ARE YOUTH MOVING TOWARDS OR AWAY FROM AGRICULTURE?

Analysis of farm and non-farm occupational choices among youth in rural Tanzania

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List of Abbreviations

FAO	-	Food and Agriculture Organization
GDP	-	Gross Domestic Product
ILO	-	International Labor Organization
NPS	-	National Panel Survey
UN	-	United Nations
URT	-	United Republic of Tanzania
VIF	-	Variance Inflation Factor

Abstract

The agricultural sector in rural Tanzania is practiced more by elderly people than by the youth. This study examined the determinants of youth occupational choice between farming and non-farming in rural Tanzania. Specifically, the study intended to establish the trend of farming and non-farming occupation choices among youth; analyze the determinants of farming and non-farming occupational choices; and to analyze the impact of youth occupational choice on their subjective welfare. The study used National Panel Surveys of 2008/9, 2010/11, 2012/13, and 2014/15. The determinants of occupational choices were analyzed using the logistic regression model while the effect of occupational choice on subjective welfare was estimated using treatment-effect estimation with nearest-neighbor estimator. The findings show that there was a sustained drop out of youth from farming occupations from the year 2008/09 to 2014/15. Furthermore, education level was found to influence the dropping out of youth from farming to non-farming occupations while land ownership motivates youth to join farming occupations. There was no statistically significant difference between the subjective welfare of youth engaging in farming and those in non-farming occupations. The study recommends the following: introducing agriculture as a subject in primary schools, stabilizing farm products' markets, changing the perception of youth towards farming, and encouraging land tenure system that allows youth's full ownership of farming land.

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Introduction

1.1 Background Information

Global population growth is generally slowing except for that in African countries whose projections continue to show rising trends. The structure of population changes with the rapid increase in population and that the youth make up a large and increasing share of the population; with most of them expected to live in Sub-Saharan Africa and South Asia (FAO, 2017; Calicioglu et al., 2019). The projections show that agriculture output would need to more than double in Sub Saharan-Africa by 2050 to meet the increasing demand which is higher than the projected global rate of output needed to suffice the global demand, that is, one-third above the current level (UN, 2015).

The agriculture sector in Tanzania is dominated by small-scale farmers who engage themselves in production of both food and cash crops (Kimaro and Hieronimo, 2014). The majority (73%) of Tanzanians live in rural areas. The agricultural sector employs more than half of the employed workforce and provides livelihoods to approximately two-thirds of the entire population (Ochieng and Hepelwa, 2018). The sector is thus vital for the growth of the country's economy as it accounts for about 24% of the gross domestic product (URT, 2016a).

Like other African countries, the agriculture sector in rural parts of Tanzania is practiced predominantly by elderly people than youth, with women farmers dominating; as such the farmers to non-farmers ratio is higher among women than men (Leavens & Kennedy, 2011; Lawi, 2013). In recent years, however, there has emerged a practice of 'agriculture for businesses' practiced in both rural and semi-urban areas, cultivating mainly watermelons, cucumbers, tomatoes, onions and vegetables; the youth being the main participants.
The youth in Tanzania account for about 67% of the total labor force (URT, 2016b). Economic participation of youth in the country is, however, not promising due to the challenge of unemployment they face. The new jobs created annually are not enough to absorb the number of new youths entering the job market. The existing unemployment rate among youth is a function of not only the inability of the economy to absorb the existing labor, rather as a result of the youth having low entrepreneurial skills and little work experience. Thus, despite their dominance in the labor force, the youth dominate among the unemployed in rural areas. According to the Tanzania mainland integrated labor force survey of 2014, more than half (55.2%) of unemployed youth are located in rural parts of the country (URT, 2015). On top of that, rural areas have the highest percentage (93.6%) of youth who are in vulnerable employment compared to urban areas, the least being Dar es Salaam with 40.1 percent.
The government of Tanzania, as is the case with other governments in developing countries has put emphasis on agriculture as a means towards economic development. This is considered to be an effective way of reducing poverty among the poor community as majority of poor people are in rural areas (Rosegrant and Hazell, 2001).

Evidence abound that investment in agriculture is more effective in reducing poverty compared to investment in non-agriculture sectors. at the effect is even more pronounced in reducing poverty in low-income countries when inequality is high (Loach and White, 2011).
The youth show displeasure with agriculture since they get less returns against their expectations. They also afford to invest less in agriculture as they don't have enough capital, which leads to less commitment of the youth in farming activities. This has thus speeded the rate of rural urban migration as youth search for employment and leave the agriculture sector in rural areas in the hands of elders who are economically unstable in terms of power and resource mobilization (Lawi, 2013). Furthermore, the rain-fed agriculture system that exists in rural areas results into seasonal unemployment during non-farming periods. Therefore, majority of youth engage in other non-farm activities including but not limited to motorcycling alias bodaboda, carpentry and petty trades (Katega and Lifuliro, 2014). Although farming is the most important livelihood activity for rural households, the non-farm sector is crucial for income generation and poverty alleviation in general.

1.2 Statement of the Problem

The Agricultural sector employs about 66% of youth, they are also engaged in a combination of wholesale and retail trade activities and repair (or manufacture) of fabricated metals which altogether absorb 13% of employed youth (URT, 2015). Despite the dominance of youth employment in agriculture sector and its relevancy in supporting rural life, there is an emergence of non-farm activities in rural areas which also provides employment opportunities to youth population and at some points directly or indirectly affects agriculture. Some of these non-farming activities include carpentry, motorcycling (bodaboda), welding activities, petty trades, and service businesses such as money service, barber shops, beauty salon, and food vending.

The non-farming activities also play a great role in providing income to rural youth (Katega and Lifuliro, 2014). This sub-sector is fast growing and its importance is observed when the income generated from it is used to finance agricultural expansion through purchase of agriculture inputs and other socio-economic services such payment of school fees and health services of the households. Therefore, the two kinds of activities, that is farming and non-farming, have been competing for resources such as capital, time and human capital which necessitates the choice between them by the youth (Berdegue et al., 2013).

Literatures show that there is high rate of migration from rural to urban areas, and most of the migrants are middle age people. The migrated youth engage themselves into small businesses in towns to earn their living (Msigwa & Mbongo, 2013). The same activities are done in the villages but at a small scale. Other studies including Ripoll et al., (2017) argued

that youth in rural areas of Sub-Saharan Africa currently spend more energy on agriculture due to rising share of market-oriented farming and therefore, the migration can be due to other factors other than occupation choice issues. This poses a question on what causes occupational choice among youth in rural Tanzania. The study, therefore, analyzes factors that influence youth's occupational choice and establish the effect of the occupational choice on the subjective welfare of youths living in rural areas.

1.3 Objectives of the Study

The general objective of this research is to analyze the determinants of occupational choice among youth in rural areas. Specifically, the study intends to;

i. determine the trend of youth engagement in farming and non-farming occupations in rural areas
ii. analyze the determinants of farming and non-farming occupational choice among youth in rural areas,
iii. analyze the effect of youth occupational choice on their subjective welfare

1.4 Research Questions

The study seeks to answer the following research questions:

i. What is the trend of youth engagement in farming and non-farming occupations in rural areas?
ii. What determines the choice of youth participation in either farming or non-farming activities?
iii. What is the effect of youth occupational choice on their subjective welfare?

1.5 Significance of the Study

This research report provides an understanding of push factors for farming and non-farming occupations among youth in rural areas to policy makers. Rural unemployment remains a challenge in Tanzania, thus policy makers understanding of labour decisions is necessary in formulating appropriate measures to address the unemployment problem and in fostering economic growth of the country and welfare of the rural population.

Literature Review

2.1 Theoretical Literature Review

Three main theories are discussed in this section; the first is the general cognitive career theory, followed by the Ginzberg theory of occupational choices and thirdly the Holland theory of career choices.

2.1.1 General Cognitive Career Theory

The general cognitive career theory was developed by Bandura in 1986. The theory explains that the proposition of vocation outcomes or choices is determined by the mutual interactions among person's cognitive attributes, environmental factors and other behaviors. The focal point of the theory is the self-efficacy, outcome expectations and personal goals of an individual. Self-efficacy is the most influential forecaster of the human behavior, whereas the beliefs an individual harbours help evaluate control over the actions and environment. The self-efficacy determines the initiation of the copying behavior, results of the efforts and how long the effort will be sustained while going through the obstacles. The theory emphasizes the role and interactions of the dynamic ways by which a person projects the abilities and capabilities for initiating a course of action or a career. The theory also, emphasizes on the expected outcomes, an individuals' estimation of the chances of an outcome or performance. In addition, it emphasizes on the personal goals and the values individuals' place on their actions, and plan of action in order to achieve a set of objectives. All are being emphasized by considering the individuals' occupational choices at the center.

Moreover, success in the career development is based on probabilities and doubts because the future is uncertain, hence, it depends on the person's perceptions or treatment of the existing challenges and opportunities. A study of Lent et al (1994: 1996) had employed a social cognitive career framework to explore the development of interest in choice and adjustments in farming of youth in rural areas in Ghana in the perspective of the contextual factors, barriers and opportunities which enhance or limit their personal choices.

Sustaining a certain occupation choice depends on the individual reaction towards the barriers or support they face in life. Therefore, it is assumed at a certain unpredicted event, a need of action may erupt which may compel an individual in changing the occupation or pursuing another career. Occupation choice models assume that choices are lifelong processes that begin from childhood to adulthood (Super, 1991).

The theory assumes that the most influential factors (variables) of the outcome expectations and self-efficacy and personal goals are gender, race, contextual factors such as family, geography and culture, learning experience, job opportunities, financial resources and accessibility to opportunities on training, disability status and social structural barriers and supports.

Nevertheless, the theory of general cognitive has some weaknesses, first is, some efficacy beliefs are unrelated to behavior and the theory relies on the self-report excessively. Secondly, the theory gives minimal attention to motivation, emotions and conflict and thirdly, the theory has ignored the maturation and changes over life span (Nabavi, 2012).

2.1.2 The Ginzberg Theory of Occupational Choice

The Ginzberg theory of occupational choices was developed by Ginzberg et al in 1951; the underlining central theme of this theory is the increase of rationality that is involved in the individuals' occupational choice attitudes.

The individual perception of the occupational choices and the awareness of the work world increase significantly as the tentative period approach (Osipow, 1973). The theory suggests that, the individuals' awareness of the market demand of labor and the occupational roles influences the persons' perception of the reality factors. The perception on reality factors is the individuals' realization of the social contingencies included in the continuation of the present level of aspiration.

The theory included the following variables, Parental social economic factors, occupational role knowledge of individual, awareness of dynamic shift in labour force, occupational aspirations, occupational expectations and perceived goal blocks (these includes blocking factors or the reality factors such as, schools that an individual attended previously, affordability of attending to technical schools, race, immobility, scarcity of jobs of a nation, unavailability of technical schools or college in nearby places, personal intelligence, lack of information about opportunities that exist.

Ginzberg explained the theory by using only three stages of life and career development. However, Super theory addressed this challenge and explained his theory by using five life and career development stages from growth, explorations, establishment, maintenance and disengagement or decline (Super, 1991). In addition, Ginzberg theory does not lead to prediction of occupation as it allows one to anticipate vocationally relevant behavior a person will engage in. (Osipow, 1968)

2.1.3 The Holland Theory of Career Choices

This theory was developed by John Holland. According to Holland, in choosing career individuals prefer works that are closer to others which resemble them. Individuals search for jobs that will let them use their skills and abilities. The theory further suggests that the individuals' behavior is being determined by an interaction between personality and the environment. The major influence in occupational choice development that has been given attention under this theory is the behavioral style and personal types.

Furthermore, the theory is described under the following themes. First, the occupation choice is an expression of personality and not random. Second, members of an occupational group have similar personalities. Third, people in each group will respond to situations similarly. And forth occupational achievement, stability and satisfaction depend on congruence between one's personality and job environment. According to Holland, most people fit into one of the six personality types which are Realistic, Investigative, Artistic, Social, Enterprising, and Convectional. Realistic personality includes occupations like construction, farming, architecture, truck driving mail carrier. In the Investigative personalities includes occupations like biologists, chemist and the like. In Artistic, it includes artists, musicians, interior designers and the like. Social personality includes occupations like social work, counseling, police and others. In enterprising includes occupations like lawyer, business executive and other, and in the Conventional personality, it includes occupation like the bank teller, clerks and data entries.

Holland career choice theory assumed individuals' occupational choice is influenced by the following variables: individuals' personality, job environment, members of the similar group, behavioral styles and personality types. Moreover, the advantage of this theory is that it is helpful in identifying and understanding various working environments for youth and help students get oriented to the reality factors about work that are not overwhelming. The main weakness of this theory is that it does not help in provision of useful insights to the employers on the development of the type or guidance of working with youth. Moreover, Holland failed to recognize other factors that might influence occupational choices such as family and labor market.

2.2 Empirical Literature Review

The combination of agriculture value chains, technology and entrepreneurship are argued to unlock a sweet spot for youth employment in Sub Saharan Africa. Ripoll et al., (2017) in their study on rural transformations and youth in Africa argued that youth will not drop from agriculture occupations rather will remain in rural areas and will depend in agriculture. However, an important aspect depicted in their study for youth to effectively use the available rural farming resources are a combination of entrepreneurial skills, technology and agriculture value chain.

Since the drop out in most cases is the result of low yields, the emerging of the specialized, market-oriented arable farming and livestock production trigger the engagement of youth in agriculture despite being surrounded by other non-farming opportunities in rural and peri-urban areas. The occupation choice among young generation, therefore, depends on market opportunities and interactions, place and social structures. In addition, Mabiso and Benfica (2019) argued that exiting of youth from agriculture and entering other non-farming job opportunities in the economy is just a misconception. The drop out is transitional and resulted from rural transformation.

Adam and Quinhentos (2018) in their study of Interests and Perceptions of Agriculture among Rural Youth in Mozambique argued that lack of other alternative employment in rural areas has been termed as among reasons for youth engagement in agriculture. Many youths engage in petty trades that involve selling of non-farm products but do not last long. Their business fails before their 3rd year of operation and eventually, they get back to farming. This proves the lack of entrepreneurship skills among youth in rural villages and limited non-farming economic opportunities.

The rural youth in some African countries consider agriculture as a tedious job that has no clear stream of income and thus fits the elderly people. The study on the assessment of future agriculture in the hands of rural youth which was carried out by Felicia et al., (2016) in Nigeria examined the perception of rural youth towards agriculture as a profession. The findings reveal that agriculture is not considered as a profession due to its unpredictability of income flow. Therefore, young people with higher levels of education would rather go for other opportunities which they perceive as professional works. This was supported by Kritzingeron (2002) who claimed that, youth diverge from agriculture and concentrate on non-farming economy due to unpredictability of the yields. However, the situation might be due to poor methods of farming that are employed by the majority of rural population that makes farming a tiresome and less paying job that is not attractive to most of youth particularly those exposed to some levels of education. The provision of farm machineries and some basic social amenities including water supply, electricity and improved water system in order to facilitate marketing for agricultural products are recommended.

Similar results are found in the study of Proctor and Lucchesi (2012) on small scale farming and youth in an era of rapid rural change, where various stakeholders were interviewed about the nature of intergenerational changes in small scale farming in emerging economies with regard to the global market transformation that takes place. The findings of this study show that most of young generation in rural areas aspires to leave agriculture; however, they are still bound to it. They further give the reasons as to why they are still bound to farming by claiming that there are no alternative opportunities for life in rural areas. In regard to this study it can be said that youth are not satisfied to keep on engaging in farming activities, they are tied to farming because they lack some important aspects like education and other skills that can help them acquire opportunities and move out for other earning sources like entrepreneurship and white collar jobs.

Levy and Smith (2010) had explored youth aspirations, expectations and life choices. Among other studies, this study also suggests that a large number of youths in most of sub Saharan countries are choosing not to pursue livelihoods as farmers. This may have implications in the expected national and global efforts to uplift economic growth through agricultural investment. The paper describes the dynamic process through which aspirations are formed, shaped and influenced by the economic context, social norms and customs, parental and peer influence, media and previous agrarian context of sub Saharan Africa. The study was done on the basis of the reviewed literature on the youth aspirations, expectations and life choices. The paper revealed that expectations of the youth in rural areas of the sub Saharan countries on education is lower than the youth in the urban areas.

2.3 Research Gap

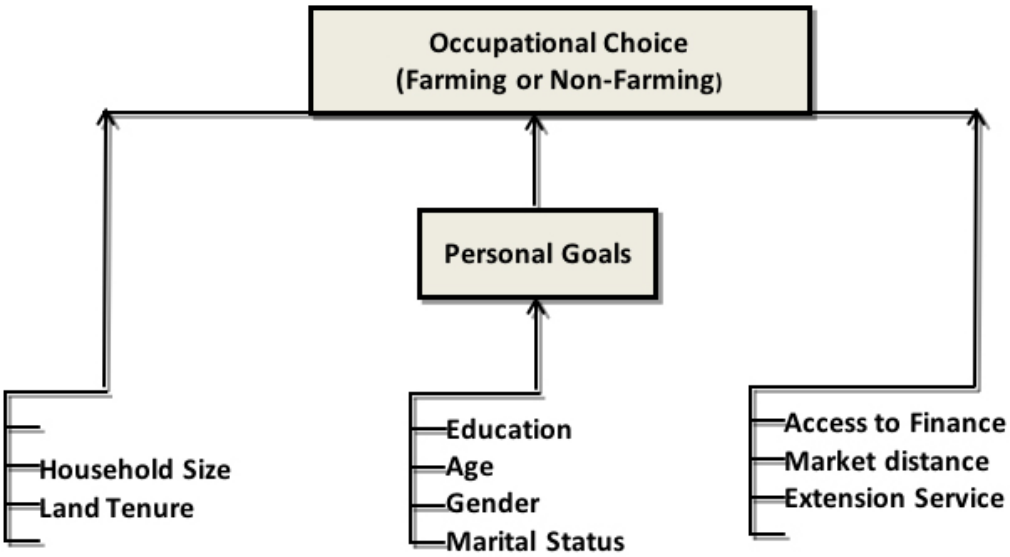
This research used different methods from the reviewed literature. The previous studies based on perceptions of youth themselves in finding out the reason for their drop out from farming occupation and they were more qualitative. This study is purely quantitative and used national representative dataset. The study has gone further by finding the difference in self-evaluated welfare between the farming and non-farming youths. Moreover, no study similar to this has been carried out in Tanzania and therefore the current study generates new knowledge with policy implications relevant within the context of Tanzania.

Methodology

3.1 Conceptual Framework

Having reviewed various theories and synergy explaining factors that influence youth occupational choice between farming and non-farming activities in rural areas, the conceptual framework is summarized in Figure 3.1. The figure explains various factors and their channels in accordance to the theories reviewed showing the way through which they influence youth occupational choice between farming and non-farming. These factors include household size which determines the level of man power within the household, land tenure (ownership), access to finance, distance from the market, and access to extension services, demographic factors that include education, age, gender and marital status of the youth household head. The demographic factors have an influence on the youth personal goals which ultimately lead to the choice of occupation that can trigger the realization of those targeted goals.

Figure 3.1: Conceptual Framework showing influences of rural youth occupational choice



3.2 Data Type and Area Coverage

The study used nationally representative data set, that is, National Panel Survey (NPS) wave 4, and therefore, it covered economically active youth who constitutes the labor force across rural Tanzania. However, the trend was analyzed using all the four waves of the NPS (wave 1 through wave 4). Since the dissimilarities exist between wave four and other waves, the proportion of farmers to non-farmers were used for trend analysis.

3.3 Unit of analysis

According to National Youth Development Policy (2007) Tanzania defines youth as a person between the ages 15-35. Since the majority of Tanzanian of the ages 15-24 as defined by United Nations are full time students and therefore in order to capture the youth participation in labor force in various farming and non-farming activities the definition by the Tanzania Youth policy suffices. The heads of the households who fall under the youth definition were, therefore, studied.

3.4 Data Analysis

Data was analyzed using STATA software. To address the given objectives, the study established the trend and estimated mainly two econometric models as stipulated below.

3.4.1 Trend Analysis

The trend of change in youth's occupations was established from wave one through wave four which covered the periods from 2008/09 to 2014/15. Wave one through three has the same sample and sampling design, however, the sample design for wave four was revised and the sample was refreshed. Therefore, tracking the drop out from one occupation to the other for a specific individual household was not possible. The overall average change in occupation through all the waves was computed by finding the percentage of change.

3.4.2 Estimation of Occupational Choice

The occupational choice of youth is the dependent variable measured as a binary response. It takes the value of 1 if a youth is a farmer and 0 if otherwise. Given the nature of the dependent variable, binary response model was utilized, hence estimating the probabilities of participating in farming occupation given the explanatory variables. According to

$$P(Y = 1/X) = P(Y = 1/X_1, X_2, \ldots X_K) \quad (1)$$

From the model expression in equation 1 above, Y=1 if a youth is a farmer and 0 otherwise and X represents the set of explanatory variables. The study thus used the logistic estimating technique. The corresponding independent variables included in the model are age, gender, marital status, credit access, access to extension services, human capital represented by education level, household size, land tenure system and market distance from the farming plot to the marketplace.

3.4.3 Estimation of the Subjective welfare of youth

The second model estimates the effect of youth occupational choice on their subjective welfare[1]. The subjective welfare of the youth has been treated as an outcome of occupational choice. This outcome variable is also a binary response. Utilizing different aspects of subjective welfare provided by the data such as satisfaction with the occupation or life in general, the variable takes the value of 1if youth is satisfied with the life in general based on the current occupation and 0 if he/she is unsatisfied.
Youth were given option to rank their levels of satisfaction and/or happiness with life in comparison to others. This kind of measurement was preferred to objective welfare measurement because the primary aim was developing a question regarding the trend. If farmers were better-off than non-farmers, the research could pose a question of why farmers quite farming and join non-farming occupations.
The study used propensity score matching method as designed by Rosenbaum and Rubin (1983). This is a method that utilizes observable variables to remove systematic differences between treatments, farmer youth for this case, and control group, non-farmer youth using a propensity score which is the conditional probability of receiving treatment given the observable characteristics. The model is expressed in equation 2.

$$p(X) \equiv Pr(T = 1|X) = E(T|X) \quad \ldots\ldots (2)$$

Using this propensity score, the impact of occupation choice, treatment, was thus estimated by comparing treatment group, farmer youth and control group, non-farmer youth, who bear almost similar characteristics.

1 *The subjective welfare - also called the self-reported welfare in the NPS data set has been treated as the level of satisfaction reported by respondents in the survey study. The level of satisfaction was an accumulation of satisfaction with the health status, financial status, housing status, safety status, health care availability, and education availability*

Table 3.1 describes the variables that were used in the estimations and their respective expected nature of their relationship with the occupational choice.

Table 3.1: Description of Variables used in estimations

Variables code	Description of the variable	Expected Sign of relationship with occupational choice
Occupational choice	The primary or main activity that a youth is engaged to, it is a dummy variable (occupation =1 if youth is a farmer, 0 otherwise)	
Subjective welfare	A dummy variable (1= a youth satisfied with the current general life, 0 = not satisfied)	
Gender	Gender a dummy variable (Gender =1 if the farmer is male, 0 otherwise)	Negative
Age	Age of the youth measured in years	Positive
Education	Education years spent till completion the current level	Positive
Marital Status	Marital status (1=single, 2=married or living together, 3=divorced or separated, 4=widow or widower)	Positive
Household size	The number of household members	Positive
Credit Access	The amount of money that a youth ever accessed as a loan over the period of 12 months	Positive
Extension Services	A dummy variable, (1= access, 0 = no access)	Positive
Land tenure	Dummy variable (1 = own land, 0=otherwise)	Positive
Market distance	The distance measured in kilometers from residential house to the market area	Negative

Findings and Discussion

4.1 Descriptive Statistics

The descriptive statistics have been generated using the current National Panel Survey of 2014/15. The total of 585 surveyed youth headed households was used in the analysis. The household had minimum and maximum household members of 1 and 15 respectively with an average of 4 members per household. Furthermore, the males form the majority (79%) of youth household heads. Most of the areas in Tanzania practice patrilineal system and, therefore, female become the head of the family only when there is no male who is capable of being so. In most cases females who head the households are either widows or divorced/separated from their husbands.

The study further indicates that youths of the ages below 25 were few (16%) as compared to those of ages between 25 and 35 years who constitute 84% of the surveyed rural households' heads. This reflect the fact that many youths below the age of 25 are still at school most in secondary schools and Universities or has just completed their studies and are still under the parental care, therefore, becomes difficult to head the household.

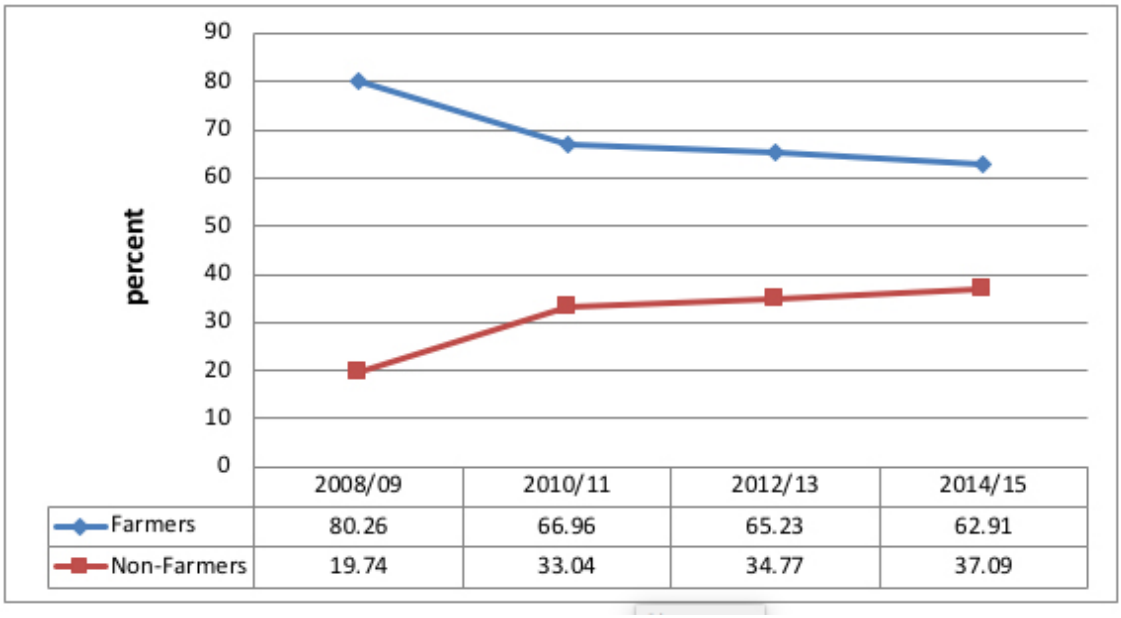
4.2 Trend of Youth Occupational Choices

4.2.1 The Trend of Farming and Non-farming Occupations

The trend analysis was done in order to understand the changes in the choice of youth occupations between farming and non-farming. Farming activity in this context includes both crop cultivation and livestock keeping while non-farming occupations include fishing, formal employment in both private and government sectors, self-employment into non-farming activities, mining, tourism and employment in religious institutions.

Figure 4.2 shows that in 2008/09 the majority of youth engaged in farming activities; the rate was at its peak in that year. This proportion kept on decreasing for the next successive three periods. On the other hand, the proportion of youth engaging in non-farming activities increased from 19.74% in 2008/9 through 37.09% in 2014/15. The raise in non-farming opportunities in rural Tanzania caused the youth to drop out of agriculture and join other non-agriculture activities including formal employment in both government and private sectors and self-employment. There has been a rise of micro and small-scale businesses in rural areas which in one way or the other motivated many youths to leave farming; engaging instead in other activities, including petty trade, transport business alias bodaboda, food vending, and agricultural related businesses.

Figure 4.1: The Trend of Youth engagements in Farming and Non-farming occupations



	2008/09	2010/11	2012/13	2014/15
Farmers	80.26	66.96	65.23	62.91
Non-Farmers	19.74	33.04	34.77	37.09

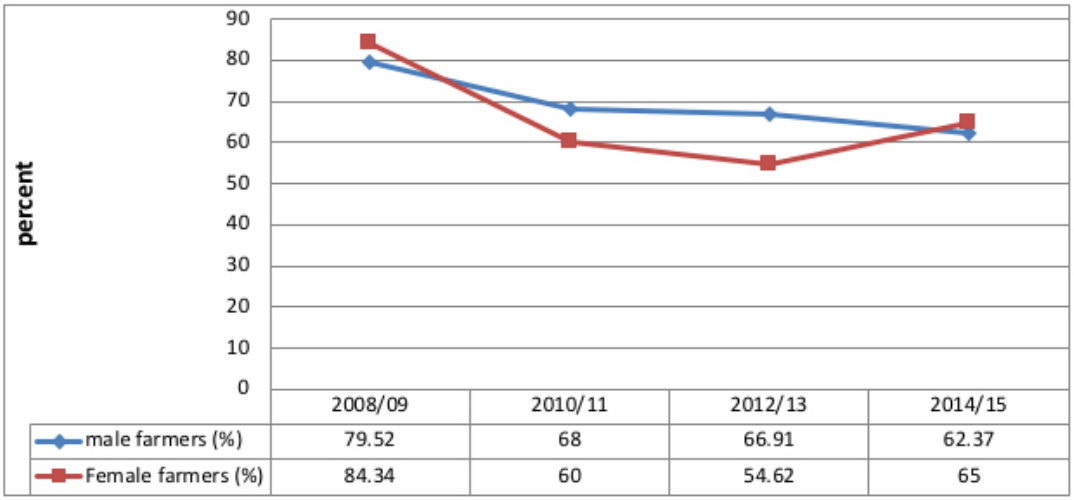
Source: National Panel Survey Data 2014/15

Furthermore, most youth do not take agriculture as a profession and are, therefore, likely to be attracted by other emerging opportunities other than farming. The trend in Figure 4.2 shows that with time youth are joining other non-farming activities including formal employment and self-employment such as starting small businesses and entrepreneurship. Participation in formal employment is actually determined by the level of education possessed by the individual, and which has recently been facilitated by the increase in the number of schools built in both urban and rural Tanzania, leading to increased number of enrollments in primary, secondary, and tertiary education levels. Nonetheless, due to the responsibility of running the family at a young age, youth take it necessary to engage themselves in the activities that provide daily income rather than agriculture which is seasonal and unpredictable. Thus, the need of quicker money necessitate youth headed households to engage more in non-farming activities as found also by Boetang et al, (2018) in his study in Ghana.

4.2.2 The Trend of Youth Occupational Choices by Gender

The cross-gender youth occupation was also analyzed, and the results are as depicted in Figure 4.3. In the NPS1, 2008/9, among females 84.34% were farmers, this proportion is higher as compared to that of males, whereby 79.5% of them were farmers[2]. However, the rate of quitting farming was higher among females than males throughout the two successive periods of 2010/11 and 2012/13. In 2014/15 more females had gone back to farming while males were still experiencing the downward trend. According to Hyder et al., (2015), female that fall under the age 20-39, largely participate in farming and selling of raw agricultural products. Raney et al., (2011) also portrayed that women in most developing countries constitute the majority of small-scale farmers in rural areas.
Due to the African culture, women are the ones responsible for family care, including nurturing children and performing most of the unpaid household chores (Valodia and Devey, 2005). This makes women to be less mobile as compared to men. The process of urbanization increases with time, the cities are expanding towards the near villages and due to mobility of male youths, majority of them either migrate to the towns to earn a living or perform activities in nearby towns and get back in the village on a regular basis (Finney and Kohlhase, 2008). Therefore, women with the help of other family members concentrate on subsistence farming in the village.

Figure 4.2: Trend of youth occupation by sex



	2008/09	2010/11	2012/13	2014/15
male farmers (%)	79.52	68	66.91	62.37
Female farmers (%)	84.34	60	54.62	65

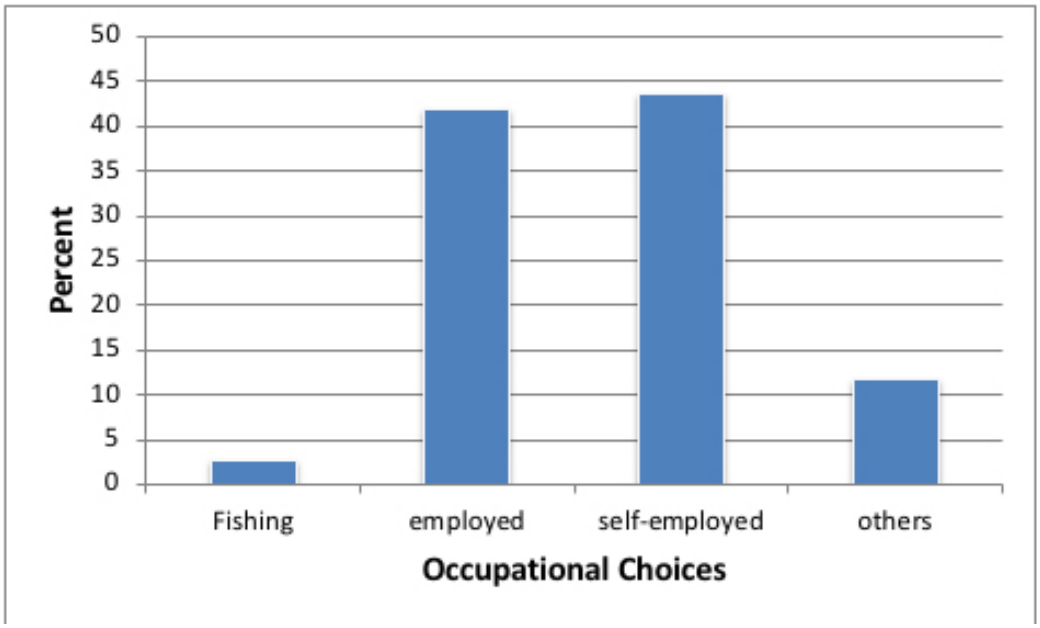
Source: National Panel Survey 2008/9 - 2014/15

2 *The number of males and females youth included in the dataset differs. Therefore, the percentages of farmers and non-farmers across gender were calculated within the same group of gender. i.e 84.34% was obtained by taking the number of female youth farmers dived by all female youth multiply by hundred, likewise to the part of male youth.*

4.2.3 Non-Farming Youth Occupations

Many youths who engaged in non-farming activities in 2014/15 were in self-employment (43.6%) as shown in Figure 4.1. This is followed by those employed in the government, parastatal and private sector which altogether absorbed 42%. Other occupations in mining and tourism together comprised 11.8% and very few (2.6%) engaged themselves in fishing. In most of rural areas in sub-Saharan Africa, agriculture alone cannot provide sufficient livelihood opportunities (Gordon and Craig, 2001) and, therefore a mix of activities is important for assurance of a living. In rural Tanzania the youth diversify their sources of income by engaging in other non-farm activities (Katega and Lifuliro, 2014). Nevertheless, not all youth prefer to migrate to urban settlements, they perform other non-farm activities to sustain the household living.

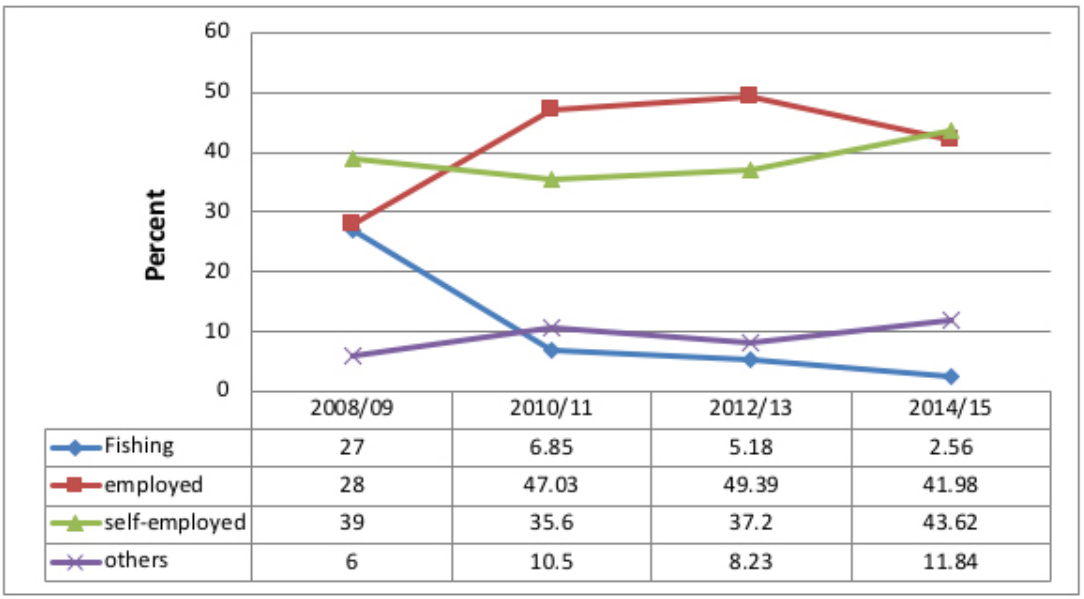
Figure 4.3: Non-farming youth occupational choices in 2014/15



Source: National Panel Survey 2014/15

The trend of the non-farming youth occupations over the period 2008/9 through 2014/15 was analyzed as shown in Figure 4.4. These non-farming economic occupations were grouped into four categories which are fishing, employed, self-employed and others. In the period of 2008/9, many youth-headed households were self-employed as shown in Figure 4.4 compared to other occupations. The trend of self-employed youth declined in 2010/11 but eventually maintained an increasing trend for the period 2012/13 and 2014/15. The youth employed in formal sectors rose from 2008/09 through to 2012/13 but substantially declined in 2014/15.

Figure 4.4: Trend of Non-Farming occupations



	2008/09	2010/11	2012/13	2014/15
Fishing	27	6.85	5.18	2.56
employed	28	47.03	49.39	41.98
self-employed	39	35.6	37.2	43.62
others	6	10.5	8.23	11.84

Source: National Panel Survey 2008/9 to 2014/15

Most of youth are currently absorbed in non-farming employment. This is due to the emergence of more economic opportunities such as petty trades, bodaboda, food vending, and the like (Adam, 2018).

Fishing is among the activities that resemble farming. This activity does not require much skill compared to those performed in formal employment which need writing and/or communication skills and sometime the ICT knowledge. Therefore, fishing is affected in the same way as farming. Fishing has been experiencing a decreasing trend throughout the periods from 2008/9 to 2014/15. Figure 4 shows that fishing was performed by relatively higher proportion of youth (27%) compared to other periods of 2010/11, 2012/13 and 2014/15 of which 6.85, 5.18 and 2.56% of youth respectively had taken fishing as their main occupation. This means that youth who quit farming and fishing joined formal employment, self-employment or other non-farming activities.

4.3 Estimation of Youth's Occupational Choice

From the regression analysis, eight independent variables were included in the model to quantify their joint and individual effect on youth's occupational choice. The variables include sex, age, education level, marital status, access to credit, access to extension services, land ownership, and access to market measured by distance from farming plot to the market.

4.3.1 Diagnostic Tests

Several diagnostic tests were tested after logistic estimation to detect the existence of any econometric problem. These include model specification test, goodness of fit of the model, and multicollinearity test for independent variables.

Model Specification Test

The model specification error was tested using the link test. The results are summarized in table 4.1 The linear predicted value (_hat) was significant and the predicted value squared (_hatsq) was insignificant indicating absence of model specification error. In other words, all important and powerful independent variables were included in the model. However, there was a consideration of theoretical background of the variables to obtain meaningful relationships.

Table 4.1: Link Test for Model Specification Error

Occupation Choice	Coeff	Linearize Std. Error	t	P>|t|
_hat	1.1000141	0.3549441	3.10	0.002
_hatsq	-0.0423493	0.1313751	-0.32	0.747
cons	-0.0267401	0.3030191	-0.09	0.930

Source: NPS data 2014/15

Goodness of Fit of the Model

The Hosmer-Lemeshow (HL) test was used to test for the goodness-of-fit of the model. The Hosmer-Lemeshow chi2 is 9.44 with a p-value of 0.306. The study could not, therefore, reject the null that the model is fit.

Multicollinearity Test

The collinearity diagnostics was tested using the Collin program in STATA; there was no serious problem of multicollinearity between the independent variables. The VIF for all variables were below 1.5 and the mean VIF reported was 1.16, evidencing the absence of a serious problem. The model was therefore, considered to be stable and not very sensitive to minor changes, thus it can confidently be used for forecasting purposes.

4.3.2 Logistic Regression Results

Two out of eight independent variables included in the model were found significant; these include education level and land ownership status of the household heads. The findings are summarized in Table 4.2.

Table 4.2: Logistic Estimation for Youth Occupational Choice

Occupational Choice (1=farming, 0=non-farming)	Coefficient	(linearized Std. Err)
Constant	4.053657**	(1.879988)
Sex (1=male, 0=female)	-0.356661	(0.435889)
Age (years)	0.0521276	(0.042610)
Education (years of schooling)	-0.1787165***	(0.050667)
Marital status (1=single, 2=married, 3=divorced, 4=widow(er)	-0.5637972	(0.415326)
Access to credit (1=yes, 0 = no)	0.1010575	(0.370670)
Access to extension services (1=yes, 0 = no)	-0.9578588	(0.631535)
Land tenure system (1=owning land, 0=not owning land)	1.059014***	(0.362235)
Distance from farm plot to market area (km)	0.0346091	(0.020463)
Household size (number of household members)	-0.0910025	(0.099044)
Number of Observations	335	
F(9, 326)	3.61	
Prob>F	0.0003	

*Note: Significance level: *** (p ≤0.01); ** (p ≤ 0.05)*

Source:NPS data, 2014/15

Education Level and Youth's Occupational Choice

Education level is an important factor that defines choice of the path of an individual in realizing his/her goals. In this study, education is found to significantly trigger the drop of youth household heads from farming occupations. The coefficient of the education shows that individuals with higher levels of education have higher chances of quitting farming (Table 4.2). In the study of Maina and Maina (2012) it was also found that youth with at least secondary education were less likely to engage in agriculture.

People are the key players as factors of production, and therefore, education level was expected to promote youth ability to better combine their entrepreneurial skills with other factors such as labour, land, and capital to effectively and efficiently produce farm products (Bertow and Schulthesis, 2007), which in the end could motivate more youth to engage in farming. However, youth in Africa do not take agriculture as a profession and claim to be unpredictable in terms of production yields which in most cases depend on natural rainfall (Felicia et al., 2016). The other notion that depresses educated youth from farming is that, agriculture is perceived as a tiresome work with little or no pay that fits elderly and poor people who have no other job options (Kritzingeron, 2002). Therefore, majority of youth with higher levels of education would find it worthwhile to engage in other non-farming activities than in farming.

The majority of youth who part away from farming are absorbed in formal employment which are in government, private institutions, and parastatals and some of them have employed themselves in other non-farming activities (Figure 4.4). This reveals that, unpredictability in the flow of income has been the cause for majority of youth with higher levels of education to ignore farming activities.

Land Tenure and Youth's Occupational Choice

Land is the major input in farming activities and the land ownership has a big role to play in choosing whether to farm or perform other activities. The land tenure system was subdivided into two groups, the group of those who owned land and those who either rented or acquired it for free from relatives, friends and/or neighbors for some temporary activities including farming as per agreement. The youth with ownership status were about 67.5% while 32.5% relied on either rented or temporarily freely given land for farming purposes for that particular farming season.

The findings in Table 4.1 show that owning land positively influence choosing farming as the main occupation among youths which imply that youths who own land have higher probabilities of engaging in farming than those with no land ownership. In other words, land ownership motivates rural youth to choose the farming occupation. The study by Maina and Maina (2012) on youth engagement in agriculture proves this nature of relationship between youth farming and land tenure system. They argued that lack of exclusive ownership rights impede youth from engaging in agriculture.

Contrastingly, other studies including that of Amegnaglo and Soglo (2019) argued that land ownership does not matter in promoting youth farming particularly for food crop production and instead emphasized more on land access than ownership. The same results were observed in the study of Bezu and Holden (2014) which argued that lack of access to agricultural land in Ethiopia is drive youth away from pesuing livelihoods form agricultural activities.

Exclusive land ownership encourages land improvements that enhance the productive capacity of land through proper farming methods; it also facilitates credit access when used as collateral (Tenaw et al., 2009) which consequently can promote farming investment. For instance, youths find it worthier to invest in irrigation schemes and planting of permanent crops in their own farm plots than the hired ones. Therefore, owning farm plots encourages youth to freely use the land for income generation and for household food consumption. Inheritance of land is often the main means by which rural youth obtain access to land in Africa, and therefore, access to land ownership by these energetic rural youths is subject to the loss of their parents and/or close relatives. Many youths are thus left landless or as secondary rights users.

4.4 Youth's Occupational Choice and Subjective Welfare

The subjective welfare was measured using self-reported satisfaction to life[3] of the rural youth households' heads. It was presented in a Likert scale ranging from 1 to 7 representing the situation of very satisfied to a very dissatisfied respectively. The Likert scale was re-grouped to two scales of either satisfied or unsatisfied with life. Therefore, the subjective welfare in this context is a dummy variable of either satisfied or not. It takes the value of 1 if an individual is satisfied with the life as whole and 0 if unsatisfied given the current occupation.

The findings in Table 4.2 show that more than half of rural youth household heads were unsatisfied with their life as presented in Table 3 and the remaining 41.13% were satisfied. Despite the fact that rural youth had self-evaluation of their level of life satisfaction based on the criteria given, there was a higher possibility that this comparison was made with reference to urban youths. The rural households' economy is diversifying and creates the interaction between the rural and urban areas (Rigg, 1998) whereby agricultural products and industrial final outputs are interchanged between rural and urban markets. In regard to that interaction, rural youths products fetch low prices as most of them are raw output which leads to low earnings as compared to urban youths who sell the value-added products (Anderson and Hanselka, 2009), and therefore rural youths are relatively poor as compared to their counterpart urban youths.

3 Satisfaction in this study as defined in the National Panel Survey report, 2017 refers to a self-reported level of satisfaction with health, financial status, housing, job, services, and safety

Table 4.3: Subjective Welfare of Rural Youth Household Heads

Subjective Welfare	Percent
Satisfied	41.13
Unsatisfied	58.87

Source: National Panel Survey 2014/15

The effect of youth occupational choice on their subjective welfare was therefore estimated using propensity score matching. Table 4.3 shows the nearest-neighbor matching estimator results of the effect of occupational choice on the youth's subjective welfare. The findings show that youths whose main occupations is farming have higher probability of being happy than those in non-farming occupations. However, this difference (for about 9.3%) was not statistically significance.

Table 4.4: The nearest-neighbor matching (nnm) estimator results

Outcome (1=satisfied, 0=Unsatisfied)	Coefficient	(AI Robust Std. Err)	P-value
ATE: Farming Vs Non-Farming	0.093	(0.09577)	0.331
Number of Observations	308		
Matches: requested	1		

Source: NPS data, 2014/15

Due to the downward trend revealed in this study, it was expected that youth who joined non-farming activities would enjoy higher welfare than those in farming occupation. Non-farming activities generally have higher returns than farming due to their sustainability and predictability of income flow. However, obstacles like lack of education, formal credit, and access to telecommunication restrict effective participation in such activities (Stifel, 2010) and therefore, no significant difference is observed between the group of youth farmers and non-farmers.

Conclusion and Policy Recommendation

5.1 Conclusion

The results show that youth leave agriculture and engage themselves in in non-farming activities and other forms of employment including self-employment or become employed by the government, parastatals or private sector. The trend of youth drop-out from farming has prevailed from 2008/9 to 2014/15. Based on this trend it is likely that in the near future farming will be left in the hands of the elderly population.

Two factors were found to significantly influence youth occupational choice between farming and non-farming; these include education level and land ownership. Youths with higher levels of education take farming as a tiresome job and thus consider formal employment to be more secure, with predictable flow of income than farming. Not surprisingly, land ownership appears to motivate youth to engage more in farming than non-farming occupations. Full land ownership provides opportunity to plan and use the farm as per one's plan. I It does not limit the type of crops one intends to cultivate unlike the case with rented land.

The government through its National Five Year Development Plan 2016/17 – 2020/21 enhances the pace of progress towards achieving aspirations of Tanzania Development Vision 2025 and Sustainable Development Goals of 2030 by putting emphasis on agriculture sector development and prioritization of some important crop production as important milestones for realization of the stipulated goals. These crop products are maize, rice, sunflower, pulses, floriculture, cotton, sisal, grape, and sesame. The vision demands that the you who are knowledgeable and energetic, with a positive mind towards agriculture, to take up the challenge and engage in farming as an important income generating activity.

5.2 Recommendation

Based on the findings the following recommendations are provided in order to check the youth's exit from farming and promote their engagement in farming:

iv. Agriculture should be introduced as a subject from as early as at primary school level. This will make agriculture to be valued and considered among the formal income generating activities that educated people can perform.

v. Stabilizing markets for agricultural products in rural areas. Stable market guarantees farming income flow which is the reason why most of youth exposed to education prefer participating in non-farming activities.

vi. The perception of youth towards farming should be changed. Youth in rural areas should interact with successful farmers as their role models. They are exposed to hard labour from their childhood, while depending on their parents as the main source of information about farming. This gives agriculture a negative image. Therefore, youth with development ambitions, source their mentorship from successful farmers which will help change their negative attitude towards farming.

vii. Promoting rural youth land ownership by changing the traditional means through which the majority of youth acquire full ownership of land. Parents and elders should transfer part of their land ownership title to the young generation when the parents are still alive and mentor the youth on the importance of engagement in farming.

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