic activity, and this region has 259,246 households involved in crop production (NBS, 2012). Morogoro region is among the leading regions for horticultural production in the Southern highland zones. According to the NBS report (2016), the total production of fruit and vegetables in the region is 42,229 tonnes, occupying about 12,400 ha (3%) of the planted area. In addition, the economically active group of the Morogoro region with 15 to 64 years is 47.5% of the regional population (PHC, 2012), thus making the region among the top regions for horticultural production as a result of labor force availability.

Pwani region is situated in the Eastern part of Tanzania along the Indian Ocean coastal belt. This region is located between 6° and 8° South of the Equator and between 37° to $40^o10'$ East of the Greenwich Meridian. The region has six districts; Bagamoyo, Kibaha, Kisarawe, Mkuranga, Rufiji, and Mafia, and occupies about 32,407 square kilometers (NBS, 2007). According to the PHC (2012), the Pwani region has 1,098,668 people, and the active group of 15 to 64 years constitutes 50% of the total rural agricultural population. The youth population is higher than other age groups due to youth migration from different areas and is higher for women than their male counterparts (URT, 2016). In the Pwani region, agriculture is also the main economic activity, with 61.1% of the economically active population depending on agriculture, livestock, and fishing for livelihood. About 16,598 households planted one or more fruit and vegetable crops in the region, and the total production of fruits and vegetables is estimated to be around 4,178 tonnes. Moreover, about two-thirds (66.5%) of 15,399 tonnes harvested produced were from tomatoes (6,402 tonnes, 41.6%) and watermelons (3,840 tonnes, 24.9%) (NBS-URT, 2012).

Figure 2. 2: Map indicating Pwani (Coastal), and Morogoro regions in Tanzania

Source: Egerton University Department of Geography (2020)

3.2 Population of study and sampling unit

The target population for this study consisted of a youth cohort of 18 to 35 years who participated in the agribusiness program in 2016 from the Pwani and Morogoro regions. The study included youth engaging in horticultural MSEs operated for at least three (3) years from 2017, both participants and non-participants of the youth hands-on agribusiness program.

3.2.1 Sample size determination

In 2016, out of 225 youth who participated in the youth hands-on agribusiness program, 52% (117) were under the horticultural sub-sector from Pwani, Morogoro, and Singida regions. Pwani and Morogoro regions had the highest number of participants, 63 and 42, respectively. The study applied a Census survey by taking all participants (105) from Pwani and Morogoro regions to get the required sample size for the treated group from the two regions. This was because the available sample size represented the entire population to be studied.

For the non-participants, the study used the Cochran's (1977) sample size determination formula since the variability of youth engaged in horticultural MSEs in the two regions was unknown. According to Cochran's (1977) sample size determination formula for the unknown population is expressed as;

$$n = \frac{Z^2 PQ}{E^2}$$

(1)

Where; n = Desired sample size; Z = Confidence level; P = Proportion of the population containing the major interest, Q = 1-P and E = Allowable error. Since the variability for the population for the non-participants was not known with certainty, then a maximum variability with P = 0.5 and 95% confidence level and an allowable error of plus or minus 8% was taken. Hence, P= 0.5, Q = 0.5, Z= 1.96 and E = 0.08.

The estimated sample size for non-participants was;

$$n = \frac{(1.96)^2 (0.5) * (0.5)}{(0.08)^2} = 150.06$$

$$n \approx 150$$

Based on above, this study targeted sampling 150 non-participants, with equal distribution of 75 participants in the Morogoro and 75 in the Pwani regions.

3.2.2 Sampling procedure

This study used the Multi-stage sampling procedures. In the first stage, Pwani and Morogoro regions were purposely selected because they were among the youth hands-on agribusiness skills program target regions. This was followed by a purposive selection of 4 treated districts. Rufiji and Kisarawe in Pwani region, and Mvomero, and Morogoro Urban in Morogoro region. The next stage involved the purposive selection of youth-owned

horticultural MSEs operated for at least three years from 2017. Using a Census survey, the study used a database provided by SUGECO to survey only 51 youth who participated in the program in 2016 from Morogoro and Pwani region. During the survey, it was hard to get all participants (105) from the two regions as expected following the implementation of government regulation that required mandatory registration of all sim cards in the country by 2020. All unregistered sim cards ceased operations, and hence complicated locating the potential respondents who did not register their current phone numbers held in the SUGECO database. This posed a challenge despite having the list of the participants. In this case, a snowball approach was used and ended up with 51 respondents.

Thereafter, for the non-participants a systematic sampling procedure was used from a list that was created with the help of the district agricultural officers and extension officers from 2 non-treated districts; Mkuranga in the Pwani region and Kilosa districts in the Morogoro region. In this stage, 106 non-participants out of 150 engaged with horticultural SMEs were obtained from the two regions. Hence, 157 youth were surveyed, as indicated in Table 3.1.

Table 3. 1: Distribution of sample size by regions and districts

	The sample size for Participants		The sample size for Non-Participants		Total
Regions	Districts		Districts		
Pwani	Kisarawe	6	Mkuranga	39	
	Rufiji	21			
		27		39	66
Morogoro	Mvomero	18	Kilosa	67	
	Morogoro Urban	6			
		24		67	91
Total		**51**		**106**	**157**

3.3 Data collection and analysis

This study used both primary and secondary data. Primary data was collected through interviews using semi-structured questionnaires attached in **Appendix 1** administered with the help of enumerators. Secondary data was obtained from relevant books, journal articles,

thesis, and reports from relevant ministries. Data collected was coded, recorded, cleaned, and analyzed using statistical packages software (SPSS and STATA).

3.4 Analytical framework

3.4.1. Objective one

To characterize various youth horticultural MSEs in Pwani and Morogoro regions.

To arrive at this objective, descriptive statistics were used. This was necessary to understand important features and variations of youth-owned-horticultural enterprises in the surveyed regions. Means, frequencies, standard deviations, and percentages were used to summarize variables of interest such as socio-economic, institutional, and enterprise characteristics. The key variables for enterprise characteristics for both participants and non-participants of the youth agribusiness program were; enterprise location, nature of employment, employment size, farm size, nature of enterprise ownership, and age of an enterprise. Inferential statistics such as *Chi-square* and *t-test* were used to compare variables of interest for participants and non-participants of agribusiness intervention in the two regions.

3.4.2. Objective two:

To evaluate the effect of agribusiness program on youth decisions and the extent of participation in horticultural MSEs in the Pwani and Morogoro regions.

The Double Hurdle Model (DHM) was used to analyze this objective. The Double Hurdle Model (Cragg, 1971) is used to analyze separately individual decisions of whether to participate or not and the extent of participation in a particular program or event. DHM works by modelling the two decisions separately, assuming different or similar sets of variables affect the two stages differently. In DHM, individuals are assumed to pass through two hurdles separately to attain maximum satisfaction (Eakins, 2016). In this case, the first hurdle in DHM defines the initial discrete decision ($y > 0$), while the second hurdle defines the extent of participation (Olwande & Mathenge, 2012). Similarly, the DHM has been extensively used in different participatory studies, including (Adeyanju, 2019; Agossadou *et al.,* 2018; Mignouna *et al.,* 2017; Nkuya, 2019; Srinivasan, 2013; Twumasi *et al.,* 2019).

Apart from DHM, the Tobit and Heckman selection models could be used to analyze this objective. However, due to social-economics and institutional factors, it is possible to have youth who will not engage in agribusiness activities. This results in a pile-up of zeros for non-participants, leading to a corner solution problem. Therefore, in this study, the first stage of the model was binary (*1= Establish an enterprise*; *0= Otherwise*), while the second decision with a continuous dependent variable (*Initial start-up capital*) measured the outcomes of participation as applied by (Twumasi *et al.,* 2019). The zeros in the first step

indicate that some youth made their optimal decision and not otherwise. In this case, Tobit (1958) a corner solution model, could be appropriate than a Truncated selection model (Ricker-Gilbert *et al.,* 2011). However, the Tobit model cannot analyze this objective since it assumes participation and extent of participation are driven by the same mechanisms (Wooldridge, 2013).

The Heckman and Double Hurdle models are somehow similar in separating discrete and continuous outcomes (Mignouna *et al.,* 2017). Both models assume different or similar sets of variables affecting two decisions differently. However, Heckman's selection model is more appropriate for controlling selection bias using the Inverse Mills Ratios (IMR) but is opposed to DHM because zeros in the Heckman reflect missing responses (Mbitsemunda & Karangwa, 2017). Furthermore, the Heckman model assumes non-zero responses in the second stage of the hurdle (Mignouna *et al.,* 2017). This indicates that there will be no room for non-participants in the first stage to participate in the second stage (Mal *et al.,* 2012).

In this case, the DHM became an appropriate model since it relaxes the restrictive assumptions of both the Tobit and Heckman models. Therefore, DHM analyzed this objective by integrating both Probit and Truncated Normal Regression models (Khoza *et al.,* 2019). The Truncated normal distribution is preferred over lognormal because it dwells in the usual Tobit model, thus allowing testing restrictions implied by the Tobit hypothesis against the two-step model (Olwande & Mathenge, 2012). Therefore, the Probit model measured youth participation decisions while the Truncated normal regression measured the extent of youth participation in horticultural MSEs. In this case, Achandi and Mujawamariya (2016) specified DHM as;

$$d_i^* = z_i'\gamma + \mu_i \qquad \text{Participation decision} \qquad (2)$$

$$y_i^* = x_i'\beta + v_i \qquad \text{Extent of participation} \qquad (3)$$

Whereby d_i^* and y_i^* are the latent variables described youth participation decision in horticultural MSEs (*1= Establish MSEs* and *0= otherwise*) and the extent of participation in horticultural MSEs, z_i' and x_i' vectors of observed covariates explained youth decision and extent of participation, γ and β vectors of unobserved parameters, and μ_i and v_i were respective error terms indicated all other factors affected **d** and **y** apart from z_i' and x_i'. The

error terms were assumed to be independent and normally distributed as μ_i, N~ $(0, 1)$, and v_i, N~ $(0,\sigma^2)$.

The integration of the two decisions led to the following estimation models;

$$
\left.
\begin{aligned}
d_i &= z_i'\gamma + \mu_i \;\; \text{If } d_i^* > 0, \text{ and } = 0 \text{ if otherwise} \\
y_i &= x_i'\beta + v_i \;\; \text{If } y_i^* > 0, \text{ and } = 0 \text{ if otherwise}
\end{aligned}
\right\}
\tag{4}
$$

The empirical model for youth decision to participate is estimated by the Probit model as follows;

$$Ester\_MSE$$
$$
= \gamma_0 + \gamma_1 age + \gamma_2 hhhead + \gamma_3 agehh_{head} + \gamma_4 marst + \gamma_5 resorgn + \gamma_6 sex + \gamma_7 edul
$$
$$
+ \gamma_8 hhsize + \gamma_9 nonfrminc + \gamma_{10} fmagb + \gamma_{11} trngpart + \gamma_{12} frmexp + \gamma_{13} grpmrshp
$$
$$
+ \gamma_{14} infoac + \gamma_{15} inputac + \gamma_{16} credtac + \gamma_{17} landacc
$$
$$
+ \mu_i
\tag{5}
$$

The second equation for the extent of participation having the size of initial start-up capital as the dependent variable estimated by the Truncated normal regression will be;

$$InitStartup =$$
$$
\beta_0 + \beta_1 age + \beta_2 hhhead + \beta_3 agehh_{head} + \beta_4 marst + \beta_5 resorgn + \beta_6 sex + \beta_7 edul
$$
$$
+ \beta_8 hhsize + \beta_9 nonfrminc + \beta_{10} trngpart + \beta_{11} fmagb + \beta_{12} frmexp
$$
$$
+ \beta_{13} grpmrshp + \beta_{14} infoac + \beta_{15} inputac + \beta_{16} credtac + \beta_{17} landacc + \beta_{18} extnserv
$$
$$
+ \beta_{19} marktac
$$
$$
+ v_i
\tag{6}
$$

To allow for Heteroskedasticity and the non-normal error term, the log-likelihood function for DHM, as specified by (Carroll *et al.,* 2005) as follows, was used;

$$
L(\alpha, \beta, \sigma^2) = \prod_0 \left[1 - \varphi(z_i'\gamma)\varphi\left(\frac{x_i'\beta}{\sigma}\right) \right] \times \prod_1 \left[\varphi(z_i'\gamma)\sigma^{-1}\emptyset\left(\frac{y_i - x_i'\beta}{\sigma}\right) \right]
\tag{7}
$$

Where φ and $\emptyset$ is the standard normal cumulative distribution function (CDF) and density function, respectively. The log-likelihood for the DHM specified above comprises the log-likelihood values estimated in the first hurdle by the Probit model and the second hurdle by the truncated normal regression model. Furthermore, to determine the effects of explanatory

variables on the extent of youth participation, the Marginal effects were evaluated. Jensen and Yen (1996) specified the marginal effect as;

$$(y_i/y_i > 0) = \emptyset \left(\frac{x_i'\beta}{\sigma_i}\right)^{-1} \int_0^\infty \left(\frac{y_i}{\sigma_i\sqrt{1+\theta^2 y_i^2}}\emptyset\left(\frac{T(\emptyset y_i) - x_i'\beta}{\sigma_i}\right)\right) dy_i \qquad (8)$$

Table 3. 2: Description of variables used in the Double Hurdle Model (DHM)

Variables	Description and Measurement	Expected signs	
Dependent		*Step 1*	*Step 2*
Parti	Participation (Dummy; *1=establish, 0=otherwise*)		
InitStartup	Initial start-up (*Cash invested in MSEs in TZS*)		
Independent			
age	Age of respondent (Continuous; Years)	+/-	+/-
agehh-head	Age of household head (Continuous; Years)	+/-	+/-
hhsize	Household size (Continuous; No. of house members)	+	+
hh-head	Household head (Dummy; 1=Yes, 0=No)	+	+
marst	Marital status (Dummy; 1=Single, 0=Otherwise)	+	+
resorgn	Respondent's place of birth (Dummy, 1=Yes, 0=No)	+	
sex	Gender of respondent (Dummy; 1=Male, 0=Otherwise)	+/-	+/-
edul	Education level (Continuous; Years in school)	+	+
nonfrminc	Non-farm income (Continuous; Total income from non-farm activities)	+	+
fmagb	Family members in agribusiness (Continuous; Number of members)	+	
trngpart	Training participation (Dummy; 1=Yes, 0=No)	+	+
frmexp	Farming experience (Continuous; Total years in farming)	+	+
grpmrshp	Group membership (Continuous; Max years stayed in the group)	+	+
infoac	Access to info Agbm training (Dummy; 1=Yes, 0=No)	+	+
inputac	Access to inputs (Dummy; 1=Yes, 0=No)	+	+
crdtac	Credit access (Continuous; Total credit accessed in TZS)	+	+

landac	Land access (Continuous; Total land in acres)	+	+
extnserv	Extension services access (Continuous; No of contacts)		+
mrktac	Market access (Continuous; Distance in km)		+

All variables used in the DHM presented in Table 3.2 were derived from an intensive review of various works of literature (Bosompem *et al.,* 2017; Cheteni, 2016; Etim & Udoh, 2018; Etim & Udoh, 2018; Kimaro, 2015; Kising'u, 2016; Mbah *et al.,* 2016; Mohamed *et al.,* 2012; Mwendwa, 2016; Nyabam *et al.,* 2018; Ohene, 2013; Sharu & Guyo, 2013; Twumasi *et al.,* 2019; Yami *et al.,* 2019; Zakaria *et al.,* 2014).

3.4.3. Objective three:

To determine factors influencing the growth of youth horticultural MSEs Pwani and Morogoro regions.

In measuring the growth of youth horticultural MSE, the growth model by Evans (1987) was used with sales turnovers as the outcome variable. This model agrees with Jovanovic's learning model (1982) that the age and size of enterprises are inversely related to enterprise growth. Other similar studies that adopted the Evans model in measuring enterprise growth include (Derese, 2014; Gebreeyesus, 2007; Mshenga *et al.,* 2010; Seyoum *et al.,* 2016).

Previous studies have suggested different indicators to determine whether an enterprise is growing or not. Achtenhagen *et al.* (2010) proposed that the growth of an enterprise can be evaluated by sales turnover, increase in the number of employees, increase in profits, increase in assets, increase in firms' value, and internal development. However, sales and employment growth are the most used indicators. Studies such as Babadije (2012) used sales turnovers to measure MSE growth. Sales growth is considered the best growth indicator because it reveals both short and long-term changes in the enterprise (Davidsson *et al.,* 2006). According to Jenssen (2009), enterprise growth begins with expansion in sales, followed by an increase in investments in additional factors of production to meet its market demand. This implies that, for an enterprise to acquire additional production factors first, there must be an expansion in product demand that lead to an increase in sales.

This study also used sales turnovers to measure the growth of youth-owned MSE in the Pwani and Morogoro regions. This was similar to a study done by Ng'ang'a and Gichira (2017) that used the same indicator in measuring MSE growth. For the independent

variables, various works of literature have pointed out various factors contributing to MSE growth. These determinants were connected to entrepreneurial characteristics, internal factors, and external factors. Entrepreneurial characteristics in most cases include both demographics and socio-economic aspects such as age, sex, marital status, education level, income level, and household size. Also, a study by Tadesse (2015) differentiated the factors into economic (initial capital, government restrictions, number of employees, access to credits, and access to technology) and non-economic (education, market access, gender, family size, MSEs age, and owners age). Other studies, for instance Tiruneh *et al.* (2011), associated enterprise-related factors like age, size, initial capital, location, formality, and type of business to be the most determinant affecting the growth of MSEs. Moreover, growth determinants of MSEs were also linked with external factors. These factors are the business environment characteristics, and they are not limited to credit access, infrastructure, market, workplace, technology, social services, and other government regulations (Hove & Tarisai, 2013).

In this study, the independent variables were categorized into enterprise characteristics, business environment, and entrepreneurs' characteristics. The enterprise characteristics used included; the age of an enterprise, size of an enterprise, enterprise location, and nature of ownership. Credit access, land access, participation in agribusiness training, initial start-up capital, access to output markets, and extension services were under business environment. The last category was for the entrepreneur's characteristics including owner's age, sex, marital status, and level of education. According to Evans (1987b, pg.6), firm growth is defined as;

$$Growth = \ln \left[\frac{[S_{t'}/S_t]}{t' - t} \right] \tag{9}$$

Whereby $S_{t'}$ and S_t are the current and initial size of the enterprise, respectively, $t' - t$ is the age of an enterprise given by the difference between the current period (in this case is, 2020, a period when the study was conducted) and the beginning year of enterprise establishment. By relating the growth function specified in equation (9) with initial size and age with other independent variables affecting the growth of an enterprise, then the model was expressed as;

$$\frac{(\ln S_{t'} - \ln S_t)}{A} = \beta_0 + \beta_1 \ln(S_t) + \beta_2 \ln(A_t) + \sum \beta_i X_i + \mu_i \tag{10}$$

Whereby X_i stands for other independent variables apart from size and age that affect enterprise growth. "A" stands for enterprise age, "β_i" represents vectors or coefficients of explanatory variables to be estimated, $ln(A_t)$ and $ln(S_t)$ represent logs of enterprise age and size, respectively, and μ_i is the error term (Evans, 1987). The coefficients for size and age were used to test the two growth theories, Proportionate Effect and Passive Learning models. When $\beta_1 = 0$ and $\beta_2 = 0$ indicate that the growth of an enterprise is independent of age and size, hence supporting Gibrat's theory. While if $\beta_1 < 0$ and $\beta_2 < 0$ implies that smaller and younger firms grow faster, thus supports the learning model as predicted by Jovanovic. For the analysis purpose, this study used the Multiple Linear Regression Model to estimate factors influencing enterprise growth. Then from equation (10), an empirical econometric model on the factors influencing enterprise growth was expressed as;

$$MSE\ growth\ (Sales\ growth) = \beta_0 + \beta_1 ownage + \beta_2 agehh\_head + \beta_3 hh\_head +$$
$$\beta_4 resorgn + \beta_5 sex + \beta_6 edul + \beta_7 marst + \beta_8 grpmrshp + \beta_9 frmexp +$$
$$\beta_{10} \ln(entage) + \beta_{11} \ln(entsize) + \beta_{12} entloc + \beta_{13} entownshp + \beta_{14} crdtac +$$
$$\beta_{15} landac + \beta_{16} infoac + \beta_{17} trngpart + \beta_{18} inputac + \beta_{19} initcapt + \beta_{20} mrktac +$$
$$\beta_{21} extnserv + \beta_{22} nonfrminc + \mu_i$$

(11)

Table 3. 3: Factors influencing the growth of youth MSEs using the MLR model

Variables	Description and Measurements	Expected sign
Dependent		
Growth	MSE growth (Sales turnover)	
Independent		
Entrepreneurs Characteristics		
ownage	Respondent's age (Continuous; Years)	+/-
agehh_head	Age of household head (Continuous; Years)	+/-
hh_head	Head of household (Dummy; 1=Yes, 0=No)	+
resorgn	Respondent place of birth (Dummy; 1=Yes, 0=No)	+/-
sex	Gender of the owner (Dummy; 1 Male, 0=Otherwise)	+/-
edul	Education level (Continuous; Years in school)	+
marst	Marital(Categorical;1=Single,2=Married,3=Divorce,4=Widowed)	+/-
grpmrshp	Group membership (Continuous; No of years stayed in group)	+
frmexp	Farming experience (Continuous; Years)	+
Enterprise Characteristics		
ln_entage	Log of enterprise age (Continuous; Years)	-
ln_entsize	Log of enterprise size (Continuous; No of employees)	-
entloc	Location(Categorical;1=Market place,2=Main road, 3=Residential area, 4=Farm gate)	+
entownshp	Enterprise ownership (Categorical; 1=Family-owned, 2=Joint venture, 3= Sole Proprietor)	+
Business Environment Characteristics		
crdtac	Access to credit (Continuous; Amount in TZS)	+
landac	Access to land (Continuous; Land size in acres)	+
infoac	Access to information (Dummy; 1=Yes, 0=No)	+
trngpart	Training participation (Dummy; 1=Yes, 0=No)	+
inputac	Access to input (Dummy; 1=Yes, 0=No)	+
initcapt	Start-up capital (Continuous; Amount in TZS)	+
mrktac	Access to output market (Dummy; 1=Yes, 0=No)	+
extnserv	Access to extension services (Dummy; 1= Yes, 0=No)	+
ln_nonfrminc	Non-farming income (Continuous; Amount in TZS)	+

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the main findings on the youth decision and participation level in horticultural MSEs and factors influencing the growth of youth horticultural MSEs in Pwani and Morogoro regions. The chapter has been organized as follows: the first part (4.1) gives the Descriptive statistics on socio-economic, institutional, and enterprise characteristics for both participants and non-participants of the youth hands-on agribusiness skills program. Part two (4.2) discusses the results obtained from the Double Hurdle Model. Lastly, part three (4.3) provides detailed results of the Evans growth model on the enterprise growth status and the Multiple Linear Regression model results on factors influencing the growth of youth MSEs.

4.1 Descriptive statistics for participants and non-participants of agribusiness program

4.1.1 Socio-economic characteristics

The overall mean age of respondents, as indicated in Table 4.1 was 29.69, which falls within the standard age criterion definition used in Tanzania that considers youth to be those from 15 to 35 years (National Youth Development Policy, 2007). It also coincides with the operational definition of youth used in this study. Specifically, the mean age for participants of the youth hands-on agribusiness skills program was 30.55 years, while for the non-participants was 29.27 years. Participants of the program were slightly older than non-participants, and the mean age difference was significant at 10%. This was also noted by Adeyanju (2019) that participants of the Fadama youth agribusiness program in Nigeria were older than non-participants. Age is an essential factor in decision-making on matters affecting one's livelihood (Dimelu *et al.,* 2020). In addition, age reflects individuals' maturity level that defines their ability and willingness to participate in certain activities. Similarly, Twaya (2018) discovered that farmers' participation in farmers-based organizations in Mulanje district in Malawi increased with age. Besides, both participants and non-participants of the youth agribusiness skills program were at their productive age and regarded as an economically active group within the society.

Education level was measured by the number of years an individual stayed in school. The results revealed the average number of years in school was 8. Participants of the youth hands-on agribusiness skills program had 10.12 years while non-participants had 8.32 years in school. Program participants had more years in school than non-participants, and the

difference was significant at 5% level. Justification for this might be participants with many years in school are in a better position to understand and adopt new skills and make better choices on effective use of production inputs than those with low or no education at all. Education level determines youth's ability to understand various concepts and skills disseminated during training programs. Moreover, educated youth become more aware of the existing opportunities that might add value to their business enterprises. They might as well respond rapidly to various changes in the markets that can affect their productivity (Holden & Otsuka, 2014). This finding matches Ogunmodede *et al.* (2020) that participants of the N-Power agro-program in Nigeria had attained at least a bachelor's degree but contradicts with (Dhakre, 2014; Enimola *et al.,* 2019).

Table 4. 1: Socio-economic characteristics for continuous variables

Variables	Aggregate (100%)		Participants (32.48%)		Non-Participants (67.52%)		
	Mean	Std. dev	Mean	Std. dev	Mean	Std .dev	*t-test*
Age	29.69	4.46	30.55	3.94	29.27	4.65	-1.6884*
Edu lev (No of yrs)	8.90	3.57	10.12	3.51	8.32	3.46	-3.0321**
H/hold size	4.53	2.69	4.86	3.48	4.37	2.22	-1.0789
Fmly in agb	1.92	1.12	2.00	1.02	1.88	1.18	-0.445
Frm exp (No of yrs)	4.08	3.92	4.93	4.43	3.62	3.56	-1.6829*
Non-farm inc (USD)	63.20	40.17	75.37	47.85	51.02	36.47	-1.8955***

Note: *, **and *** Significant at 10%, 5% and 1% levels, respectively

1 USD = TZS 2316.88/= as of 2020

The average household size was around 5 persons as indicated in t above. The mean household size for participants and non-participants of youth agribusiness skills program was also around 5 and 4 persons. The mean size for the two groups has not deviated much from the average size of the Tanzanians' households which is 5 persons, with rural households and urban areas having 5 and 4 persons per household, respectively (NBS, 2017). Participants of the program had a slightly large household size compared to non-participants. The total

42

household size determines the available labor force utilized for farming and non-farming occupations for the particular household. Likewise, household size determines the quantity of food consumed, which influences household farming decisions (Dimelu *et al.,* 2020). Thus, youth with large household sizes will comfortably participate in agricultural-related activities, including agribusiness training programs that motivate their involvement in farming activities due to the available family labor. However, the *t-test* results at 5% level indicated no significant difference between participation in an agribusiness program and youths' household size.

The findings on the presence of family members in agribusiness indicate that the aggregate mean size was approximately 2 members. Both participants and non-participants of the youth agribusiness skills program had 2 family members, engaging in agribusiness activities. The presence of family members in business plays an influential role in youth engagement in agri-preneurship. Entrepreneurs whose parents own or had been in business might do well compared to those without any motivation from their close related people. A past study by Cooper *et al.* (1991) indicated that the presence of family members in business provides a learning environment that offers essential lessons on expected difficulties and the requisite skills for starting and managing a business. However, findings indicate no statistical significance difference between the two variables.

Concerning farming experience, the average farming experience for the respondents was 4 years. Participants of the youth hands-on agribusiness skills program had 4.9 years, while non-participants had 3.6 years. This implies that program participants had more years involved in farming activities than non-participants, and this difference was statically significant at 10%. This might be related to engagement in farming activities within their families that undertake agriculture as the primary economic activity. Since participants of this training had many years in school, this can also relate to their prior engagement in farming activities through learning and practicing agriculture as a subject. Farming experience is necessary for agri-preneurs to perform well in their enterprises. Experience widens one's ability to choose appropriate technologies needed for their enterprises. In addition to that, farming experience helps farmers evaluate the benefits and costs of adopting particular agricultural technology (Obisesan, 2014).

For the non-farming occupations, out of 157 respondents, 48.41% were engaging in non-farming activities while 51.59% were not. Furthermore, results in Table 4.1 indicate the average income generated from non-farming occupations was USD 63.20. Participants of the

agribusiness skills program had a slightly higher income level of USD 75.37 than non-participants who had USD 51.02 with a mean difference at 1% level. In this case, program participants had a higher income level because of being exposed to other income-generating sources during the training period. Program participants were also trained on other activities such as liquid soap and garments *"batiki"* making for income generation apart from horticultural production. This is because horticultural crops mostly take three to four months to be ready for harvesting and marketing. Therefore, income generated from other income sources may help young farmers cover their day-to-day needs and cushion from unforeseen risks associated with crop losses. Such income also enables farmers to acquire essential production inputs such as land, agrochemicals, and labor (Twaya, 2018).

Concerning gender, results indicate that 71.97% were males and 28.03% were females. In terms of program participation, male participants were 68.63% while females were 31.37%. This indicates that males participated more in programs related to agricultural activities than females. In relation to participation in agricultural activities, these findings are in line with Akinwekomi *et al.* (2017); Oyeyemi *et al.* (2021). They found more male than female youth in agricultural-related activities. This is as a result of the nature of the agribusiness sector, which is tedious, time-consuming, and labor-intensive. Also, this sector involves masculine activities befitting males more than females. Moreover, female youth are in charge of fulfilling day-to-day domestic responsibilities, including home keeping, food preparations, and other household chores (Ng'atigwa *et al.,* 2020). During the interview, respondents mentioned that some females failed to participate because they had 7 to 12 months of young babies. In addition, some traditions and norms hinder female youth participation in such activities. For instance, some respondents reported that their colleagues, especially the married ones, were not allowed by their spouses to attend a 14 days training program conducted away from their homes. Some of these norms, especially in some developing countries, discourage young women from participating in several activities, including agriculture (Amha, 2015; Elias *et al.,* 2018).

Regarding marital status, 50.98% of program participants were single, 41.18% were married, and 7.84% were divorced. On the other hand, 38.68% of non-participants were single, 51.89% were married, and 9.43% were divorced, as indicated in Table 4.2. The large size of program participants was single compared to that of non-participants. This might result from the program requirements that was designed specifically for youth with 18 to 35 years only. Most youths are not tied up with married commitments at this age, and they are in

the transition stage of establishing their lives. Hence, they tend to be more ambitious and active in participating in various income-generating activities such as entrepreneurship training. These results relate to that of Ogunmodede *et al.* (2020), who observed that 60% of the N-Power agro-empowerment program participants in Nigeria were single. Being single increases youth's freedom to participate in various programs than married people (Ogunremi *et al.,* 2012).

Table 4. 2: Results on gender, marital status, and respondents' regions

Variable	Description	Participants (N=32.48%)	Non-participants (N=67.52%)	χ2
Gender	Male	68.63	73.58	0.4195
	Female	31.37	26.42	
Marital status	Single	50.98	38.68	2.1299
	Otherwise	49.02	61.32	
Respondents' Regions	Pwani	45.45	54.55	8.7345**
	Morogoro	23.08	76.92	

Note: * and ** Significant at 10% and 5% levels respectively

Furthermore, the youth hands-on agribusiness skills program was conducted at Mkongo village in the Pwani region due to the presence of the agricultural youth camps that accommodated at least 250 youth per intake. In this case, 45.45% of program participants were from Pwani region, while 23.08% were from the Morogoro region, as shown in Figure 4.1.
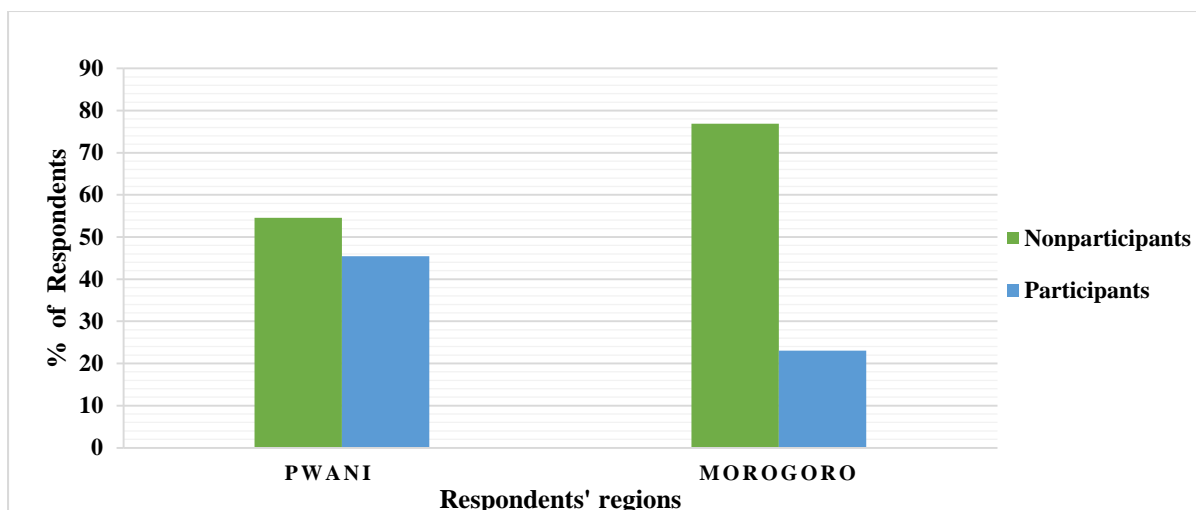
Figure 4. 1: Participation level by region

Pwani region had more participants than Morogoro because the youth agribusiness skills program took place in Mkongo village in the Pwani region. The *Chi-square* results in Table 4.2 also indicate a significant difference at 5% in terms of respondents' region and participation in agribusiness program. This results agrees with Kaguongo *et al.* (2012); Lamie (2014) that participants from intervention areas have higher chances of participating in such programs than their counterparts. This might be due to easier and quick information access and the absence or minimal traveling costs to the intervention's centers. Ohene (2013) indicated that a further increase in distance traveled from one's residence had a higher chance of reducing participation level in agricultural programs due to an increase in transport costs.

In addition to the above, this study was also interested to understand factors that limited 106 (67.52%) respondents from participating in the agribusiness skills program. In this case, 75.45% mentioned that access to information was the major hindrance to participating in the youth hands-on agribusiness skills program, as indicated in Table 4.3. This problem was also observed by Udemezue (2019) that young people experience challenges in accessing important information on several matters relating to the agricultural sector. In most cases, youth are less aware of various opportunities available in these sectors. Other reasons indicated were; family responsibilities (11.82%), lack of required qualifications (5.45%), training was conducted very far (3.64%), lack of interest in training (1.82%), and 1.82% pointed out that they failed to attend due to norms and traditions that prohibit them from attending into such programs.

Table 4. 3: Reasons for not attending the youth hands-on agribusiness skills program

Reasons for not attending youth hands-on agribusiness training	Percentage of cases (%)
Lack of required qualifications	5.45
The training was conducted very far	3.64
Family responsibilities	11.82
Lack of information	75.45
Due to norms and traditions	1.82
Not interested to attend	1.82
Total	**100**

4.1.2 Institutional characteristics

The study also determined respondents' involvement in various groups to understand their social capital formations. Both past and recent have well documented the presence of both tangible and intangible benefits associated with affiliations from such groups studies (Elosy & Mburu, 2012; Gautam & Andersen, 2016; Jagwe *et al.,* 2010; Mukundi *et al.,* 2013; North, 1990). In most cases, social groups provide platforms through which group members can access markets, price information, and credits, reduce information asymmetries, and enforce contract arrangements with potential investors. For instance, Village Community Banking (VICOBA) members usually train their group members on various skills, including entrepreneurship skills. Group members are also entitled to get loans from their contributions for income-generating activities at an affordable rate compared to formal financial institutions (Likokola, 2015). In this study, respondents mentioned that access to credit (67.78%) was the main reason behind their membership as indicated in Figure 4.2 below. Also, findings revealed that 55.48% of the respondents were members of at least one group. Specifically, 38.37% were in the farmers' group, 36.05% were in Village Community Banking (VICOBA), 34.88% were in youth groups, and 2.33% were in community-based groups. This finding is in line with Akinwekomi *et al.* (2017), who noted that 55% of youth participating in agribusiness activities in Ogun State, Nigeria, belong to various social groups.
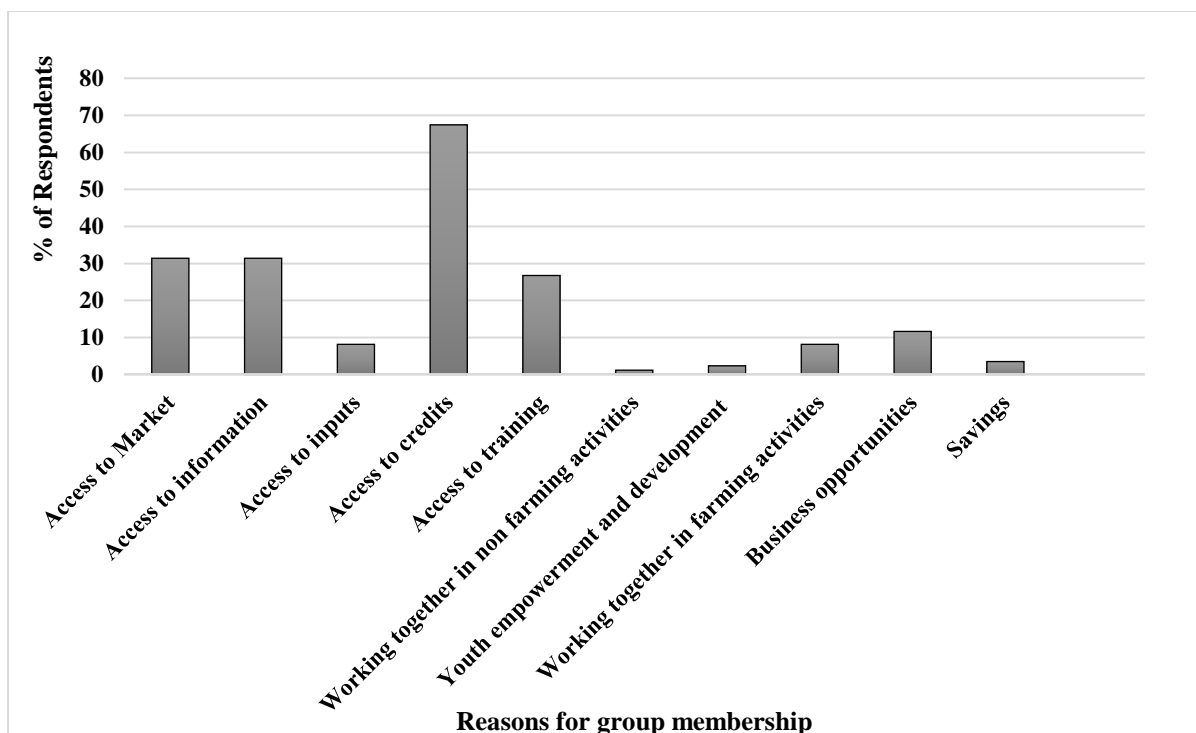
Figure 4. 2: Reasons for group membership

Furthermore, group membership was measured by the number of years individuals stayed in one of the groups mentioned above. Results in Table 4.4 show that the average number of years for the longest stayed group was 1.7 years. Participants of the youth agribusiness skills program stayed for 2.5 years while non-participants stayed for 1.3 years, with a mean difference at a 1% level. From the results, training participants stayed longer in such groups than non-participants. This might be because, during training period, more emphasis was given to self-organized groups to access various opportunities available for developing their enterprises.

Table 4. 4: Results on group membership, extension services, credit and market access

Variables	Aggregate (100%)		Participants (32.48%)		Non-Participants (67.52%)		
	Mean	Std.dev	Mean	Std.dev	Mean	Std.dev	t-test
Group mrshp	1.666	2.0454	2.5131	2.2536	1.2585	1.8113	-3.7467***
Extn service	1.3057	3.0206	2.2157	4.3466	0.8679	1.9908	-2.6692***
Crdit acc (USD)	535.08	315.47	585.76	317.63	453.20	306.21	-1.1986
Market acc (km)	4.85	3.94	5.46	4.64	4.20	3.56	-3.6785

Note: *, ** and *** significant at 1%, 5% and 10% levels respectively

1 USD = TZS 2316.88 as of 2020

Regarding extension services, results show that the combined mean for the number of contacts with extension officers in the last production season was 1.3. Participants of the program had 2 contacts while non-participants had 1 contact, respectively, and the mean difference from the t-statistics was statistically significant at a 5% level. This indicates that program beneficiaries had higher chances of contacting the available extension officers than non-participants. This could be due to several links created between program participants and local extension agents during the training. Extension services enable agri-preneurs to get exposed to different environmental challenges and develop appropriate solutions to overcome them. Also, extension services help agri-preneurs access improved technologies and important production information necessary for their enterprises (Okello, 2017). In terms of services mostly accessed, diseases and pest management was mentioned by many (77.94%), followed by agronomic practices (39.71%) as well as production and technical advice (33.82%).

Results on credit access indicate that only 21.66% of all respondents had access to credit. The mean average of the total amount of credit accessed was USD 535.08. Participants of the youth agribusiness skills program accessed an average of USD 585.76 while those who did not participate was USD 453.20. Although the mean difference for the amount of credit accessed between the two groups was not statistically different, the total amount accessed by

program participants was higher compared to their counterparts. During training, participants were connected to financial institutions such as banks (NMB and CRDB Banks) and guaranteed by the hosting institution, SUGECO. This could have increased their likelihood of accessing credit from the available institutions compared to non-participants. Despite the efforts, credit access was generally low for the two groups since those with access were less than 50%. This might be contributed by the fact that, a large number of respondents were still young and deemed to be less financially viable to pay for borrowed money. A study by Mureithi (2015) reported that young enterprise owners could not get loans from formal institutions. Lack of collateral was the major hindrance to accessing credits by the respondents. In most cases, collateral limits youths' credit accessibility from financial institutions (Chebet, 2016).

Distance from the production areas to output market is often used to proxy for the ease of access to market and hence the transaction cost. From the analysis, results revealed that participants of the program traveled approximately 5.46km while non-participants traveled about 4.20km. However, results from the t-statistics in Table 4.4 indicate no significant difference between the two groups for the distance traveled. On average, respondents traveled a shorter distance (4.85km) to access output markets, which could be because horticultural produces are highly perishable. Thus, respondents might have strategically selected production areas near the market centers to cut off operation costs and reduce post-harvest losses (Zanello et al., 2014).

In addition to that, the study also determined the accessibility of land by respondents, as indicated in Table 4.5. Access to land is critical in making important farming decisions and increasing youth confidence toward poverty reduction (Cotula et al., 2004). In this case, 84.71% of respondents had access to land. In relation to participation in the youth hand-on agribusiness skills program, 88.24% of program participants had access to land, and that for non-participants was 68.14%, and the difference was significant at 5% level. During training, program participants were introduced to several links and channels with local government authorities that facilitated their access to productive land within their local areas.

The study also determined the accessibility of production inputs that included self-financed inputs and those provided by different stakeholders such as SUGECO, NGOs, and the government. The most accessed inputs include improved seed varieties, drip irrigation kits, fertilizers, greenhouses, and pesticides. In this regard, results reveal that out of 115 established horticultural enterprises, 89.57% had access to production inputs. Provision and

availability of production inputs motivate and increase youth farmers' willingness to engage in agricultural activities (Fawole & Ozkan, 2019). In terms of training participation, both participants and non-participants had access to farming inputs by 86.67% and 91.43%, respectively. Non-participants had more access to production inputs than program participants. However, the difference in input access was not statistically significant for the two groups.

Table 4. 5: Institutional characteristics for discrete variables

Variables	Response	Participants (N=32.48%)	Non-participants (N=67.52%)	$\chi 2$
Access to land	Yes	82.35	85.85	0.3250
	No	17.65	14.15	
Access to information	Yes	90.20	50.00	23.8825***
	No	9.80	50.00	
Access to inputs	Yes	76.47	66.04	1.7657
	No	23.53	33.96	

Note: *, ** and *** significant at 1%, 5% and 10% levels respectively

Concerning access to information on agribusiness programs, the study discovered that 63.06% of respondents had information access compared to 36.94%. Moreover, participants of the hands-on program had more access (90.20%) than non-participants (50%), and the difference was significant at 5% level. This might result from an established relationship with the local extension and agricultural officers that helped participants of the program to receive frequent updates for the ongoing training and other available opportunities at the right time. The study also noted that the majority (46.94%) got access through local extension officers, followed by those who accessed through their friends and relatives (42.86%).
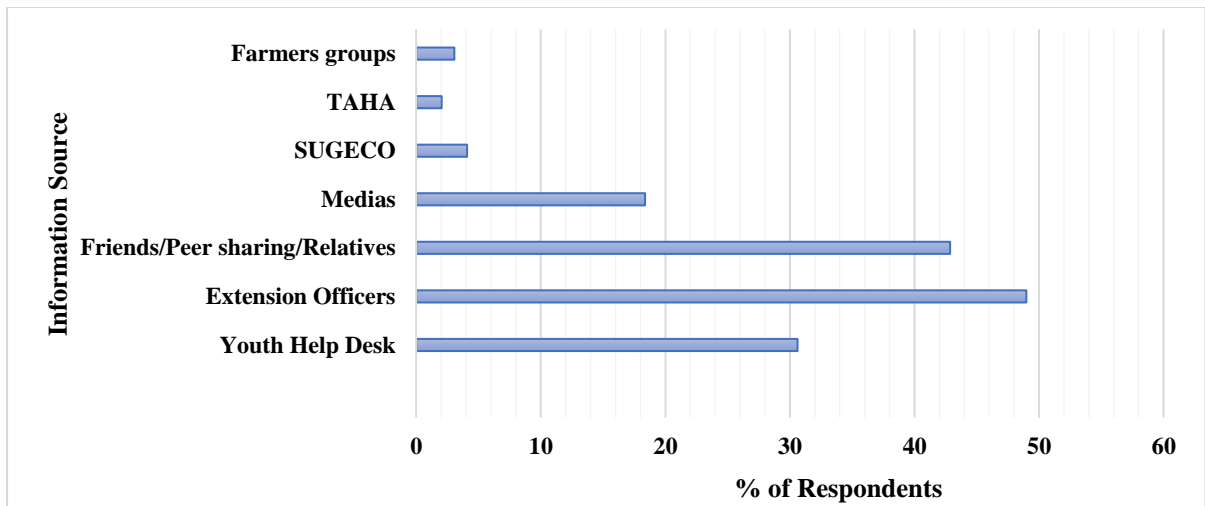
Figure 4. 3: Sources of information on agribusiness training program

4.1.3 Enterprise characteristics

The aggregate mean for initial start-up capital invested in horticultural MSEs by the respondents was USD 121.29. Participants of the youth hands-on agribusiness skills program had invested a total of USD 182.92 and for the non-participants was USD 81.67. In this case, program participants had higher start-up capital by USD 101.25, and the difference between the two groups was statistically significant at a 5% level. Possible explanations for this might be that, during training participants were introduced to good agricultural practices (GAP) such as fertilizer applications by using drip irrigation systems (fertigation process), drip irrigation technologies, and soil preparation techniques that require a considerable amount of investment. Non-participants have not invested more compared to participants probably because they were not aware of such practices. In addition, training participants were introduced to several funding opportunities available within their local areas through local governments that account for about 10% of the collected revenues. These funding are interest-free with fewer conditions compared to those from financial institutions. Financial institutions usually evade lending money to farmers, youth in specific because of the perceived risky nature of farming activities, and if it does so, they are likely to impose tough borrowing conditions that discourage farmers' interests in loans applications (Maritim, 2020; Mureithi, 2015; Twaya, 2018).

Employment size was used as a proxy of the size of the surveyed enterprise. Among others, the youth agribusiness training program aimed to enhance youth enterprise development for self-employment and job creation. The results (Table 4.6) revealed that the mean size for the number of employees was 2 people. Both participants and non-participants of the agribusiness program had an average of 2 employees. The mean size of 2 people was very low, depicting that the surveyed enterprises were still falling under the microenterprises category that comprises between 1 to 49 employees, family members in particular (SME policy, 2002).

In terms of enterprise age, this study covered a maximum of 4 years from 2017 up to 2020 (a period when this study was conducted). The overall mean age for the surveyed enterprise was 4 years, as seen in Table 4.6. Participants of the agribusiness program had 3.9 years of operations, while non-participants had 4.7 years. In general, the surveyed enterprises were found to have few years since establishment because youth spend an average of 8 years in school to acquire formal education first. However, the association results from the *t-test* revealed no significant difference in terms of enterprise age and the two groups.

53

In addition, the study computed the average sales revenues generated from youth horticultural MSEs. As indicated in Table 4.6, the mean sales revenue was USD 1112.39. Program participants had an average of USD 1326.02, and for the non-participants was USD 898.96 with a mean difference at 5% level of significance. A higher level of sales revenues for the program participants was attributed to the application of various modern farming techniques such as nursery establishment, fertigation process, good agronomic practices, and proper identification of production calendars that might have increased their productivity by producing quality farm produce compared to non-participants. Besides, training participants were exposed to courses such as business planning, marketing, financial literacy, record keeping, and leadership management that might add value to their enterprises, thus earning more income than their counterparts. This finding is in line with Ogunmodede *et al.* (2020), who noted higher income levels for the N-power agro-empowerment program beneficiaries in Nigeria than non-beneficiaries due to various benefits gained from the training program.

The combined results for the average farm size owned was 2.3 acres. Participants of the agribusiness program had 3.28 acres, and that for non-participants was 1.86 acres respectively. Program beneficiaries owned slightly large farms than non-beneficiaries. Moreover, the results of the associations of the *t-test* were statistically significant at a 5% level. In this case, respondents owned an average of 2.32 acres, implying that these enterprises were still under the microenterprises category. To add on the same, the Match Maker Associates (2017) reported that small-scale growers highly dominate the horticultural sub-sector in Tanzania with plot sizes of between 0.1 to 2 hectares, equivalent to 0.25 to 5 acres.

Table 4. 6: Results on start-up capital, employment size, enterprise age, and farm size

Variables	Aggregate		Participants		Non-participants		t-test
	Mean	Std.dev	Mean	Std.dev	Mean	Std.dev	
Ini-capital (USD)	121.29	118.88	182.92	154.15	81.67	64.26	-4.8840***
Empl-size	2.2522	3.732	2.2389	2.8732	2.2607	4.2127	0.0305
Ent-age(yrs)	4.4261	3.7675	3.9556	3.4704	4.7286	3.9413	1.0746
Sales-rev (USD)	1112.39	998.50	1326.02	1210.84	898.96	786.39	-2.0311**

Farm size(acres)	2.3218	3.3636	3.2846	5.1111	1.8575	1.9302	-2.2680**

Note: *, ** and *** significant at 1%, 5% and 10% levels respectively

1 USD = TZS 2316.88/= as of 2020

Results in Figure 4.4 show the distribution of participants and non-participants of the youth agribusiness skills program with enterprise locations. Enterprise location was broken down into 4 groups: marketplace, along the main road, residential area, and farm gate. Findings indicate that 51.16% of the participants used farm gate as an enterprise location, 27.97% were located at the marketplace, 16.28% at the residential place, and 4.65% along the main road. On the other hand, 65.75% of the non-participants also used farm gate as the major location, 21.92% used market place, 6.85% were located along the main road, and 5.48% had their enterprise located in the residential area. This implies that respondents opted for farm gate as the major location, and the reasons behind this could be because most of the horticultural produces are highly perishable, while farmers do not possess modern storage facilities to prevent losses. Usually, vegetable farmers prefer to sell their produce to neighbourhood areas to minimize costs incurred due to transportation (Bhimsen *et al.,* 2016; Zanello *et al.,* 2014;).
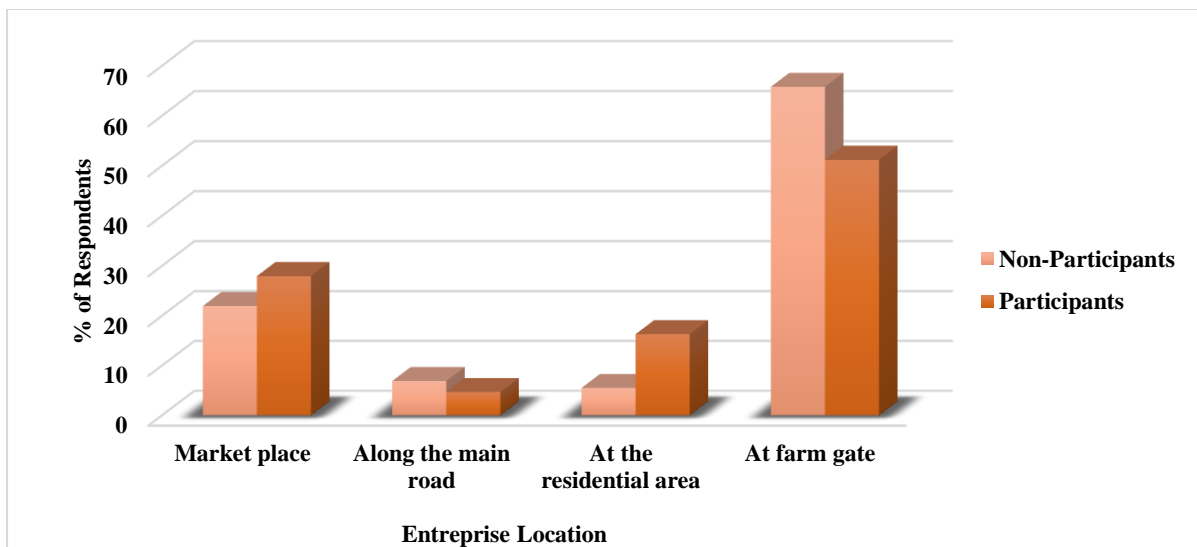
Figure 4. 4: Enterprise physical location

The study also determined the nature of ownership of youth enterprises, and the results in Table 4.7 depict that a large number of the surveyed enterprise (62.93%) were individually owned (sole proprietorship). Those enterprises that were jointly owned were 28.45%, while family-owned enterprises were only 8.62%. For the two groups, results indicated that 11.63% of the enterprises owned by program participants were family-owned, 27.91% had a partnership nature, and 60.47% were individually owned. Of the non-participants, 64.38% were individually owned, 28.77 % were in partnership, and 6.85% were family-owned. This also supports the argument by Amha (2015), that the sole proprietorship

is the primary form of ownership of the MSE sub-sector. However, the association between the two groups and the nature of enterprise ownership was not statistically significant.

Table 4. 7: Results on enterprise ownership and enterprise location

Variables	Response	Participants (N= 32.48%)	Non-participants (N=67.52%)	χ2
Enterprise ownership	Family-owned	11.63	6.85	0.7898
	Partnership	27.91	28.77	
	Sole proprietorship	60.47	64.38	
Enterprise Location	Market place	27.91	21.92	4.9017
	Along the main road	4.65	6.85	
	Residential area	16.28	5.48	
	At farm gate	51.16	65.75	

Note: *** significant at 1%, 5% and 10% level respectively

Finally, the study determined factors that hindered 26.75% of respondents from establishing their horticultural MSEs in the studied regions. In this case, 54.55% of respondents mentioned that lack of access to start-up capital was the main reason that limited them from establishing their horticultural enterprises. This confirms the findings of Agossadou *et al.* (2018) that access to capital prevented youth engagement in post-harvest activities in Nasarawa and Kano rice hubs in Nigeria. Start-up capital is necessary for business establishment, especially in the early stages, because it is mostly needed to acquire essential production inputs. Other factors that limited the establishment of youth horticultural MSEs were lack of access to productive land (23.64%), others indicated to have been employed somewhere else (18.18%), and others indicated lack of access to inputs and market (1.82%).

Table 4. 8: Reasons for not establishing horticultural enterprises

Reasons for not establishing Horticultural enterprises	Percent of cases (%)
Lack of farming inputs	1.82
Lack of land	23.64
Lack of output market	1.82
Lack of start-up capital	54.55

Employed somewhere else	18.18
Total	**100**

4.2 Preliminary diagnostics of the variables to be used in the econometric analysis

Prior to data analysis, various tests such as Multicollinearity and Heteroskedasticity tests were conducted for the selected variables to be used to have significant, consistent, and unbiased estimates. The multicollinearity test was done for both continuous and categorical variables using the Variance Inflation Factor (VIF) and the Pairwise correlation.

4.2.1 Multicollinearity test

A multicollinearity problem occurs when two or more predictor variables in the regression model have a perfect relationship (Yang & Wu, 2016). This may lead to a lack of statistical significance of individual predictors variable even though the overall model might be significant. This study obtained a mean VIF of 1.44, as seen in Table 4.9. According to Hair *et al.* (2011), the VIF value should be below the standard cut off threshold of 10 or a more restrictive criterion of less than 5. Thus, the obtained VIF indicates an absence of a perfect relationship to the selected variables.

Table 4. 9: Results of multicollinearity test using VIF

Variable	VIF	1/VIF
Experience (number of years in farming)	2.60	0.3844
Enterprise age (years)	2.47	0.4044
Age of household head (years)	1.10	0.9125
Total credit accessed (TZS)	1.61	0.6208
Extension services (number of contacts)	1.55	0.6458
Age of respondent (years)	1.16	0.8610
Total land size accessed (acre)	1.38	0.7263
Education level (years in school)	1.15	0.8680
Group membership (maximum years in group)	1.22	0.8199
Employment size (mean size of employment)	1.12	0.8900
Number of family members in Agribusiness	1.17	0.8513
Access to output market (distance in Km)	1.08	0.9287
Log of non-farming income (TZS)	1.16	0.8649
Mean VIF	**1.44**	

Note: VIF refers to Variance Inflation Factor

A pairwise correlation was also carried out for all categorical variables, and the results also revealed an absence of serious relationship among the categorical variables. Table 4.10 below shows the pairwise correlation values obtained from 0.0139 to 0.2655. Variables are highly correlated when their pairwise correlation value is greater than 0.8 (Gujarati, 2001).

Table 4. 10: Results for multicollinearity test using pairwise correlation

	Region	Marital	Gender	Information	Inputs	Location	Ownship
Region	1						
Marital status	-0.0271	1					
Gender	0.2443	0.1220	1				
Information	-0.1172	-0.1560	-0.0369	1			
Inputs	-0.0610	0.1172	-0.0139	0.2655	1		
Location	-0.1898	0.1367	-0.0864	0.0302	-0.1069	1	
Ownership	0.2362	0.1686	0.1888	-0.0287	0.1625	0.0315	1

4.2.2 Heteroskedasticity test

Heteroskedasticity occurs whenever the variance of the unobserved factors changes across different segments of the population (Williams, 2020). To detect the presence of heteroscedasticity, graphical approach or relevance tests such as the Breusch-Pagan or the White tests can be used. The Breusch-Pagan test only checks for the linear form of Heteroskedasticity, while the White test allows independent variables to have a non-linear and interactive effect on the error variance. Further, unlike the Breusch-Pagan test, the White test can detect a more general form of Heteroskedasticity (Woolridge, 2004). In this study, Heteroskedasticity was tested using the White test with a null hypothesis that residuals are homoscedastic. Then, from the results in Table 4.11 below, we fail to reject the null hypothesis at 95% and conclude that residuals are homoscedastic since the probability of $\chi 2$ was 0.4625.

Table 4. 11: Results of Heteroskedasticity test using the White test

Source	chi2	df	P
Heteroskedasticity	157	156	0.4625
Skewness	47.71	17	0.0001
Kurtosis	8.82	1	0.003
Total	**213.54**	**174**	**0.0221**

Note: chi2 = chi-square; df = degrees of freedom and p value = significance level

4.3 Decision and extent of youth participation in horticultural MSEs

This objective was analyzed using the Double Hurdle Model (DHM), with participation in the youth agribusiness program becoming the variable of interest. Training participation by respondents was treated as an exogenous variable in both stages, and the question was asked to both participants and non-participants of the training. This aimed to determine whether the agribusiness program had any impact on the decision and extent of youth participation in horticultural MSEs. Therefore, the DH Model was used to model the two stages (hurdles) separately by determining factors influencing youth decision to establish horticultural MSEs and the extent of participation in horticultural enterprises.

The log-likelihood of the **Craggit** comprised the summation of the log-likelihood values estimated in the first and second hurdles. Therefore, the log pseudolikelihood for the fitted model was -186.84728 and was found to be strongly significant at a 1% level with a Wald *Chi*-square value of 100.71 ($p = 0.000$). The maximum likelihood estimates using the **Craggit** command are presented in **Appendix 3**. The first stage of the Double Hurdle Model used the Probit regression model to determine factors influencing youth decision to establish horticultural MSEs, whereas the second stage of the model used the Truncated normal regression to determine the extent of youth participation in horticultural MSEs.

4.3.1 Factors influencing youth decision to establish horticultural MSEs

In this stage, the dependent variable for youth decision to establish horticultural enterprises was binary (*1=Establish enterprise, 0=Otherwise*). Meanwhile, the magnitude of maximum likelihood estimates in the DH model cannot be interpreted sensibly; therefore, the marginal effects were estimated as indicated in Table 4.12.

Respondents' place of birth was found to have significant at a 10% level but negatively affected youth decision to establish horticultural MSEs. A shift from an area where youth was born to somewhere else decreases the probability of youth decision to establish horticultural MSEs by 80.25%, other factors held constant. Being born in a particular place improves one's ability to be more conversant and familiar with the available opportunities within that area, including markets, favorable production technologies, and a better understanding of production calendars. Also, being born and raised in the same place influences an individual's production decision due to understanding the market's mechanism of demand and supply. It might also increase the youth's chances of having the most access to means of production, such as land. This was also observed by Lawi (2016) that 31% of respondents born in the Babati district in Tanzania participated more in agricultural activities

than those born outside the area. However, these findings contradict Adeyanju *et al.* (2020) that youth migration positively influenced their decision to participate in agricultural programs.

The presence of family members in agribusiness was observed to have a positive and significant effect on youth decisions to establish horticultural MSEs at a 5% level. In this case, a 1% increase in family members engaging in agribusiness increases the probability of youth decision to establish horticultural MSE by 48.81%, other factors constant. The implication for this is that the presence of family members in agribusinesses motivate and inspire young entrepreneur to take up self-employment within the agribusiness sector. Family members in entrepreneurship provide a platform for young family members to learn important lessons such as production and marketing skills for their established enterprises. Experienced family members in agribusiness undertakings also provide an additional labor force that might help youth agri-preneurs run their enterprises and thus operate efficiently at a minimal cost. Experienced family members in business can nurture and prepare young members to accept and resolve several business challenges that they might encounter and become successful agri-preneurs. This result supports the findings of Mohamed *et al.* (2012) who found that availability of family members in entrepreneurship motivates young graduates' intention for self-employment in agribusiness in Malaysia. Likewise, parents' occupation in non-agricultural activities affects youth's carrier choice of non-farming occupations (Adekunle, 2009).

Agribusiness training programs provide youth with a great understanding of their capacities that widen their knowledge and skills to perform various activities. Training programs raise youth awareness of the subject matter and increase self-efficacy, which improves their overall performance through increased creativity. Participation in the youth hands-on agribusiness program was noted to have a positive and significant effect on youth decision to establish horticultural MSEs at a 1% level. *Ceteris paribus*, a percentage increase in youth participation in agribusiness training program increased the probability of youth decision to establish horticultural MSE by 1.3592%. The positive relationship between training programs in influencing youth's decisions to venture into entrepreneurship has been widely acknowledged by various literature (Agossadou *et al.,* 2018; Latopa & Rashid, 2015; Mathew & Paul, 2010). This also concurs with the argument posed by Mathew and Paul (2010) that youth capacity-building programs contribute toward empowering and awakening their embedded abilities and competencies for their well-being and their families.

Table 4. 121: Factors influencing youth decision to establish horticultural MSEs

Variables	Marginal Effect (dy/dx)	Std. Err.	P>z
Age of the respondent (Years)	0.0147308	0.072	0.838
Age of household head (Years)	0.019771	0.05014	0.693
Total household size	0.0290861	0.10307	0.778
Household head (1=Yes, 0=otherwise)	-0.1983544	1.15598	0.864
Marital status (1=Single, 0=otherwise)	0.095047	0.60903	0.876
Respondent's place of birth (1=Yes)	-0.8024813	0.42435	0.059*
Gender (1=Male)	-0.0237772	0.42126	0.955
Education level (Years in school)	-0.0010633	0.05325	0.984
Log of non-farm income (TZS)	-0.0436323	0.03044	0.152
Family members in Agribusiness	0.4880537	0.21033	0.02**
Training participation (1=Yes, 0 = No)	1.359229	0.52409	0.009***
Farming experience (Yes)	0.2820412	0.1059	0.008***
Group membership (Max year stayed)	0.1671585	0.13942	0.231
Access to info on agribusiness training	-0.3880842	0.36154	0.283
Access to farming inputs	3.801389	0.60796	0.000***
Log of total credit accessed (TZS)	-0.0674899	0.05124	0.188
Total size of land accessed (Acre)	-0.1168086	0.05142	0.023**
Constant		1.87928	0.171

Observations	157
Wald chi2(17)	100.71
Prob>chi2	0.0000
Log pseudolikelihood	-186.84728

Note: *** p<0.01, ** p<0.05, * p<0.1 significant at 1%, 5% and 10% levels respectively

Source: Field survey, Sept 2020

Experience is used as a proxy for human capital. Experience is a fundamental part of human capital and positively affects performances (Becker, 1964). The farming experience was measured by the number of years in farming and had a positive and significant effect on increasing the probability of youth decision to establish horticultural MSEs at a 1% level. *Ceteris paribus*, a percentage increase in farming experience, increased the likelihood of youth decision to establish horticultural MSE by 28.20%. This implies that experienced youth

have higher chances of engaging in horticultural MSEs than inexperienced ones. Experience in a particular field enhances youth's ability to understand the nature, requirements, and risks of a particular undertaking. Lawal-Muhammad (2009) pointed out that farming experience correlates with the acquisition of improved skills related to agricultural activities. Experience also provides opportunities to discover proper production techniques and uses of cost-saving methods that positively impact outputs level. Martey *et al.* (2012) argued that experience broadens an individual's contacts base and facilitating trade opportunities at a lower cost.

Access to farming inputs was positive and statistically significant at 1%. A percentage increase in access to farming inputs increases the probability of youth decision to establish horticultural MSEs by 3.8014%, else held constant. These findings are in line with those of Fawole and Ozkan (2019) that the provision of input subsidies to youth in Southwest Nigeria increased youth engagement in agriculture activities. Once farmers get assured of access to the required inputs, their productivity will significantly increase (Matanmi *et al.,* 2017). However, lack of access to farming inputs is among the most mentioned challenge impeding youth farmers' engagement in agriculture. Young farmers are still new to the labor markets; they also have minimal access to working capital and fail to have full access to essential farming inputs.

Access to land was significant at 5% but negatively affected youth decisions to establish horticultural MSEs. Other factors held constant, a percentage increase in land size accessed by a young farmer decreases the likelihood of youth decision to establish horticultural enterprises by 11.68%. Besides, access to land is among the critical factors in making important farming decisions but insufficient to increase youth's willingness to participate in farming activities (Atkinson & Messy, 2012). This finding agrees with Ng'atigwa (2020), who discovered that access to land reduced youth participation in horticultural production in the Njombe region in Tanzania. However, this study disagrees with Dlamini-Mazibuko *et al.* (2019); Matsane and Oyekale (2014). Youth farmers must also have a strong financial base to cover necessary production costs. Full access to land by youth through ownership of title deeds which most youths do not have, could enhance their chances of securing credits from formal financial institutions that require land as collateral (Ayuya, 2010). However, there are several limitations on land access to young farmers, especially in developing countries that reduce their likelihood of practicing farming (Withanage & Damayanthi, 2019). Some of these factors are directly associated with the norms and customs of a particular society. For instance, in Ethiopia, 75% of female youth are not given access

rights to their family land as it is believed they will be married and inherit land owned by their partners (Tadesse, 2020). Female youth are on the disadvantageous side of land ownership (Rogito, 2020).

4.3.2 Extent of youth participation in horticultural MSEs

The second stage used the Truncated normal regression model to determine the extent of youth participation in horticultural enterprises. In this stage, the amount of initial start-up capital measured the extent of youth participation. Results of the Maximum Likelihood estimation revealed that five variables were significant with positive effects, while three variables significantly but negatively influenced the extent of youth participation in horticultural MSEs.

Youth age had a negative and significant influence at a 1% level, with a 1% increase in age decreasing the extent of youth engagement in horticultural MSEs by 7.75%. As far as this study is concerned, youth were regarded as those 18 to 35 years old. A further increase in age reduces the size of initial start-up capital invested in horticultural MSEs. This observation opposes the findings of Fisher and Qaim (2012) but supports Akinwekomi *et al.* (2017). A possible explanation for this might be that youth become more active at this age, with a higher degree of receptivity towards new technologies, and are less risk-averse than elders (Akpan *et al.,* 2015; Ayuya, 2010). This increases their willingness to invest in agribusiness activities such as horticultural MSEs. On the other hand, horticultural crops are seasonal crops and more prone to post-harvest losses and price drop due to fluctuations in supply that affect their returns (Kitinoja *et al.,* 2011; Zakaria *et al.,* 2014). In this case, older farmers will mostly prefer to diversify their resources to less risk income-generating activities. This is because they are the main provider of their households and need an assured income source, thus reducing their extent of participation in horticultural MSEs.

Being head of the household positively and significantly affected the extent of youth participation in horticultural MSEs at a 10% level. Being a household head increases the size of initial start-up capital invested in horticultural MSEs by 68.62%. In most cases, household heads are responsible for providing basic and necessary wants to the dependent family members such as children and elders. This influences the choice of livelihood activities of the household head to cover for the needs required from their families. Heads of households are the decision-makers and principal providers of the basic needs of their households' such as food, shelters, healthy services, and education (Mossie *et al.,* 2020). Horticultural enterprises ensure quick income generation with fewer requirements than staple cash crops (TAHA,

2018). Also, horticultural crops offer substantial opportunities with higher returns ranging from input provision and on-farm productions to marketing. This might also attract household heads who need fast and considerable huge income to support their families.

Furthermore, being single decreased the size of initial start-up capital invested by the youth in horticultural enterprises by 55.05% and was significant at a 5% level. Horticultural MSEs are labor-intensive and time-consuming activities requiring more labors to participate effectively in planting, weeding, harvesting to marketing. Being single means only one individual must fully engage in all stages. In this case, youths who are single consider horticultural MSEs as the most demanding activity, and due to this, youth prefer to engage in less labor demanding activities. Again, marital status is connected to one's decision on the choice of economic activity to undertake to meet his or her important needs. Being single is less attached to family responsibilities, making youth focus only on meeting their own needs (Josephine, 2018). However, this finding disagrees Akinwekomi *et al.* (2017); Chikezie *et al.* (2021) that youth who are single participate more in agribusiness enterprises than married ones.

In terms of non-farming income, a 1% increase in non-farming income increases the size of initial start-up capital invested by youth in horticultural MSEs by 2.78% else held constant. This positive relationship was significant at 10% level and might be a result of prior exposure of youth to other income-generating sources. Access to non-farming occupations increases youth disposable income and increases their investment level in horticultural MSEs. Usually, non-farm occupations enable farmers to expand their income due to multiple income sources (Khatiwada *et al.,* 2017). Also, off-farm income increases farmers' ability on debt payments and makes them more creditworthy (Otieno, 2012).

Furthermore, results on the effect of agribusiness training program attended on the extent of youth participation in horticultural MSEs was significant and positive at 5% significant level. Other factors held constant, a 1% increase in youth farmers' participation in agribusiness training programs increased the size of initial start-up capital invested by 68.37%. This might result from the number of benefits gained from training programs that make program beneficiaries more interested in establishing their enterprises than those who did not attend. In the same manner, Khoza *et al.* (2019) postulated that training programs were one of the important factors that influenced the extent of participation by farmers in agro-processing industries in Gauteng province in South Africa.

Group membership indicates a percentage increase in one year of staying in a group decreases the extent of youth participation in horticultural MSEs by 12.99%. This finding was significant at a 5% level but negatively affected the degree of youth engagement in horticultural MSEs. This observation implies that being a member of respective social groups reduces the farmers' ability to participate in agricultural activities (Dimelu *et al.,* 2020; Fiscer & Qaim, 2011). However, it contradicts the studies by Gautam and Andersen (2016). Social groups are well-acknowledged for their roles in information dissemination (North, 1990) and the provision of credits from their members' contributions. They also act as sources of the market and marketing information and source for production and production techniques (Elosy & Mburu, 2012; Jagwe *et al*., 2010; Mukundi *et al.,* 2013). On the other hand, being member of such groups may not always guarantee positive outcomes. This occurs when the social cohesion and coordination are weaker among group members, especially in groups of large size (Fischer & Qaim, 2013). Within groups, there might be some variations in terms of the marginal benefits and costs, which may cause free-rider behaviors among less committed and irresponsible group members.

Access to credit enables farmers to purchase modern farming tools, essential in running their horticultural enterprises. Credit accessibility provides farmers with a strong financial base to cover variables and fixed costs associated with farming activities (Lamie, 2014; Ngenoh *et al.,* 2019). From the analysis, credit access was positive and significant at a 5% level. This means that a 1% increase in youth ability to access credit increases the level of youth investment in horticultural MSEs by 4.23%, other factors held constant. These findings support Agossadou *et al.* (2018); Cheruiyot (2016); Ng'atigwa *et al.* (2021) that access to credit positively and significantly influenced farmers' engagement in the agricultural value chain.

Results on output markets indicate an increase in distance traveled was positive and significant at a 5% level. Else held constant, a percentage increase in the distance traveled to output markets increases youth investment in horticultural MSEs by 0.16%. Enterprises located in production area contributes to lower prices received by farmers from traders who travel a long distance to purchase such crops. This was also noted by Kariuki and Omwenga (2017) that horticultural exporting youth groups in Kirinyaga County in Kenya received lower prices for their produce due to exploitation by middlemen. These traders pay for their transport cost which adds to the final prices paid by final consumers. In relation to this, younger farmers adapt to modern techniques and have good negotiation skills than their

elder's counterparts (Tray *et al.,* 2020). In this case, youth might have opted to engage in a similar path along the horticultural production chain by transporting their produce from farm gate areas to the market centers that increase their profit margins. According to Mukarumbwa *et al.* (2018), vegetable producers sell their produce to urban markets by traveling a long distance to fetch higher market prices. Likewise, youth might have been engaged in several value additions practices that add more value and minimizes the perishability of their horticultural products. Such practices enable the horticultural produce to reach distant markets places and motivate vegetable producers to participate in high-value markets (HVMs) (Reardon *et al.,* 2009).

Table 4. 13: Second hurdle results on extent of youth participation in horticultural MSEs

Variables	Coefficients	Robust Std. Err	P-value
Age of the respondent (Years)	-0.0775115	0.0260937	0.003***
Age of household head (Years)	0.0229749	0.0143504	0.109
Household head (1=Yes, 0=No)	0.6862076	0.4140574	0.097*
Total household size	0.0094914	0.0551061	0.863
Marital status (1=Single, 0=otherwise)	-0.5505438	0.2780249	0.048**
Gender (1=Male, 0=otherwise)	-0.2301877	0.2415373	0.341
Education level (Years in school)	0.0373806	0.0329739	0.257
Log of non-farm income (TZS)	0.0278094	0.0160203	0.083*
Training participation (1=Yes, 0=No)	0.6837321	0.27176	0.012**
Farming experience (No of years)	0.0213283	0.0235152	0.364
Group membership (Max year stayed)	-0.1298719	0.052732	0.014**
Access to information (1=Yes, 0=No)	0.2881663	0.2142453	0.179
Access to farming inputs (1=Yes, 0=No)	0.0225542	0.3921663	0.954
Log of total credit accessed (TZS)	0.0422757	0.0183216	0.021**
Total size of land accessed (Acre)	0.0074213	0.0222403	0.739
Extension services (Number of contacts)	-0.009197	0.0243812	0.706
Distance to output market (km)	0.0015652	0.0006026	0.009***
Constant	12.43228	0.9808316	0.000***

Observations	157
Wald chi2(17)	100.71
Prob>chi2	0.0000

Log pseudolikelihood   -186.84728

Note: ***, **, * significant at 1%, 5% and 10% levels respectively

Source: Field survey, Sept 2020

4.4 Effect of agribusiness training program on growth of youth horticultural MSEs

Prior to the analysis, the researcher indicated varieties of horticultural crops cultivated by youth in the last production season (2019/2020). The most produced crops were tomatoes (51.40%), followed by okra (39.25%), african eggplants (Solanum aethiopicum) (26.17%), amaranth (15.89%), watermelons (14.95%) as well as green peppers (14.02%) as seen from the Figure 4.5. These results are consistent with Gulamiwa (2018) that youths in the Morogoro region are concentrated in the production of tomatoes (42.00%), cabbage (28%), green peppers (16%), carrots (6%), and other crops (8%). Moreover, the study found that some respondents were practicing various modern farming techniques such as nursery establishment (76.24%), fertilizer applications using fertigation process (71.29%,) drip irrigation system (11.88%), and only 1.98% used greenhouses. Also, the study discovered that Mlali in Morogoro and Dar es Salaam regions were the major output markets for the respondents in the surveyed regions.
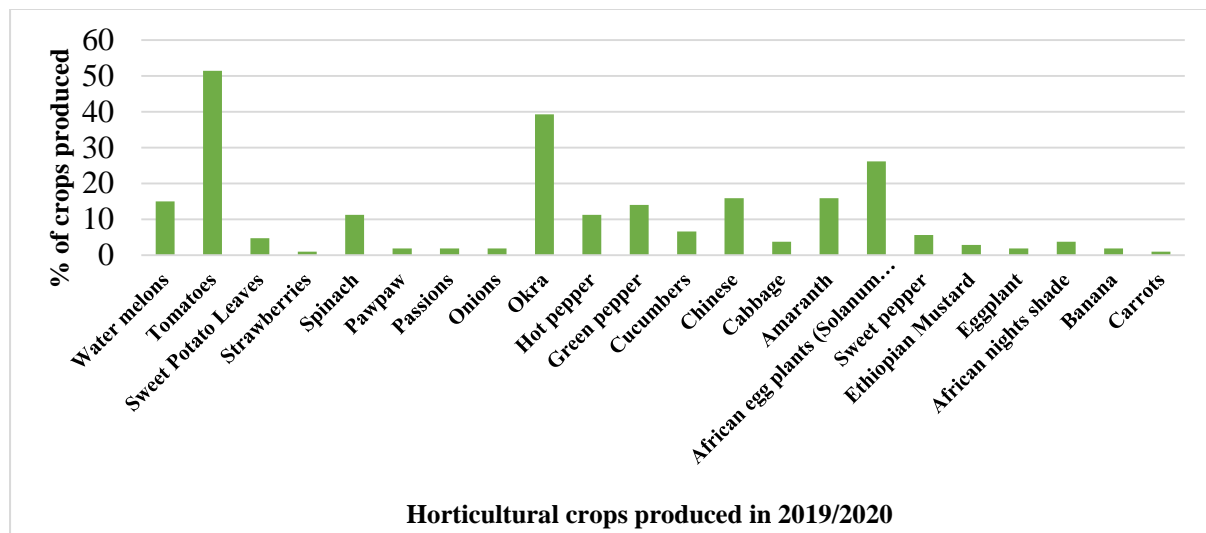
Figure 4. 5: Horticultural crops produced in the last production season

4.4.1 Results of the Evans growth model on MSEs growth

In analyzing this objective, the Evans (1987) growth model was used with sales revenue as a growth indicator. Enterprise growth was measured from 2017 to 2020, and those enterprises recorded sales values in at least three periods were considered for the analysis. This was so because some enterprises failed to have sales records for various reasons, such as floods, especially in the 2019/2020 production year that washed away their farm produces. In this case, only 73 enterprises out of 116 established enterprises were analyzed. Results

indicate that 43.84% of the surveyed enterprises were growing while 56.16% were surviving enterprises (not growing), as indicated in Table 4.14 below. The percentage of growing MSEs was lower than that of surviving enterprises. Obviously, MSEs, especially in developing countries, are noted to be of the surviving type and fail to grow into small and medium enterprises (Tefera *et al.,* 2013; Wasihun & Paul, 2010). This might be due to several dynamic forces that negatively affect the growth of micro-enterprises in these countries. Moreover, the cut-off point for enterprise growth was attained by assigning a growth threshold level obtained from the growth formula specified by Evans (1987). From this, enterprises with sales growth greater than zero (*gr>0*) were growing enterprises, while those with sales growth less or equal to zero (*gr<=0*) were surviving enterprises. A similar approach was applied in several enterprises' studies (Abay *et al.,* 2014; Mashimba & Kuhl, 2014; Tafera *et al.,* 2013). Moreover, in terms of training participation, participants had slightly higher growth (55%) than non-participants (39.62%). However, results from chi-square analysis revealed no significant difference in enterprise growth for the two groups.

Table 4. 14: Enterprise growth status

	Aggregate	Participants	Non-participants	
Growth category	(100%)	(27.4%)	(72.6%)	χ^2
Not growing	56.16	45	60.38	1.395
Growing	43.84	55	39.62	

4.4.2 Econometric analysis on the factors influencing growth of youth horticultural MSEs in Pwani and Morogoro regions.

In this objective, factors that significantly influence the growth of youth-owned horticultural MSEs were analyzed, with participation in the youth hands-on agribusiness training program being the variable of interest. The Multiple Linear Regression (MLR) model was used with enterprise growth (sales revenues) as a dependent variable. Unlike other studies used binary models to determine factors influencing the growth of enterprises due to binary dependent variables (Abay *et al.,* 2014; Feleke, 2015; Kazungu *et al.,* 2018). In this study, the MLR model was chosen since the dependent variable was continuous (sales revenues). This is also similar to other growth studies Babajide (2012); Makris (2014) that used the same model to analyze factors influencing enterprise growth.

However, before discussing the regression output, several diagnostic tests for the classical linear regression model were carried out to ensure the validity of the discussed results and eliminate the presence of possible bias. The main assumption of the regression model (OLS) that guarantees the validity of all tests (*p, t*, and *F*) is that residuals behave *'normal'*. Thus, normality was the first assumption to be checked with the null hypothesis that the distribution of the residuals is normal. Using the graphical method as indicated from the Kernel density plots in Figures 4.6 and 4.7 below, both figures were approximately symmetrical, showing that residual follows a normal distribution, thus failure to reject the null hypothesis.
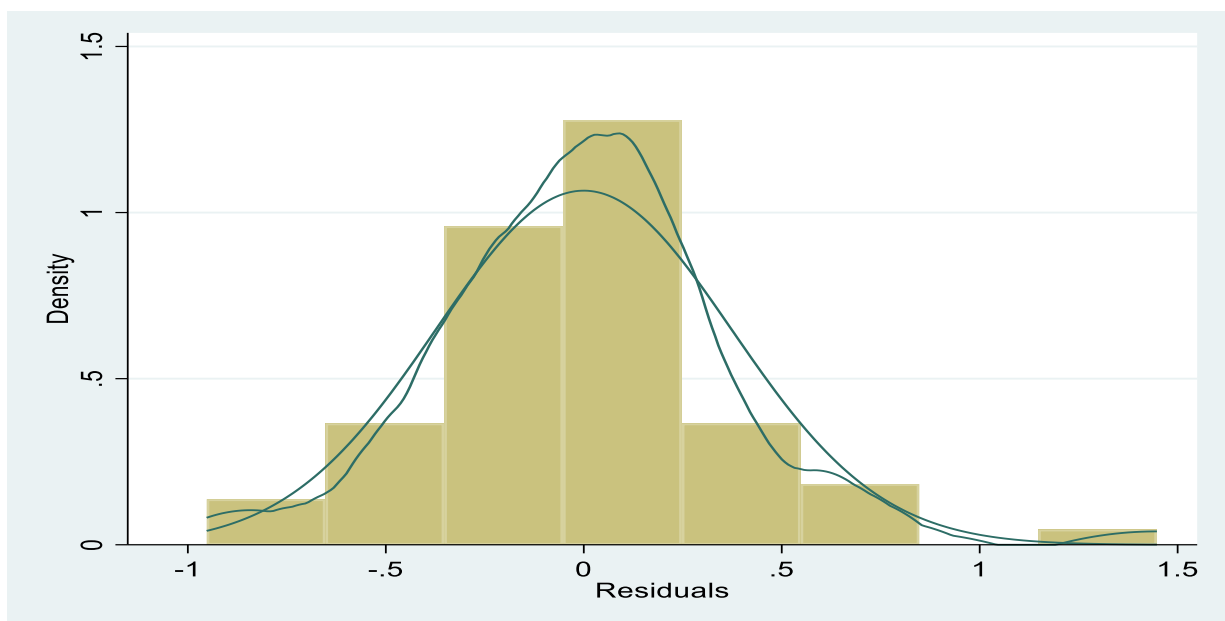
Figure 4. 6: Normality test by using the Histogram e, kdensity normal
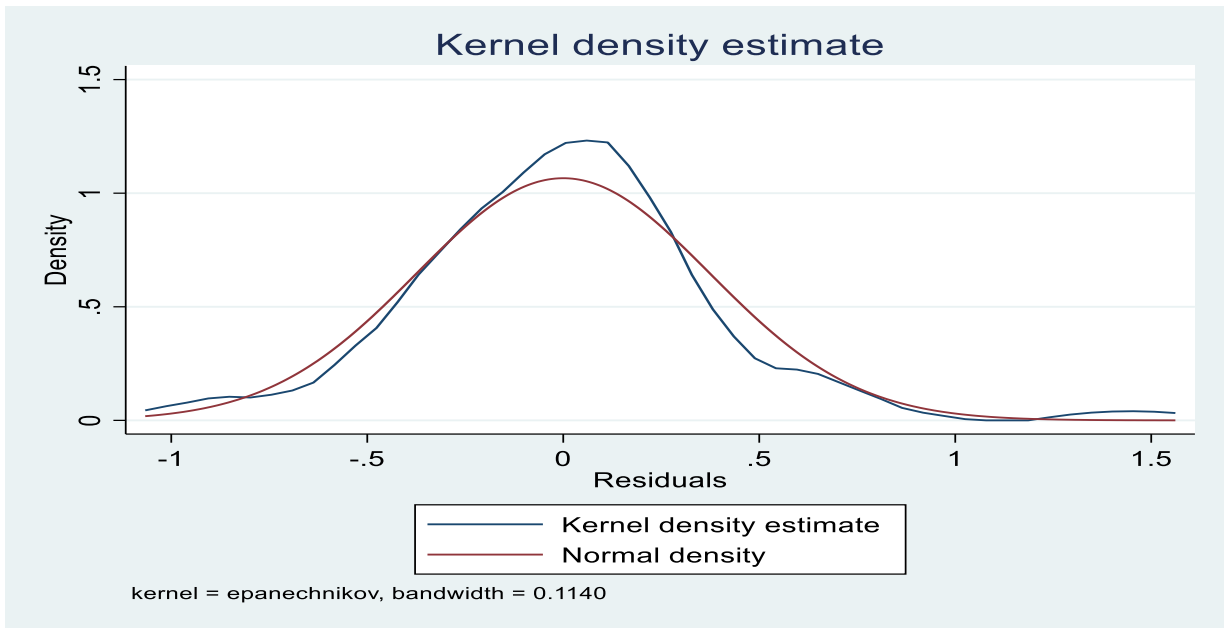
Figure 4. 7: Normality test by using the Kdensity e normal

In addition, the Heteroskedasticity problem was also tested by the White test with the null hypothesis that the variance of the error term is constant (homoskedasticity). To this end, the testing results were statistically insignificant (Prob>χ^2, =0.4449), reflecting the absence of a heteroskedasticity problem. Moreover, the Multicollinearity test was carried out assuming that there is no perfect linear relationship between explanatory variables specified in the regression model. The severity of multicollinearity across explanatory variables can be detected by the Variance Inflation Factors (VIF). A value close to ten (10) strongly indicates a multicollinearity problem, and the variable should be omitted (Gujarati, 2003). In the current study, the VIF of 3.07 was obtained less than a restrictive criterion (<5), signifying the absence of serious multicollinearity in the model.

Lastly, a specification error test was also done using the Ramsey (1969) RESET test. According to Gujarati (2003), specification error occurs when the regression model contains unnecessary variables, misses important variables, or is due to functional misspecification that causes specification bias. For omitted variables, the assumption here is that the model does not have omitted variable problem. The results from the test indicated a ***p-value*** of 0.8233, higher than the usual threshold of 0.05. Hence, we failed to reject the null hypothesis and concluded that there is no specification bias in our selected model.

Generally, the goodness of fit was quite good, with a probability of the ***F test*** being 0.0000 and statistically significant at a 1% level, as indicated in Table 4.15. This implies that almost all independent variables used in the model have jointly contributed to the growth of horticultural MSEs in the Pwani and Morogoro regions, respectively. Furthermore, the results from the regression analysis produced an R^2 of 0.5121, and according to Henseler's (2009) rule of thumb, an R^2 of approximately 0.50 is considered to be moderate. Thus, the obtained R^2 was

appropriate, indicating that 51.21% of MSE growth is explained by the explanatory variables. Besides, seven independent variables significantly influenced enterprise growth at different levels of significance. Three variables were significant at 10% level while four variables, services, were significant at 5% level, respectively.

Results on the household size indicate that an increase in the household size by one person increases the growth of horticultural MSEs by 7.01%, holding other factors constant. This relationship between household size and growth of youth-owned MSEs was significant at 10% level. Although horticultural enterprises require minimum land sizes of less than 5 acres, they are labor-intensive with several activities such as farm clearing and preparations,

nursery establishments, transplanting, planting, weeding, chemical spraying, fertilizer applications, harvesting, and marketing. Having a large household size contributes to the growth of youth-owned horticultural MSEs through dedicating collective efforts to those activities. With a large family size, households will produce enough food for family consumption and trade the remained surplus (Okello, 2017). MSEs have limited capital requirements of not more than 5 million, hence it might be more gainful to use family members to reduce their operating costs.

Education level is another crucial socioeconomic variable related to entrepreneurs that might positively or negatively influence enterprises' growth. Economic theory and some empirical studies suggest that, there is positive relationship between the level of education of the enterprise owners and enterprise growth (Aggrey *et al.,* 2012; Ahiawodzi & Adabe, 2012; Feleke, 2015; Shibia & Barako, 2016; Tarfasa *et al.,* 2016). However, this argument differs from the findings obtained in this study. Results indicate that an increase in one year in school by the enterprise's owner reduces MSE growth by 5.09%%. This result was significant at a 5% level and supports the findings of Mashayo (2006) that education had a negative effect on enterprise growth. Chikezie *et al.* (2012) and Akpan *et al.* (2015) asserted that the probability of youth with more years in school disengagement into agricultural-related activities is higher compared to less-educated youth. Odongo and Kithinji (2015) also noted that most youth-owned micro-enterprises in Nakuru county in Kenya have relatively low levels of education. This may also be related to changing youth perception towards agriculture after attaining higher education levels like university graduates. Most of the time, educated youth feel less special working within the agricultural-related MSEs, and instead, they prefer to be employed in formal sectors (Akpan *et al.,* 2013; Amha, 2015; Twumasi *et al.,* 2019).

Another variable most likely to affect the growth of youth enterprises is enterprise location. Results revealed that enterprises located in the residential areas contributed to enterprise growth by 99.49% compared to those located along the main road, and it was significant at a 5% level, other factors held constant. Being located along the main road expose enterprises to various costs such as tax payments and other fees required by the government authorities. Also, enterprise owners might be required to formally register their businesses, hence increasing the cost of doing business. Considering many youth face challenges in accessing working capital, thus being located at home implies that obtained revenues can be re-invested back into their business since they are not obliged to pay for any

fees or charges. These results are consistent with Mashayo (2006); Tefera (2013) that home-based enterprises grow more due to fewer operational expenses and operate for longer hours than those away from home. However, this finding disagrees with Liedholm (2002), who discovered that enterprises located away from home outperform home-based enterprises.

Ceteris paribus, enterprises owned by a single owner, decreased the growth of youth MSEs by 76.93% and was significant at a 5% level. Horticultural enterprises are labor-intensive and time-consuming, characterized by various activities from on-farm production to marketing. Despite the sole proprietorship being the dominant form of ownership of the MSEs sub-sector (Amha, 2015), family-owned enterprises also entail more labor that might be assigned with different tasks associated with horticultural enterprises. In this case, the micro-enterprises can generate higher returns while being operated at a lower cost than enterprises owned by single individuals requiring a considerable number of workers to be employed. Similarly, family-owned enterprises influence the pooling up of production resources by family members, such as land and working capital, and widening their contacts base to facilitate easily market accessibility. However, these arguments contradict Amha (2015) who discovered that enterprises owned by more than one owner had the lowest growth rate compared to those with sole proprietor ownership due to the presence of adverse selection and moral hazard problems caused by weak cohesion and lack of common vision among owners.

Results on credit access indicate a unit increase in the size of the total credit accessed reduces the growth of youth-owned enterprises by 1.19E-05 units holding other factors constant. This implies that amount of credit accessed had an inverse relationship with the growth of youth enterprises at 10% level. The justification for this might be that most youth farmers are unemployed, and the only way to obtain the required finances is by securing from the financial institutions. In addition, interest rates charged by those institutions are very high, thus, reducing earnings obtained from their enterprises. This was also reported by the HODECT (2010) that only a few commercial banks finance horticultural activities in Tanzania, and, if they do so, they will impose higher collateral requirements and unaffordable interest rates. On the other hand, agriculture is mainly associated with risks due to weather changes, thus, youth might diversify credit obtained from non-farming activities to avoid such risks (Akpan *et al.,* 2015). In this case, they most likely inject credit access into non-farming occupations that do not generate more income and cause reduced growth in their horticultural enterprises that require considerable income. However, our results contradict

Afande (2015); Degefu (2018); Tonui & Kimani (2016), who reported a positive relationship between the two variables since access to financial sources relaxes financial constraints faced by farmers.

Land size accessed negatively affected enterprise growth at a 5% significant level. Results from the analysis indicate that a unit increase in the size of land accessed reduced the growth of youth horticultural enterprises by 4.08%. This implies that an additional size of land accessed by the young agripreneurs reduces the growth of horticultural enterprises from the surveyed regions. A plausible explanation for this scenario could be horticultural subsector is labor-intensive, growing into small plots of land not more than 5 acres for micro-enterprises. A unit increase in land size could also mean an increase in the investment size that requires more cash to be injected into the business, which most youths cannot afford. This is consistent with Ng'atigwa *et al.* (2020), who viewed a direct association between an increase in land size with an increase in production costs that pose constraints for the youth to operate effectively in their enterprises. Likewise, additional land may influence youth to diversify their investments to non-horticultural crops to eliminate price fluctuations and post-harvest losses, which is very prone to horticultural produces estimated to be around 40% (TAHA, 2011).

Results on the extension contacts revealed that a percentage increase in the number of contacts with an extension provider contributes positively to enterprise growth by 4.55% at a 5% significant level. Through extension services, farmers can improve their productivity and technologies that enhance the availability of excess produce to meet consumers' demands. This finding is consistent with Akpan *et al.* (2015) who discovered positive relationship between access to extension services and increased productivity. However, there are possibilities of having a negative effect of extension services on the growth of the enterprises. Enterprises with low business experience might receive incorrect information from the service providers due to a lack of modern working facilities. Farmers might be misinformed by the service providers due to inefficient and poor quality of the information received (Sunday *et al.,* 2013).

Enterprise age and size are among the key determinants of MSE growth. According to the *"Learning models,"* there is an inverse relationship between the two variables on enterprise growth. In this study, though not significant, both enterprise age and size were observed to have a negative effect on the growth of youth-owned horticultural MSEs. These results support an inverse relationship between enterprise age and size on growth as proposed

by the learning models. *Ceteris paribus*, a unit increase in the age of an enterprise reduces enterprise growth by 0.0747 units, and for the enterprise size was by 0.0411 units. These findings are consistent with several past and current studies (Babajide, 2012; Evans, 1987; Gebreeyesus, 2007; Haftom, 2013; Janda *et al.,* 2013).

With regard to participation in the youth agribusiness program, results indicate a positive relationship between the growth of the youth MSEs and training participation. Unlike other proper or formal educational programs, business training typically provides a strong base helpful in improving the performance and growth of youth-owned MSEs. Though not statistically significant, training participation increases MSE growth by 0.1447 units, holding other explanatory variables constant. Even though training programs motivate and increase youth willingness to establish agribusiness enterprises, most youths are resource-poor and lack access to other crucial productive inputs such as land ownership and assured finances. For such programs to produce significant outcomes, there is a great need to create a conducive and enabling environment that includes the provision of land rights by issuing title deeds and the establishment of special loan schemes that provide affordable credits to youth. These findings support those of Kazungu *et al.* (2018) that proper training received by the enterprise owners contributes positively to enterprise growth.

In addition, the constant value, which is the intercept, though not significant, also illustrates that when all the variables are equal to zero, sales revenues of the youth horticultural MSEs will decrease by 2.45%. This implies that all variables used in this model are important factors contributing to the growth of youth horticultural enterprises.

Table 4. 15: Results on factors influencing growth of youth horticultural MSEs

MSEs growth (Sales growth)	Coefficients	Robust Std. Err.	P>t
Respondent's Age (Years)	-0.021746	0.0253112	0.395
Age2 of respondent (Years)	-0.0001932	0.0002246	0.394
Age of household head (Years)	0.0644471	0.0627793	0.31
Age2 of household head (Years)	-0.0005791	0.0006609	0.386
Gender (1=Male, 0=otherwise)	0.2165956	0.2416693	0.375
Household size	0.0700704	0.0410449	0.095*
Household head (1=Yes, 0=No)	0.463428	0.3875225	0.238
Respondent place of birth (1=Yes, 0=No)	-0.1733902	0.1502849	0.255
Education level (Years in school)	-0.0509159	0.0227424	0.03**
Marital status (1=Single)			
2. Married	0.0427481	0.1713337	0.804
3. Divorced	-0.0168565	0.3723046	0.964
Log of enterprise age (Years)	-0.0747897	0.1082442	0.493
Log of enterprise size	-0.0210874	0.076668	0.785
Enterprise Location (2=Main road)			
1. Marketplace	-0.4584938	0.2884517	0.119
3. In the residential areas	0.9948586	0.3643401	0.009**
4. At farm gate	-0.2709619	0.2197545	0.224
Enterprise ownership (1=Family owned)			
2. Partnership	-0.3597312	0.3721719	0.339
3. Sole proprietorship	-0.7692965	0.3438972	0.031**
Log of non-farm income (TZS)	-0.0042558	0.0136774	0.757
Access to information (1=Yes, 0=No)	0.0705008	0.156898	0.655
Farming experience (Years)	-0.1887445	0.2575596	0.468
Amount of credit accessed (TZS)	-1.19E-07	6.56E-08	0.076*
Total size of land accessed (Acre)	-0.0407745	0.0156274	0.012**
Training participation (1=Yes, 0=No)	0.1379224	0.1969049	0.487
Log of initial start-up capital (TZS)	0.0399788	0.0389112	0.31
Distance traveled to output market (km)	-0.0382639	0.035546	0.288

MSEs growth (Sales growth)	Coefficients	Robust Std. Err.	P>t
Extension services (Number of contacts)	0.0454657	0.0222778	0.047**
Access to farming inputs (1=Yes, 0=No)	-0.1545076	0.3337654	0.646
Group membership (Max year stayed)	-0.0411989	0.0444997	0.36
Constant	-0.0244586	1.06685	0.982
Number of observations	73		
Prob > F	0.0000		
R-squared	0.5121		

Note: ***, **, * significant at 1%, 5% and 10% levels respectively

Source: Field survey, Sept 2020

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of the study per the objectives and methods used. It also provides conclusions, policy options and recommends areas for further research.

5.1 Summary

This study aimed to determine the effect of the youth hands-on agribusiness skills program on youth participation and growth of micro and small horticultural enterprises in the Morogoro and Pwani regions. To achieve the objectives of this study, descriptive statistics was used to characterize various youth horticultural MSEs. At the same time, the Double Hurdle model was used to evaluate the effect of the youth hands-on agribusiness skills programs on youth decision and participation level in horticultural MSEs. Lastly, the Multiple Linear Regression model determined factors influencing the growth of youth horticultural MSEs in the selected regions.

5.2 Conclusion

i. Program beneficiaries had higher non-farm income than non-beneficiaries. They also had many years in social groups, more access to extension services, higher initial start-up capital, and generated higher sales revenues than non-participants. These results reveal the importance of youth agribusiness program in enhancing gainful careers for the youth within the agribusiness sector.

ii. The youth hands-on agribusiness skills program was found to have a positive and significant effect on youth decision to establish horticultural MSEs. In addition, having family members in agribusiness, farming experience, and access to inputs positively influenced youth decision to establish horticultural MSEs, while respondents' place of birth and land access had a negative impact. Similarly, the extent of youth participation in horticultural MSEs was positively influenced by participation of the youth in agribusiness program, being household head, size of non-farm income, credit access, and distance to output markets, while negatively influenced by the number of years stayed in the social groups, marital status, and youth age.

iii. The growth of youth-owned horticultural MSEs was significantly and positively influenced by household size and access to extension services, with MSEs located in residential areas. On the other side, education level, sole proprietor ownership, credit

access, and land access reduced the growth of youth horticultural enterprises in the Morogoro and Pwani regions. However, participation in the agribusiness program was positive but had no significant effect on the growth of youth MSEs.

5.3 Recommendations

i.   Youth sensitization on the importance of agribusiness training programs for self-employment and job creation in agribusiness value chains.

ii. Government and key stakeholders should provide more hands-on agribusiness training programs to equip and attract more youth, graduates specifically to venture into agribusiness in other parts of the country.

iii. Formulate effective land policies to facilitate land rights acquisitions to young agripreneurs for easy accessibility of affordable credits from financial institutions.

5.4 Suggested areas for further research

This study analyzed the effect of the youth hands-on agribusiness skills program on youth decision and participation level in horticultural MSEs in two regions only: Morogoro and Pwani. Moreover, the study determined factors influencing the growth of youth horticultural enterprises in the surveyed areas. Further research is therefore proposed on the evaluation of agribusiness program in other project target regions; Singida and Dodoma regions. Likewise, to fully determine the contribution of such training on youth enterprise growth, further research should focus on examining specific training attributes such as business and production plans, marketing, financial literacy, record keeping, and leadership management.

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94

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APPENDICES

Appendix A: Questionnaire

The aim of this study is to evaluate the **"Effect of Agribusiness Intervention Program on Youth Participation and Growth of Micro and Small Horticultural Enterprises in Tanzania".** You have been selected as one of the respondents whom I believe you can help to provide valuable information towards achieving the objectives of this research project. Your participation will be highly appreciated and information provided will be treated with strict confidentiality. Please indicate whether you agree or disagree with the following statements by placing a tick (√) next to the statement or column for the correct response. Also provide response to the blank spaces where necessary.

Individual Identification:

Questionnaire No_____ Date of Interview_____

Enumerator_____

Region_____ District _____ Ward_____

A: General Information

1. Name_____ Telephone no_____ Gender F [　], M [　] Education level _____ (*Number of years*) Age of respondent _____

2. Are you household head? Yes [　], No [　]

3. Age of the household head _____

4. Household size: Total _____; Adult male [　], Adult female [　], Children below 18 [　]

5. Marital status of respondent; Single [　], Married [　], Divorced [　], Widowed [　]

6. Were you born in this place? Yes [　], No [　]　　　　　　　　*If Yes, go to qstn 9*

7. If No, when did you move into this place? _____

8. What was the reason for moving into this place?

   Followed spouse [　]　　For practicing Agriculture/Agribusiness [　]

   Seek land [　]　　　　　For business purposes [　]Others (*Specify*)

   _____

B: Households Livelihoods

9. Do you engage in non-farming occupation? Yes [   ], No [   ]   ***If No, go to qstn 12***

10. What is the most important occupation in this household? (*Rank three: **1=MOST***)

    Petty trade [   ]   Riding motorcycle (*Boda boda*) [   ]

    Money services (Tigo Pesa etc.) [   ]   Salon/ Barber shop [   ]

    Others   (*Specify*)   a)   _____   b)   _____   c)
    _____

11. What is the estimated amount of income per month obtained from the activities in question (10) in a period from 2017 to 2020?

Years	Occupation	Income per month	Relevant Month (1=Jan to 12=Dec)
2017			
2018			
2019			
2020			

12. Is there any family member(s) involved in agribusiness activities? Yes [   ], No [   ] ***If No, go to qstn 16***

13. If Yes, how many members? _____(Male) and _____ (Females)

14. Which agribusiness value chain are they involved with?

    Input provision [   ]   On farm production [   ]   Processing [   ]

    Storage [   ]   Transportation [   ]   Marketing [   ]

15. Do the members in qstn (13) motivate your engagement into agribusiness? Yes [   ], No [   ]

D: Group membership

16. Are you a member in any of the following groups?   ***If No, go to qstn 21***

    a) Community Based Organization [   ] b) Farmers group [   ] c) Youth group [   ]

    f) Saving and Borrowing group (*VICOBA*) [   ]   e) None [   ] Others
    (*Specify*)_____

17. For how long have you been a member in each of the following groups? (*Number of Years*)

a) Community Based Organization _____ b) Farmers group _____, c) Youth group _____

d) Saving and Borrowing group (*VICOBA*) _____

18. Do you pay any fee for your membership in (16) above? Yes [   ], No [   ]

19. If Yes, how much per day/week/month/year?

i) Subscription Fee a) _____b) _____c) _____ d) _____

ii) Monthly contribution a) _____ b) _____c) _____ d) _____

20. What was your reason for your membership?

Access to market [   ]   Access to information [   ] Access to inputs [   ]

Access to credits [   ]   Access to training [   ] Others (*Specify*)_____

E: Youth Hands-on Agribusiness Training Program

21. Do you have access on information on Agribusiness Training Programs? Yes [   ], No [   ]

If No go to qstn 24

22. If Yes, what is your most information source? (*Select three*)

Regional Officers [   ]   District Youth Help Desk [   ] Extension/Village Officers [   ]

Friends/Peer Sharing [   ] Medias [   ] Organization [   ] Relatives [   ] Others _____

23. Which information do you access mostly? (*Select 2*)

Information on farming input [   ]   Market information [   ]

Information on skills and Production Technologies [   ]

Entrepreneurship and Business Skills Management [ ] Others _____

24. Did you attend the *"Youth-Hands on Agribusiness Training Program"* in **2016** at Mkongo Youth Camp in Rufiji? Yes [   ], No [   ]   *If No, go to qstn 27*

25. If Yes, did you had farming experience before joining the Programme? Yes [   ], No [   ]

26. For how many years? _____

27. What was the reasons for not attending to the *Youth Hands-on Agribusiness Skills Program?*

103

Lack of required qualifications [   ]   Training was conducted very far [   ]

Family responsibilities [   ]   Lack of information [   ] Due to norms and traditions [   ]

Others (*Specify*)_____

F: Horticultural Enterprise Characteristics

28. After **Participated** in the Youth program did you manage to establish your own horticultural enterprise? Yes [   ], No [   ]   ***If No, go to qstn 41***

29. As you have **Not participated** in the Youth program did you manage to establish your own horticultural enterprise? Yes [   ], No [   ]

30. If Yes, when did you establish your enterprise? (*Year*)_____

31. Where is the physical location of the enterprise? (*Select one*)

    Market place [   ]   Along the main road [   ]   At the residential area [   ]

    Village Center [   ] At farm-gate [   ] Nearest town [   ]

    Others (*Specify*) _____

32. What is the nature of ownership of the enterprise? (*Select one*)

    Family owned [   ] Joint owned [   ] Individual/Sole Proprietor [   ]

    Others (*Specify*) _____

33. How many employees did you have in the following years?

Years	Full time	Cost	Part-Time	Cost	Family members	Cost	Relevant months
2017							
2018							
2019							
2020							

34. Apart from horticultural produce, which other Agri-enterprises do you operate in your farm? (*Mention three*); _____, _____, _____

35. Which horticultural crops did you produce in the last production season? (*Mention three*) _____, _____, _____

36. What was the output produced and prices of horticultural crops in the following years?

Year	Crops	Qty produced/unit	Qty sold/unit	Price Sold/unit
2017				
2018				
2019				
2020				

37. What were the costs incurred for the following operations on horticultural enterprise in the last production season?

Activities	Unit	Qty used	Cost / unit	Total costs
Land renting (*If applicable*)	Acre			
Land clearing	Man-days/Acre			
Farm Preparations (Ploughing, ridge making etc.)	Man-days/Acre			
Nursery establishment stage	Man-days/Acre			
Transplanting	Man-days/Acre			
Weeding	Man-days/Acre			
Pests and Diseases Control (Chemicals Spraying)	Man-days/Acre			
Fertilizer Applications	Man-days/Acre			
Harvesting	Man-days/Acre			
Storage Processes	Kg			
Transportations	Kg/ Acre			
Others (Specify)				

38. What was the size of land allocated for horticultural crops in the following years?

Years	Available land size	Land size cultivated
2017		

2018		
2019		
2020		

39. Do you practice any of the modern farming technique in your enterprise?

Nursery establishment processes [   ]   Drip irrigation system [   ]

Green house farming [   ]   Fertilizer application/fertigation processes [   ]

40. What were the reasons for **not establishing** your own horticultural enterprise?

Lack of credit [   ]   Lack of inputs [   ]   Lack of land [   ]

Lack of output market [   ]   Others (*Specify*) _____

G: Land Access

41. After **Participated**, did you manage to access land? Yes [   ], No [   ] *If No go to qstn 47*

42. As you have **Not participated**, did you manage to access land? Yes [   ], No [   ]

43. If Yes, fill in the information required in the box below;

No	Source	(√)	Total size in *Acres*
1	Local Government Authorities		
2	Youth Agribusiness Groups		
3	Family (Inherited)		
4	NGOs		
5	Individual source		

44. Was the land allocated adequate enough for your business? Yes [   ], No [   ]

45. If No, what did you do to acquire addition land for your business?

Bought [   ], _____(*State amount*) Leased [   ], _____ (*State amount*)

Family owned [   ],   Communal based [   ] _____(*State amount*)

None [   ]   Others (*Specify*) _____

46. How do you cultivate all or most of your land?

Hand hoe [   ]   Animal Draft Power Plough [   ]   Tractors [   ]

Others (*Specify*) _____

47. What were the reasons for **not accessing** land?

106

Lack of money to purchase land [   ] Lack of communal allocated lands [   ]

Unbankable business idea [   ] Others (*Specify*) _____

H: Credit Access

48. After **Participated** did you manage to access credit? Yes [   ], No [   ] *If No, go to qstn 57*

49. As you have **Not participated** did you manage to access credit? Yes [   ], No [   ]

50. If Yes, what is your source of credit? (*Tick appropriate*)

No	Source	(√)	Total Amount	Interest Rate (*Specify*)
1	Local Government Authorities			
2	Youth Agribusiness Groups			
3	Cooperatives			
4	Microfinance Institutions			
5	Banks			
7	Agriculture Finance Corporation			
8	Family			
9	NGO			
10	Others (*specify*)			

51. From the credit obtained how much did you allocate for horticultural production? _____

52. Was the credit facility adequate enough to meet your needs? Yes [   ], No [   ]

53. If No, what did you do to acquire additional credit? (*State the amount*)

Individual savings [   ] _____ Youth groups [   ] _____

From family members [   ] _____ Others (*Specify*) _____

54. Did you face any challenges during credit applications? Yes [   ], No [   ]

55. If Yes, what were the challenges?

Lack of collateral [   ] Lack of guarantee [   ] Unbankable business idea [   ]

Others (*Specify*) _____

56. What was your **total initial** size of start-up capital for horticultural enterprise? _____

57. What were the reasons for ***not accessing*** credits?

Lack of collateral [   ] Lack of guarantee [   ] Unbankable business idea [   ]

Others (*Specify*) _____

I: Input Access

58. After **Participated** in the training, did you manage to access inputs for your enterprise?

    Yes [ ], No [ ]   *If No, go to qstn 61*

59. As you have N**ot participated** did you manage to access inputs for your enterprise?

    Yes [ ], No [ ]

60. If Yes, fill in the information required in the box below;

Inputs	Source	Quantity	Unit price

J: Access to Output Markets

61. Do you have any access to Output market of your horticultural produce? Yes [ ]
    No [ ]   *If No, go to qstn 64*

62. How far is the marketing point from your enterprise?

    a) Distance in (*Km*) _____

    b) Hours spent? _____

    c) If you ravel, what is the transport cost? _____

63. To whom do you normally sell most of your horticultural produce?

    Local Markets [ ] Supermarkets [ ] Street Venders [ ] Hotels/ Cafeterias [ ]

    Middle men/ Traders [ ] Processors [ ] Others (*Specify*)

    _____

K: Extension Services

64. Do have access to Agribusiness Extension officers? Yes [ ], No [ ]   *If No go to qstn 72*

65. If Yes, what was the frequency of visits in the last production season?

    _____

66. What services do you normally receive from extension service provider?

Production technical advice [　　] Farm management [　　] Agronomic practices [　　]

Input advice [　] Marketing advice [　] Diseases and Pests Management [　　]

Others (*Specify*), _____

67. Is the extension officer available at any time when you need him/her? Yes [　], No [　]

68. If No, where do you get the services from?

From peer groups [　　　] Farmers group [　　] Medias [　　　] Others (Specify) _____

69. Are the services provided meet your business needs? Yes [　　], No [　　]

70. Do you normally pay for these services in any kind? Yes [　], No [　　]

71. If Yes, how much per visit/service? _____

L: Assets Ownership

72. Does your household own any of the following assets? (*Tick appropriate*)

Assets	(√)	Total number	Value/ Unit
Plough			
House (Metal roofed/Grass)			
Fridge			
Radio			
Mobile Phone			
Television (TV)			
Bicycle			
Motorcycle			
Sewing Machine			
Milling Machine			
Generator			
Water Pump			
Green House			
Storage Rooms facilities			

M: Households Expenditures

73. How much do you spend per month in the following items? (1=January, and 12=December)

Purpose	Amount per month	Relevant Month
House Rent		
Food Consumption		
Clothing		
School/ College Fee		
Medical Services		
Telephone Costs		
Transport		
Energy (Firewood, Charcoal, Gas, Electricity)		
Send money to family elsewhere		
Farm equipment and inputs		
Other contributions (*Specify*)		

Note: Skip to 82 for Non-participants

N: Perception on Agribusiness "Before" and "After" Training and Recommendations

74. How do you rate the *"Youth Hands-On Agribusiness Training Program"* on achieving your ambitions to practice Agri-preneurship?

   Inadequate [   ]   Uncertain [   ]   Adequate [   ]

75. If you did not engage in agribusiness enterprises after exit the Programme, what work would you like to do for a living? (*Specify)*
   _____

76. Did you consider agribusiness as a career opportunity before joining the Programme?

   Strongly Disagree [   ] Disagree [   ] Uncertain [   ] Agree [   ] Strong Agree [   ]

77. Do you consider agribusiness as a career opportunity after participating in the Programme?

   Strongly Disagree [   ] Disagree [   ] Uncertain [   ] Agree [   ] Strongly Agree [   ]

78. After you have participated in the *Youth Hands-On Program*, did you take initiatives to share skills obtained with others who did not participate? Yes [   ], No [   ]

79. If Yes, do you receive any income (*State amount*) from them? _____

80. Do you consider the *Youth Hands-On Agribusiness Program* created opportunities for youth enterprises development and job creation?

   Strongly Disagree [   ]   Disagree [   ]   Uncertain [   ]   Agree [   ]   Strongly Agree [   ]

81. If you had another chance to participate in any Youth training programs, which training would you like to receive? _____,
Why? _____

82. On your opinion, what do you think should be done in order to improve Youth Agribusiness Training Programs? Explain;

_____

_____

"THANK YOU FOR YOUR PARTICIPATION"

Appendix B: Diagnostics of the variables to be used in the econometric analysis

a) Variance Inflation Factor (VIF) for Continuous variables

Variable	VIF	1/VIF
total_year~g	2.60	0.384392
enter_age	2.47	0.404354
total_cred~d	1.61	0.620768
Extension_~s	1.55	0.645785
total_land~d	1.38	0.726296
max_durati~p	1.22	0.819883
Total_fami~s	1.17	0.851307
Age	1.16	0.861036
ln_non_far~e	1.16	0.864899
Edu_level	1.15	0.867993
size_of_em~t	1.12	0.889975
Age_Hhold_~d	1.10	0.912457
outputmkt_~w	1.08	0.928666
Mean VIF	1.44	

b) Pairwise correlation for Categorical Variables

. pwcorr Region marital_married gender_male Access_info_agribusiness inputs_access enterprise_location enterprise_ownership

	Region	marita~d	gender~e	Acces~ss	inputs~s	enterp~n	enterp~p
Region	1.0000						
marital_ma~d	-0.0271	1.0000					
gender_male	0.2443	0.1220	1.0000				
Access_inf~s	-0.1172	-0.1564	-0.0369	1.0000			
inputs_acc~s	-0.0610	0.1172	-0.0139	0.2655	1.0000		
enterprise~n	-0.1245	0.0583	-0.1469	-0.0409	-0.1306	1.0000	
enterprise~p	0.2362	0.1686	0.1888	-0.0287	0.1625	0.0935	1.0000

c) Multicollinearity Test by using the White test

```
. imtest,white

White's test for Ho: homoskedasticity
        against Ha: unrestricted heteroskedasticity

        chi2(163)    =    164.00
        Prob > chi2  =    0.4633

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	164.00	163	0.4633
Skewness	52.96	19	0.0000
Kurtosis	11.44	1	0.0007
Total	228.40	183	0.0127

```
White's test for Ho: homoskedasticity
        against Ha: unrestricted heteroskedasticity

Cameron & Trivedi's decomposition of IM-test
```

Appendix C: The Double Hurdle Model (DHM) results using the Craggit command

```
. xi: craggit establish_enter Age Age_Hhold_head Hhold_size Hhold_head marital_single respondent_orign gender_male E
> du_level ln_non_farming_income Total_family_members_agbs new_parti_status total_years_farming max_duration_group A
> ccess_info_agribusiness inputs_access ln_total_credit_accessed total_land_accessed, second(ln_initial_start_capita
> l Age Age_Hhold_head Hhold_head Hhold_size marital_single gender_male Edu_level ln_non_farming_income new_parti_st
> atus total_years_farming max_duration_group Access_info_agribusiness inputs_access ln_total_credit_accessed total_
> land_accessed Extension_contacts outputmkt_distance_km ) vce(robust)

Estimating Cragg's tobit alternative
Assumes conditional independence
```

		Number of obs	=	157
		Wald chi2(17)	=	100.71
Log pseudolikelihood = -186.84728		Prob > chi2	=	0.0000

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
Tier1						
Age	.0147308	.0719998	0.20	0.838	-.1263862	.1558478
Age_Hhold_head	.019771	.050142	0.39	0.693	-.0785056	.1180475
Hhold_size	.0290861	.103071	0.28	0.778	-.1729294	.2311016
Hhold_head	-.1983544	1.155984	-0.17	0.864	-2.464042	2.067334
marital_single	.095047	.6090343	0.16	0.876	-1.098638	1.288732
respondent_orign	-.8024813	.424346	-1.89	0.059	-1.634184	.0292215
gender_male	-.0237772	.4212593	-0.06	0.955	-.8494302	.8018758
Edu_level	-.0010633	.0532467	-0.02	0.984	-.105425	.1032984
ln_non_farming_income	-.0436323	.0304378	-1.43	0.152	-.1032893	.0160247
Total_family_members_agbs	.4880537	.2103281	2.32	0.020	.0758182	.9002892
new_parti_status	1.359229	.5240861	2.59	0.009	.3320395	2.386419
total_years_farming	.2820412	.1058988	2.66	0.008	.0744833	.489599
max_duration_group	.1671585	.1394171	1.20	0.231	-.106094	.4404109
Access_info_agribusiness	-.3880842	.3615416	-1.07	0.283	-1.096693	.3205242
inputs_access	3.801389	.6079555	6.25	0.000	2.609818	4.99296
ln_total_credit_accessed	-.0674899	.0512364	-1.32	0.188	-.1679115	.0329317
total_land_accessed	-.1168086	.0514219	-2.27	0.023	-.2175937	-.0160235
_cons	-2.570948	1.879275	-1.37	0.171	-6.254258	1.112363
Tier2						
Age	-.0775115	.0260937	-2.97	0.003	-.1286541	-.0263688
Age_Hhold_head	.0229749	.0143504	1.60	0.109	-.0051514	.0511011
Hhold_head	.6862076	.4140574	1.66	0.097	-.12533	1.497745
Hhold_size	.0094914	.0551061	0.17	0.863	-.0985146	.1174975
marital_single	-.5505438	.2780249	-1.98	0.048	-1.095463	-.0056251
gender_male	-.2301877	.2415373	-0.95	0.341	-.7035921	.2432167
Edu_level	.0373806	.0329739	1.13	0.257	-.027247	.1020083
ln_non_farming_income	.0278094	.0160203	1.74	0.083	-.0035898	.0592086
new_parti_status	.6837321	.27176	2.52	0.012	.1510923	1.216372
total_years_farming	.0213283	.0235152	0.91	0.364	-.0247606	.0674172
max_duration_group	-.1298719	.052732	-2.46	0.014	-.2332246	-.0265192
Access_info_agribusiness	.2881663	.2142453	1.35	0.179	-.1317468	.7080794
inputs_access	.0225542	.3921663	0.06	0.954	-.7460775	.791186
ln_total_credit_accessed	.0422757	.0183216	2.31	0.021	.006366	.0781855
total_land_accessed	.0074213	.0222403	0.33	0.739	-.0361688	.0510114
Extension_contacts	-.009197	.0243812	-0.38	0.706	-.0569833	.0385894
outputmkt_distance_km	.0015652	.0006026	2.60	0.009	.0003841	.0027463
_cons	12.43228	.9808316	12.68	0.000	10.50989	14.35468
sigma						
_cons	.9782482	.0578348	16.91	0.000	.864894	1.091602

```
.
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```

Estimated results for the marginal effect (dy/dy) of the first stage (Tier 1/Huddle 1)

```
. mfx

Marginal effects after craggit
      y  = Linear prediction (predict)
         =  1.7904908
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
Age	.0147308	.072	0.20	0.838	-.126387	.155848	29.6879
Age_Hh~d	.019771	.05014	0.39	0.693	-.078506	.118047	36.9427
Hhold~ze	.0290861	.10307	0.28	0.778	-.17293	.231103	4.52866
Hhold_~d*	-.1983544	1.15598	-0.17	0.864	-2.46404	2.06733	.707006
marita~e*	.095047	.60903	0.16	0.876	-1.09864	1.28873	.426752
respon~n*	-.8024813	.42435	-1.89	0.059	-1.63418	.029222	.649682
gender~e*	-.0237772	.42126	-0.06	0.955	-.84943	.801876	.719745
Edu_le~l	-.0010633	.05325	-0.02	0.984	-.105435	.103308	8.90446
ln_non~e	-.0436323	.03044	-1.43	0.152	-.103289	.016025	5.77937
Total_~s	.4880537	.21033	2.32	0.020	.075817	.900291	.968153
new_pa~s*	1.359229	.52409	2.59	0.009	.33204	2.38642	.324841
total_~g	.2820412	.1059	2.66	0.008	.074483	.489599	2.83121
max_du~p	.1671585	.13942	1.20	0.231	-.106094	.440411	1.66603
Acces~ss*	-.3880842	.36154	-1.07	0.283	-1.09669	.320524	.630573
inputs~s*	3.801389	.60796	6.25	0.000	2.60982	4.99296	.694268
l~cred~d	-.0674899	.05124	-1.32	0.188	-.167912	.032933	3.00727
total_..	-.1168086	.05142	-2.27	0.023	-.217594	-.016023	1.89006
Extens~s	0	0	.	.	0	0	1.30573
output~m	0	0	.	.	0	0	13.4283

```
(*) dy/dx is for discrete change of dummy variable from 0 to 1


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.
```

Appendix D: Econometrics testing results for the Multiple Linear Regression analysis

a) Heteroskedasticity test using the White test

```
. imtest,white

White's test for Ho: homoskedasticity
        against Ha: unrestricted heteroskedasticity

        chi2(72)    =    73.00
        Prob > chi2 =    0.4449

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	73.00	72	0.4449
Skewness	16.89	27	0.9338
Kurtosis	1.44	1	0.2306
Total	91.33	100	0.7205

b) The Multicollinearity testing using the Variance Inflation Factor (VIF)

```
. vif
```

Variable	VIF	1/VIF
Age	2.30	0.434484
Age_Hhold_~d	4.56	0.219494
gender_male	2.41	0.414667
Hhold_size	3.09	0.323668
Hhold_head	4.93	0.202757
respondent~n	1.63	0.611822
Edu_level	1.84	0.543631
Marital_st~s		
2	2.95	0.339249
3	3.08	0.325082
ln_enter_age	1.72	0.581513
ln_enterpi~e	1.81	0.551410
enterprise~n		
1	7.26	0.137777
3	2.92	0.342046
5	5.81	0.172135
enterprise~p		
2	5.62	0.177905
3	6.35	0.157405
ln_non_far~e	1.58	0.631554
Access_inf~s	2.05	0.487682
farming_ex~e	3.12	0.320859
total_cred~d	2.71	0.368588
total_land~d	2.01	0.497208
new_parti_~s	2.64	0.379417
ln_initial~l	3.14	0.318425
ln_outputm~m	1.54	0.648355
Extension_~s	2.23	0.448794
inputs_acc~s	1.64	0.608772
max_durati~p	2.04	0.489596
Mean VIF	3.07	

c) Test for omitted-variable bias using the ovtest command

```
. ovtest

Ramsey RESET test using powers of the fitted values of growth_sales
        Ho:  model has no omitted variables
                F(3, 42) =      0.30
                Prob > F =      0.8233
```

Appendix E: Results for the Multiple Linear Regression (MLR)

```
. reg growth_sales Age Age2 Age_Hhold_head Age_Hhold_head2 gender_male Hhold_size Hhold_head respondent_orign E
> du_level ib1.Marital_status ln_enter_age ln_enterpise_size ib2.enterprise_location ib1.enterprise_ownership l
> n_non_farming_income Access_info_agribusiness farming_experience total_credit_accessed total_land_accessed ne
> w_parti_status ln_initial_start_capital ln_outputmkt_distance_km Extension_contact inputs_access max_duration
> _group, vce(robust)
```

```
Linear regression                               Number of obs   =         73
                                                F(29, 43)       =       8.15
                                                Prob > F        =     0.0000
                                                R-squared       =     0.5121
                                                Root MSE        =    .47747
```

growth_sales	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
Age	-.021746	.0253112	-0.86	0.395	-.072791	.029299
Age2	-.0001932	.0002246	-0.86	0.394	-.000646	.0002597
Age_Hhold_head	.0644471	.0627793	1.03	0.310	-.0621594	.1910537
Age_Hhold_head2	-.0005791	.0006609	-0.88	0.386	-.001912	.0007537
gender_male	.2165956	.2416693	0.90	0.375	-.2707769	.7039681
Hhold_size	.0700704	.0410449	1.71	0.095	-.0127046	.1528453
Hhold_head	.463428	.3875225	1.20	0.238	-.3180856	1.244942
respondent_orign	-.1733902	.1502849	-1.15	0.255	-.4764686	.1296883
Edu_level	-.0509159	.0227424	-2.24	0.030	-.0967804	-.0050514
Marital_status						
Married	.0427481	.1713337	0.25	0.804	-.3027793	.3882754
Divorced	-.0168565	.3723046	-0.05	0.964	-.7676802	.7339672
ln_enter_age	-.0747897	.1082442	-0.69	0.493	-.293085	.1435057
ln_enterpise_size	-.0210874	.076668	-0.28	0.785	-.1757031	.1335283
enterprise_location						
Market place	-.4584938	.2884517	-1.59	0.119	-1.040212	.1232246
At the residential areas	.9948586	.3643401	2.73	0.009	.2600967	1.72962
At farm_gate	-.2709619	.2197545	-1.23	0.224	-.7141392	.1722153
enterprise_ownership						
Partinership	-.3597312	.3721719	-0.97	0.339	-1.110287	.390825
Sole proprietorship	-.7692965	.3438972	-2.24	0.031	-1.462831	-.0757617
ln_non_farming_income	-.0042558	.0136774	-0.31	0.757	-.0318389	.0233273
Access_info_agribusiness	.0705008	.156898	0.45	0.655	-.2459141	.3869157
farming_experience	-.1887445	.2575596	-0.73	0.468	-.708163	.3306739
total_credit_accessed	-1.19e-07	6.56e-08	-1.82	0.076	-2.51e-07	1.31e-08
total_land_accessed	-.0407745	.0156274	-2.61	0.012	-.0722901	-.0092589
new_parti_status	.1379224	.1969049	0.70	0.487	-.259174	.5350189
ln_initial_start_capital	.0399788	.0389112	1.03	0.310	-.0384931	.1184507
ln_outputmkt_distance_km	-.0382639	.035546	-1.08	0.288	-.1099492	.0334214
Extension_contacts	.0454657	.0222778	2.04	0.047	.0005383	.0903931
inputs_access	-.1545076	.3337654	-0.46	0.646	-.8276097	.5185944
max_duration_group	-.0411989	.0444997	-0.93	0.360	-.1309411	.0485433
_cons	-.0244586	1.06685	-0.02	0.982	-2.175967	2.12705

```
.
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```

Appendix F: Research ethical permits

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

Anuani ya Simu "Admin",
Simu Na: 023 2402741/2402742

Fax: 023 2402743

Unapojibu tafadhali taja:

Ofisi ya Mkuu wa Wilaya,
S. L. P. 1,
Mkuranga
TANZANIA.

Kumb.Na. AB.220/260/01A/ 36

Tarehe:29 Juni. 2020

Mkurugenzi Mtendaji,
Halmashauri ya Wilaya,
S.L.P. 10,
MKURANGA..

YAH: KIBALI CHA KUFANYA UTAFITI BI SWAUMU HASSAN MOHAMED

Tafadhali husika na somo tajwa hapo juu.

Mtajwa hapo juu ni Mwanachuo kutoka Chuo Kikuu cha Egerton, Kenya kwa sasa anafanya utafiti kuhusu kutathmini mchango wa mafunzo ya kilimo - biashara katika kukuza biashara za vijana wajasiriamali na ulimaji wa mazao ya mbogamboga na matunda, (Effect of Agribusiness Intervention Program on Youth Participation and Growth of Micro and Small Horticultural Enterprises in Tanzania) .

Miongoni mwa maeneo atakayofanya utafiti ni Katika Tarafa zote za Wilaya ya Mkuranga.

Kwa barua hii kibali kimetolewa kwake aweze kufanya utafiti huo. Kibali hiki ni kuanzia tarehe 29/06/2020 hadi 2/07/2020.

Tafadhali naomba apewe ushirikiano kukamilisha utafiti wake

Eliminia Credo Kapufi
Kny: KATIBU TAWALA WILAYA
MKURANGA

Nakala: Makamu Mkuu wa Chuo,
Chuo Kikuu Dar es Salaam,
S.L.P. 35091,
DAR ES SALAAM.

"   BI. Swaumu Hassan Mohamed,
Mtafiti.

118

THE UNITED REPUBLIC OF TANZANIA

PRESINDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

Telegraphic Address: "REGCOM"
Phones: 2934306/2934305
Fax No: 2601308/2604988
Website: www.morogoro.go.tz
Email: ras.morogoro@tamisemi.go.tz
In Reply please quote:
Ref. No: AB.175/245/01 "H"/ 9

Regional Commissioner's Office,
Boma Road
P. O. Box 650,
67117 MOROGORO

15th July, 2020

District Administrative Secretary,
Mvomero and Kilosa.

<u>**RE: RESEARCH PERMIT**</u>

Please be concerned with the heading above.

I would like to introduce to you **Swaumu Hassan Mohamed** a staff member from University of Dar es Salaam in the Department of Agricultural Economics and Business who at the moment is required to conduct a research.

The title of his research is "**Effects of Agribusiness Intervention Program on Youth Participation and Growth of Micro and Small Horticultural Enterprises in Tanzania**".

This permit is valid from 15th **July, 2020 to 30th July, 2020.**

Please provide necessary assistance to enable them to accomplish their research.

Thank you for your cooperation.

Emmanuel P. Mazengo
For: **Region Administrative Secretary**

Copy: Deputy Vice Chancellor,
University of Dar es Salaam,
P. O Box 3015,
MOROGORO

' Researchers '

Telegrams: "REGCOM COAST"
Tel. No. 023-2402287/2402066
Fax No. 023-2402358/2402151
E- Mail: ras@pwani.go.tz
ras.pwani@tamisemi.go.tz

Regional Commissioner's Office,
Coast Region,
P.O. Box 30080,
KIBAHA.

In reply please quote:
Ref. No. FA.221/2265/01"D"/184

18 June, 2020

District Administrative Secretary,
Mkuranga, Rufiji, Kibaha and Kisarawe.
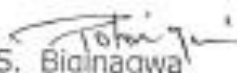
Re: RESEARCH CLEARANCE

Please kindly refer to the subjuct above.

I would like to introduce to you Ms. Swaumu Hassan Mohamed who is a bonafide MSc. In Agribusiness Management at Egerton University in Kenya.

At the moment he has been given a permission to conduct a research titled **"Effect of Agribusiness Intervention Program on Youth Participation and Growth of Micro and Small Horticultural Enterprises in Tanzania".**

The granted period of the research is from June to July 2020.

You are requested to provide necessary assistance which will enable her to complete the research study successfully.

S. Biginagwa
For: REGIONAL ADMINISTRATIVE SECRETARY
COAST

Copy to   Vice Chancellor,
            College of Agricultural Sciences and Fisheries Technology,
            P.O.BOX 35091,
            DAR ES SALAAM

"   Ms. Swaumu Hassan Mohamed,
            Researcher

Appendix G: Publication abstract

Evaluation of Agribusiness Program on Youth Decision and Participation Level in Micro and Small Horticultural Enterprises in Tanzania

Swaumu Mohamed[1*], Patience Mshenga[1], Aloyce Hepelwa[2]

[1]Egerton University, Faculty of Agriculture, Department of Agricultural Economics and Agribusiness Management, P. O. Box 536-20115, Egerton, Nakuru, Kenya
[2]University of Dar es Salaam, College of Agricultural Sciences and Food Technology, Department of Agricultural Economics and Business, P.O. Box 31091, Dar es Salaam, Tanzania
*Corresponding Author: swaumuhassan[at]gmail.com

Abstract: *Tanzania has been experiencing youth unemployment problem for many years. As a result, the government, together with development partners, has come up with numerous strategic initiatives to increase youth involvement in the agricultural sector. Introduction of agribusiness programs to empower youth with entrepreneurship skills useful in establishing and operating their business enterprises. Yet, there is limited information on the effectiveness of such programs on youth decision and participation level in horticultural enterprises in the country. Therefore, this study examines the effect of the youth agribusiness program on youth decision and participation level in micro and small horticulture enterprises (MSEs) in the Morogoro and Pwani regions. A sample of 157 respondents comprising 51 participants and 106 non-participants of the youth agribusiness program were selected through a multi-stage sampling procedure. Data were collected using a semi-structured questionnaire and analyzed by the Double Hurdle Model (DHM). Results indicate the presence of a positive and significant relationship between participation in agribusiness program on youth decision and participation level in horticultural enterprises. Specifically, youth decision to establish horticultural enterprises was influenced by the presence of family members in agribusiness, farming experience, and easy access to farming inputs. Likewise, household head, non-farming income, credit access, and access to markets influenced youth participation level in those enterprises. This study recommends for the replication of the training model to increase youth employability in the agribusiness sector.*