

Value chains in rain-fed agriculture and rural youth entrepreneurial development: The case of Umzinyathi and Amajuba districts, KwaZulu-Natal, South Africa

By

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DEDICATION

I dedicate this thesis to my supportive mother, Engelinah Malehu Baloyi and my late father, Ben Jan Baloyi.

DECLARATION 1: PLAGIARISM

I, **Raasetse Johanna Baloyi**, declare that:

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DECLARATION 2: SYMPOSIUM CONTRIBUTIONS

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ABSTRACT

Unemployment has been relatively high in South Africa and continues to rise, especially among the youth, particularly those who reside in rural areas. This has resulted in various socio-economic challenges such as poverty, food insecurity, and multiple social ills (drug abuse, crime, social unrest, *etc.*). This is despite the implementation of various national policies and strategies from the government and different stakeholders that seek to reduce the level of unemployment in the country. In an attempt to fast-track job creation, the government has been promoting entrepreneurship as a potential solution to the youth unemployment challenge. Considering the exposure at the disposal of rural youth regarding agriculture, it is expedient for them to utilize these skills in opportunities that will potentially create them income through self-employment. The challenge is that empirical studies in the past (local and elsewhere) have shown that youth are not interested in agriculture as they perceive the sector to be of low status and dirty with no potential to create for them the luxurious lifestyles they aspire. However, most of this literature emanates from studies done mainly on primary agriculture. It largely ignores the possibility that, although youth might not be interested in primary agriculture, they might be interested and willing to engage in other available opportunities along the agricultural value chain. For the mentioned reasons, the study had two empirical objectives, namely, (i) the investigation of factors affecting rural youth's interest to participate in different agricultural activities, and (ii) the examination of the impact of entrepreneurial spirit and managerial capabilities on rural youth's potential participation in agricultural value-adding economic activities (AVAEAs).

The study was conducted in two districts (Amajuba and Umzinyathi) in KwaZulu-Natal province, South Africa. Purposive, stratified, snowballing, and random samplings were employed to collect the required data. A total of 224 youth (152 being youth not engaged in agriculture while 72 were already engaged in agriculture) were interviewed. Descriptive statistics were run to compare the socio-economic status, resource endowment, and entrepreneurial spirit of the two types of youth. The factors affecting rural youths' interest to engage in agricultural activities along the value chain were examined using the Multinomial Logistics Model. The results indicated similarities in the factors affecting rural youth's interest to engage in different agricultural activities along the value chain relative to not engaging in any agriculture-related activity. Access to credit and formal education were found to decrease the likelihood of rural youth being interested to engage in all agricultural activities along the

value chain while having at least one household member already engaged in agriculture (demonstration effect) increases this likelihood. Furthermore, the results found that the likelihood of rural youth being interested to engage only in primary agriculture increased as the youth aged and decreased with access to social media (Twitter, Facebook, Instagram, *etc.*). Similarly, the youth's likelihood of being interested to engage only in AVAEAs decreased with access to social media and increased if the youth received some agriculture-related training, are endowed with positive psychological capital, and had access to primary ICT facilities. The likelihood of youth being interested to engage in the "whole value chain", that is, to incorporate both primary agriculture and AVAEAs, increased if the youth received agriculture-related training, had access to agricultural land, and are endowed with positive psychological capital. It, however, decreased with an increase in the dependency ratio, and household wealth.

The impact of entrepreneurial spirit and managerial capabilities of rural youth on their potential participation in AVAEAs was analyzed using the Fractional Logit Model. Two separate models were estimated. The first model used the proportion of time the youth were willing to spend on AVAEAs of their choice as a dependent variable while the second model used the proportion of money the youth were willing to contribute/invest, given they had the money, towards initiating AVAEAs of their choice. The results from both models indicated that endowment in business management skills, gender, positive psychological capital, and positive agricultural perception positively affect the potential participation of rural youth in AVAEAs. However, entrepreneurial spirit and household wealth negatively affected this potential participation.

In general, the findings suggest that policymakers should focus on designing policies and intervention strategies that improve the resource endowment of rural youth. That is, the development of initiatives that improve the youth's social capital and access to production credit; the development of transformative approaches to providing agriculture-related trainings; and cultural changes that will improve the youths' access to agricultural land. Also, there is a need for a mindset shift from the youth themselves regarding their perceptions of the agricultural sector.

Future research should aim at expanding the research to other provinces to assist in understanding if intervention strategies aiming at attracting rural youth are location-dependent or homogenous. Also, future research can investigate if the perceptions of rural youth getting jobs from other sectors is a significant factor in affecting their participation in agricultural activities. Since this study used the ex-ante approach to investigate interest, future studies can

use the ex-post approach and examine factors affecting participation of rural youth in AVAEAs from the perspective of those who are already engaged.

ACRONYMS

4IR	Fourth Industrial Revolution
ARC	Agricultural Research Commission
AVAEAs	Agricultural Value Adding Economic Activity
DAFF	Department of Agriculture, Forestry and Fisheries.
DARD	Department of Agriculture and Rural Development
FAO	Food and Agriculture Organization
FLM	Fractional Logit Model
FPM	Fractional Probit Model
ICT	Information Communication Technology
KMO	Kaiser – Maier – Oklin
KZN	KwaZulu-Natal
MNL	Multinomial Logistic
NGO	Non-Government Organization
PC	Principal Component
PCA	Principal Component Analysis
RP	Revealed Preference
SE	Standard Errors
SEDA	Small Enterprise Development Agency
SLF	Sustainable Livelihood Framework
SP	Stated Preference
SSA	Sub-Saharan Africa

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CHAPTER 1: INTRODUCTION

1.1. Background

Over the years, agriculture remained at the foundation of poverty reduction and economic growth worldwide (Baiphethi and Jacobs, 2009). In most parts of Sub-Saharan Africa (SSA), agriculture is at the center of food security and employment. The sector alone employs more than half of the total SSA labour force with approximately 80 percent being under smallholder farming (Food and Agriculture Organization, 2016). With poverty reduction and job creation being the priority of most African countries, the importance of smallholder agriculture to the livelihoods of many people, especially rural households, cannot be ignored. Similarly, in South Africa, agriculture is one of the sectors that serve as the backbone of the country's economy (DAFF, 2018). About 7 percent of the formal national employment is from the sector. Also, its contribution to the country's economic growth cannot be overlooked. In 2013 the sector was reported to contribute about 3 percent to the Gross Domestic Product (GDP). This highlights the importance of the agricultural sector as an important dimension in creating employment, food security, and sustaining household livelihoods.

Increasing involvement in agriculture particularly through expanding primary smallholder agriculture has the potential to assist in poverty alleviation, and unemployment while increasing income for rural households. There are, however, multiple challenges in primary smallholder farming that make it less favourable for new entrants, particularly the youth. These challenges include limited water and land access, lack of market access and market information, lack of financial support, low returns on investments, and poor access to adequate information (Dorward *et al.*, 1998; Chikazunga *et al.*, 2007; Barrett *et al.*, 2010; Salami *et al.*, 2010). These challenges remain chronic to the sector despite different interventions by the government and other stakeholders through different policies and programs. Given these challenges and also considering the negative perceptions that youth have towards primary agriculture, it is expected that the sector is experiencing a poor succession plan.

Unlike primary smallholder agriculture, agricultural value chains have the potential to attract people, especially the youth, into agriculture and create various income-generating opportunities. This could be attributed to its potentially desirable features in terms of the working environment not being considered "dirty" and possibly more financially rewarding. Agricultural value chains can be defined as the inter-linkage of economic activities that take place in livestock and crop production from the initial stages of production until the final stage of consumption (Haggblade *et al.*, 2012). This includes the vertical chains of activities initiating from input supply to production, through to processing and distribution until retailing to relevant consumers. Value chains are also composite of horizontal coordination and linkages

of stakeholders at the same level within the chain such as group selling. Compared to primary agriculture (3 percent), this component of agriculture contributes about 12 percent to the national GDP (Kuschke and Cassim, 2019). Such statistics suggest that agricultural value chains compared to primary agriculture, have relatively more potential in creating economically attractive income-generating opportunities, particularly for rural youth.

1.2. Problem Statement

Poverty, food insecurity, and unsustainable livelihoods are common challenges faced by the majority of people living in remote areas of any developing country, especially those in the SSA (Baiphethi and Jacobs, 2009; Food and Agriculture Organization, 2016). Most if not all of these challenges are a result of the relatively low and unsustainable household income and the inability to secure stable jobs (unemployment). The latter has now become chronic in South Africa. The country's unemployment rate in 2007 was reported at 25.5 percent and more than 10 years later it is reported to be at 29 percent (Statistics South Africa., 2019). Studies conducted by Statistics South Africa (Stats SA) and the Labour Force Survey (LFS) indicate relatively higher rates of unemployment among the youth. Recent statistics reported youth unemployment to be at 39.6 percent (Statistics South Africa., 2019). The majority of these are African youth in rural areas who have limited access to information thus resulting in limited opportunities.

At present, unemployment statistics continue to increase regardless of the interventions by the government and different stakeholders through different policies and programs. Post-apartheid, the government has introduced various policies including the Reconstruction and Development Program (RDP); Growth, Employment and Redistribution Policy (GEAR); National Development Plan (NDP), the Employment Tax Incentives Bill (also known as the Youth Wage Subsidy) and the Expanded Public Works Program (EPWP) all targeting economic growth with the intention to alleviate poverty, inequality, and unemployment. Lieuw-Kie-Song (2009) assessed the effectiveness of some of the implemented programs like the EPWP. In his assessment, he reported that the program had a temporary impact on alleviating youth unemployment as it offered employment opportunities for a limited duration that did not give youth concrete experience and skills. Furthermore, beneficiaries of the program in the rural areas gained the least from the program due to lack of technical support and capacity building (Altman and Hemson, 2008; Lieuw-Kie-Song, 2009). Although international experience showed that programs like the EPWP have proved to be effective in reducing severe youth unemployment, the South African youth unemployment has continued to increase regardless of such interventions (Altman and Hemson, 2008; Nzimakwe, 2008).

With the formal labor markets being saturated, and given the economic growth rate of the country, job creation that will be able to absorb all active employment seekers is very unlikely in the short run. For this reason, policymakers, scholars, and government officials have identified entrepreneurship as a potential strategy for persistent unemployment, especially among the youth (National Planning Commission, 2012; Kew, 2016; Herington *et al.*, 2017). Worldwide, entrepreneurship is acknowledged as a relevant mechanism for addressing unemployment and advancing socio-economic indicators. South African policies and strategies like the National Development Plan also acknowledge and promote entrepreneurship engagement among youth as a potential strategy to alleviate the persistent youth unemployment (National Planning Commission, 2012). The President of South Africa, Mr. Cyril Ramaphosa, in his state of the Nation address speech on the 16th February 2019 has also emphasized the need for South African youth to pursue self-employment opportunities as a way of assisting in alleviating unemployment.

Involvement in entrepreneurial activities will not only lighten the burden of government dependence but will also help alleviate poverty while sustaining food security, especially in rural areas. This involvement will also bring growth to the economy at large through job creation and improvement in the standard of living. Given that youth unemployment is relatively more in the remote areas, and also keeping in mind the common labels of rural youth that include relatively low levels of formal education with limited work experience (Lewis, 2001), agriculture seems to be the most relevant sector for them to partake and initiate entrepreneurial engagements in. Furthermore, majority of the rural youth have some sort of experience in agricultural practices either in the form of practical skills or knowledge because they grew up under parents who practice agriculture (Adekunle *et al.*, 2009; Abdullah *et al.*, 2012). The potential livelihood strategy that can be derived from the sector given their exposure is worth the attention.

Even so, many studies (Aphunu and Atoma, 2010; Bahaman *et al.*, 2010; Abdullah *et al.*, 2012; Bezu and Holden, 2014; Adesina and Favour, 2016) that were conducted on youth participation in primary agriculture reported very limited involvement and interest. Aphunu and Atoma (2010) highlighted that resolving the well-known constraints hindering engagement in primary agriculture such as access to finances will not guarantee youth involvement in the sector as some of the youth have expressed an attitude of dislike towards agriculture. There is unarguable evidence in the literature that highlights that youth do not have a preference to engage in agricultural activities, especially rain-fed primary agriculture.

Youth perceive agriculture as a low status, dirty and unattractive job (Adekunle *et al.*, 2009; Ahaibwe *et al.*, 2013). To them, agriculture is a part-time job and not a profession nor livelihood strategy (Abdullah *et al.*, 2012). The youth prefer non-agricultural careers because they perceive them as more stable, providing relatively more income and requiring less physical labor (White, 2012; Swarts and Aliber, 2013). According to Qwabe (2018) elders that are engaged in smallholder agriculture are not transparent about the profitability of their engagement in the sector leading the youth into believing that agriculture is not profitable. Also, the perception that engaging in the agricultural sector is only through primary agriculture is worth considering as a limiting factor to youth engagement in the sector. This perception might be one of the reasons why there are high rates of migration of youth from rural areas to urban areas in search of “better” job opportunities (pull factor).

Primary agriculture might not be of interest to youth, however, there are various other opportunities within the agricultural value chain that rural youth can engage in. Although engagements in most activities within the value chain such as processing require specific advanced skills, there are other less-advanced activities that youth in remote areas can easily engage in within the chain with less hindrance. Such activities include retailing of farm inputs and outputs; serving as a farm agent; buying and reselling livestock and livestock products; and transportation of both inputs and outputs to different locations (O’Planick, 2016). These activities can serve as a stepping stone for rural youth to engage in agriculture and give them the opportunity to initiate and run their own businesses.

However, at present, most of the value-adding activities in rural areas are offered by different big commercial companies (South African Cities Network (SACN). 2015). For instance, farm inputs are only found in towns where they are supplied by commercial companies; processed food in retail shops is also produced and supplied by commercial companies. The potential gross margins and entrepreneurial opportunities that can be realized by rural residents are then lost to the commercial companies. According to Haggblade *et al.* (2012), the only role that remote areas partake in within the agricultural value chain is through primary agriculture. It is then not surprising that the rural youth have a perception that involvement in agricultural practices requires one to be a farmer only which they do not have the attitude for.

The promotion of rural youth engagement in agricultural value chains should be considered vital for both rural developments and for the revitalization of the agricultural sector. This is because the potential benefits of their engagement in these activities will not be limited to them alone (creation of self-employment opportunities and income). There are various benefits with multiple spill-over effects like job creation opportunities and skills development through the backward and forward linkages that will benefit the whole community. Through the backward linkage, multiple investment opportunities can result

from the requirements that will be needed for value-adding activities to succeed such as increased demand for farm produce, technical skills to operate the necessary machinery, etc. Through the forward linkage, engagements in value-adding will result in convenient agricultural food for rural households while creating employment. Combined, these linkages will create a conducive beneficial environment for agricultural activities. Farmers will realize increased gross margins from their operations as engagements in value-adding in remote areas will reduce the number of people involved in the production process thus reducing the price depression caused by middlemen and increasing gross margins (Ngore, 2010). Furthermore, it will provide smallholder farmers with the advantage of price stability as they will not have to bulk-sell their products immediately after harvest, and this will also increase their profits.

It is then surprising that there is no research in literature that was done to explore the possibility of rural youth benefiting from engaging in agricultural value-adding activities. There is no evidence in the literature that shows studies conducted on youth attitude and engagement in agricultural value chains in South Africa. Available studies that have researched agricultural value chains focused on value chain analysis such as that of Trienekens (2011) who studied a framework analysis of agricultural value chains in developing countries while Lee *et al.* (2012) conducted a study on global value chains looking at the challenges and opportunities for smallholder farmers in developing countries. Baloyi (2010) analyzed constraints faced by smallholder farmers in agricultural value chains. All this study found that lack of access to land for expansion, limited water for irrigation, lack of modern irrigation systems, mechanization, transport logistics, and market information were the key constraints hindering smallholder farmers from participation in high-value markets along the value chain. O'Planick (2016) wrote a report detailing possible opportunities and constraints for agricultural value chains in remote areas. Recently, Senyolo *et al.* (2018) conducted a study analyzing value chains for African leafy vegetables. The study found that transaction costs among value chain actors are weak. Also, smallholder farmers are constrained by a lack of technical advice on production, lack of packaging and processing, poor infrastructure, and lack of finances to actively participate in African leafy vegetable value adding activities.

The above-listed studies are ex-post studies and do not focus on youth. In general terms, there is no ex-ante study available/published that was done on youth participation in agricultural value chains. The aim of this research is to close the identified gap in the literature and provide insight into available opportunities and constraints hindering rural youth from engaging in agricultural value chains. In doing so, the research seeks to answer the following questions:

- To what extent are rural youth of KwaZulu-Natal currently participating in value-adding activities in agriculture? If there is currently no participation, how does their interest to participate look like?
- How does this interest vary compared to interest to engage in rainfed primary agriculture?

- What are the factors limiting/hindering their interest to participate?
- To what extent are young people of KwaZulu-Natal entrepreneurial and well equipped with skills that will enable them to tap into value-adding activities in agriculture?

1.3. Study Objectives

The general objective of the study is to examine the interest of rural youth to participate in agricultural value chains.

Specific objectives of the study are:

- i. Investigate factors affecting rural youths' interest to engage in different activities along the agricultural value chain;
- ii. Examine the impact of entrepreneurial spirit and managerial capabilities of rural youth on their potential participation in agricultural value-adding economic activities (AVAEAs).

1.4. Outline of the Thesis

The remainder of the thesis is outlined as follows: Chapter 2 presents an overview of the relevant literature starting with the definitions of the key concepts of the study (youth and entrepreneurship) followed by literature on various opportunities and challenges relating to rural youth engagement in activities along the agricultural value chains. Chapter 3 deals with the research methodology adopted in the study. These include the description and justification of the study area, data collection procedures, conceptual framework, and the empirical methods used to analyze the data. Chapter 4 presents the descriptive analysis that compares the resource endowment and socio-economic status of the youth as per their current involvement in agriculture. Chapter 5 presents the empirical results and discussions of factors affecting rural youths' interest to participate in activities along the agricultural value chain. It further discusses the empirical results of the impact of entrepreneurial spirit and managerial capabilities of rural youth on their potential participation in AVAEAs. The last chapter outlines the conclusions drawn from the research and recommendation thereof. The research gaps identified by the research are also highlighted in this chapter.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

Agriculture, especially smallholder agriculture, is dominated by elderly people with the youth migrating to urban areas in search of employment opportunities in other sectors. This is despite the various opportunities available within the agricultural sector. With saturated formal labor markets, this ongoing rural-urban migration of the youth exposes them to more unemployment and a possibility of social illnesses such as drug abuse, crime, and depression. This literature review is divided into four sections. The first section defines the concept of youth and entrepreneurship. The second section of the review discusses youth involvement in primary agriculture while the third section reviews the opportunities and challenges in engaging rural youth in agricultural value chains. The fourth section is the synthesis of the literature review while the last section is the summary.

2.2. Concepts and Definitions

2.2.1. Youth: Behavioural and psychological patterns

Many scholars and writers surface their own definitions of youth especially the age range, making it difficult to reach a consensus on defining it. For the purpose of this research, youth will be defined with reference to the South African National definition and Morrow *et al.* (2005) who both defined youth as an individual aged between 18 and 35 years. This is what is often referred to as the millennial generation (born in 1984 and after). Eddy *et al.* (2010b) stated that the millennial generation portrays a significant difference in character as to previous generations. This is because they are characterized as being self-interested, entitled, unfocused, lazy, and impatient individuals. These characteristics are closely linked to the changing environment that they were born in that include globalization, technology, and “unique” parenting style.

Eddy *et al.* (2010b) and Bahaman *et al.* (2010) highlighted that the youth of today “want everything” and “want it now” and this results in impatience. This is because of their exposure to technology that enables them to get everything instantly. Furthermore, their exposure to Information and Communication Technology (ICT), particularly social media often puts them under constant pressure to “fit-it” with the majority. According to Bahaman *et al.* (2010), the youth want to do what is considered “cool” by their peers and this often means luxurious lifestyles (Eddy *et al.*, 2010b). This explains why Bahaman *et al.* (2010) refers to them as the seekers of instant gravitation which often lead to unrealistic expectations about life and this including the workplace (Eddy *et al.*, 2010b). They prefer a luxurious working environment with high remuneration. This results in them preferring the “white collar” jobs which partly

explains their lack of interest in primary agriculture as this sector does not fulfill these requirements. The current psychological state of the millennials regarding agriculture does not give any hope that the lack of a succession plan in agriculture will be resolved soon. This is despite the report by the National Development Plan that stated that agriculture alone has the potential to create a million jobs by 2030 (National Planning Commission, 2012). Without a change in their current perception and attitude towards the sector, this potential is less likely to be realized.

2.2.2. Entrepreneurship in the context of South African youth

There has not been a consensus in the literature about the definition of entrepreneurship, thus different definitions emerged attempting to define the concept. Sathiabama (2010) concluded that entrepreneurship is an endless active process where wealth is created by individuals or a group of people. To this definition, Díaz-Pichardo *et al.* (2012) added that besides creating wealth, entrepreneurship is a process where ideas are developed, organized, and marketed/launched through creativity and innovation. Business Dictionary (2018) defines entrepreneurship as “The capacity and willingness to develop, organize and manage a business venture along with any of its risks to make a profit.” In general, entrepreneurship is the process of meeting a gap/taking advantage of a business opportunity through the usage of all factors of production to make profit. The common ground of all these definitions is that they are extracted from the framework of neoclassical economics. In all available definitions of entrepreneurship, Maluleke (2016) highlighted the four most common traits found in all definitions as follows in none-prominent order:

2.2.2.1. Ability to take calculated risks

The ability to take risks is one of the most critical traits in entrepreneurship, and it is often used in the literature to measure entrepreneurial behavior (McElwee, 2008; Díaz-Pichardo *et al.*, 2012). Oxford Dictionary (2002c) defines risk as exposure to potential danger or loss. Entrepreneurs engage in entrepreneurial activities without the certainty of the outcome with the hope that they will benefit. This means that there is no guarantee of making a profit. People who fear losing or rather engage only in activities with assured results are more likely to fail as successful entrepreneurs.

Although taking risks is accounted for by literature as a vital measurement of entrepreneurial behavior, personal circumstances affect a person’s risk aversion. The majority of rural smallholder farmers are generally risk-averse due to their vulnerability to poverty and food insecurity. They are reluctant to take opportunities (adoption of new technology) with high risk as they will be gambling with their livelihoods. It will not be wrong to assume that their descendants (rural youth) carry a similar attitude towards risk. Moreover, France (2000) highlighted that in modern society, youth take risk based on objective evidence. Thus, rural youth who do not have evidence of successful local entrepreneurs might be reluctant to take the risk of entrepreneurship. Does their lack of willingness to take the risk due to their personal

circumstances make them none entrepreneurial? This will be examined further in the empirical Section in Chapter 5.

2.2.2.2. Creativity and innovation

According to Maluleke (2016), successful entrepreneurs are those who manage their businesses in an innovative manner. Innovation can be defined as the process of creating something new or making changes to something already established (Oxford Dictionary, 2002a). Entrepreneurship is about identifying a gap/ opportunity and fulfilling it for monetary gain. The fulfillment of the gap should be an innovative approach to create a competitive advantage over competitors. Business people have an obligation to keep their current customers happy while making continuous improvements to attract new customers. The inability to be innovative threatens the future and profitability of the business.

2.2.2.3. Efficiency and profitability.

One of the reasons why small businesses fail in their infancy stage (within 3 years of operation) is unprofitability (Herrington *et al.*, 2017). Poor financial management skills, lack of market access, and inability to secure comparative advantage are some of the causes of unprofitability in such businesses (Kew, 2016). It is then vital for entrepreneurs to be innovative enough to develop efficient approaches to managing and minimizing their operational costs to maximize profit. Adoption of new technology is one of the ways that entrepreneurs can minimize their long-term production costs.

2.2.2.4. Seizing the opportunity

The ability to identify a gap is one of the vital traits of entrepreneurship. Maluleke (2016) highlighted that without the ability to identify market gaps, one will not survive as an entrepreneur. Most successful entrepreneurs identified problems that are mostly societal and developed a solution that then turned into monetary gains. When entrepreneurs “seize the opportunity”, Maluleke (2016) stated the need for social responsibility.

It is essential for rural youth to be endowed with the above-discussed characteristics when seeking to engage in agricultural value chains. This is because, according to O’Planick (2016), engagement in AVAEAs requires oneself to be more entrepreneurial than just employable. However, studies conducted by Kew (2016) and Herrington *et al.* (2017) indicate relatively low levels of engagement in entrepreneurial activities among South Africans. According to Herrington *et al.* (2017), 10.7 percent and 10.9 percent of the South African adult population (18 – 64 years) were found to have entrepreneurial intentions in 2005 and 2015, respectively. Herrington *et al.* (2017) defined entrepreneurial intention as the intent of starting a new business in the next three years. The statistics mean that in every 100 South Africans (adults and youth), only 11 are intending on starting a business in the next three years.

Furthermore, Total Early-Stage Entrepreneurial Activity (TEA) is currently at 10.96 percent relative to the regional and global averages of 13.70 percent and 12.46 percent, respectively (Herrington *et al.*, 2017). TEA is a measure of people who are actively in the process of starting a business or those who are currently managing/owning a business in the age group of 18 to 64 years, and the business is less than 3.5 years old. The statistics clearly show that South Africa's participation in entrepreneurial activities is low. This raises questions as to what the possible cause of these relatively small statistics might be. A further disturbing record is a motivational index to engage in entrepreneurial activities. On a scale of 1 to 5, South Africa and regional areas have an average of 1.46 motivational index relative to the 3 for the global motivational index. This indicates a relatively low motivation to start a business among South Africans (Herrington *et al.*, 2017).

In 2005, the South African youth participation in TEA was at 3.1% and 6.1 % for ages 18-24 years and 25-34 years, respectively. In 2016, the statistics changed to 6.7 % and 6.3% for 18-24 years and 25-34 years, respectively (Herrington *et al.*, 2017). This shows a very slowly increasing trend. Between 2005 and 2016, there was an average increase of 0.4% in the participation of youth aged 25-34 years in engagement in entrepreneurial activities. The growth rate in TEA within the youth suggests that young people do realize the entrepreneurial opportunities around them and show initiative. The slow growth rate might also suggest that there are challenges or rather barriers that make it relatively challenging to enter the entrepreneurial environment. Although there are no available statistics that indicate the common sectors in which youth initiate businesses, the Small Enterprise Development Agency (2017) reported that the leading industries where small businesses are initiated are trade and accommodation, community services, construction, finance, and business services with no mention of the agricultural sector. Factors identified to be affecting entrepreneurial development are discussed below:

(i). Financial capital

Lack of finance and financial support is ranked as one of the major constraints to starting a business worldwide (Audretsch and Keilbach, 2004). A survey conducted by Lewis (2001) ranked lack of finances as one of the significant challenges faced by aspiring and emerging entrepreneurs in South Africa, which is consistent with the finding of Herrington *et al.* (2017). A possible solution to lack of finances can be the provision of loans, but Lewis (2001) highlighted that due to lack of collateral and credit history, commercial banks are reluctant to offer loans to small businesses and, in this case, youth. In rare instances where commercial banks provide loans to these small businesses, it is usually in the form of a personal loan at a very high interest rate (Kim *et al.*, 2006). Young people who do not have any form of personal collateral cannot access such loans. The only available option for youth to access financial support is through the seed funds offered by the entrepreneur-empowering initiatives with too much competition.

(ii). Social capital

Societal influence has an unarguably significant impact on the decisions people make. Casson and Giusta (2007) define social capital as institutional support that one gets from relationships and networks. The support can be in the form of knowledge and skill transfer, networking, or even connections to people necessary for the growth of the business. According to Maluleke (2016), “connectedness” is vital in business, especially for emerging entrepreneurs. Networks assist in information dispensation and are essential for marketing businesses. People often prefer to buy from people they know; thus, knowing people, especially potential clients, is necessary.

Youth, especially those in rural areas, experience difficulties in acquiring social capital (Bahaman *et al.*, 2010). Due to their surroundings, it is difficult to network with other people besides their fellow locals. Communication outside their surroundings requires monetary assets either in the form of transportation or ICT. Considering the economic status of most rural youth, it is not irrelevant to assume that this communication is minimal if present. Furthermore, apart from the monetary requirements of utilizing ICTs, rural youth are still faced with challenges relating to stable connectivity. However, it cannot be ignored that ICTs, particularly social media platforms, are important components of social capital in this modern world of technology (Hache and Cullen, 2010). Thus, it is important for intervention measures that promote entrepreneurship within rural youth to be centered on assisting with both stable access and usage of ICT facilities.

Family and friends are also included as social capital as they provide emotional support to aspiring and emerging entrepreneurs. According to Casson and Giusta (2007), the majority of rural youth are not from successful entrepreneur-headed households nor successful entrepreneur-headed communities that promote the culture of self-employment. This thus limits their understanding of entrepreneurship and the opportunities around it. This is in agreement with Morrow *et al.* (2005) who found out that graduates that have parents that are entrepreneurs have relatively more intentions of being entrepreneurs than those that are raised by employed parents. Youth that does not have self-employed role models and/or parents often prefer employment to entrepreneurship. Creating a culture of self-employment requires social capital and this is not easy especially in rural areas.

(iii). Human capital

Human capital can be defined as the skills, knowledge, and experience one has acquired (Schott *et al.*, 2015). Cognitive knowledge gained through formal education and tacit knowledge gained through experience and training both forms part of human capital. One would argue that the former type of knowledge is not important for entrepreneurial development as there are various successful entrepreneurs who do not have formal education. However, Schott *et al.* (2015) highlighted that cognitive knowledge

leads to productivity and efficiency. Furthermore, in the modern world, formal education might be necessary as it assists with the practicalities of utilizing modern technology for the benefit of the business.

One of the leading reasons why small businesses discontinue in their infancy stage is said to be unprofitability (Herrington *et al.*, 2017). This results from the lack of proper marketing strategies, poor management skills, and lack of financial skills (Brink *et al.*, 2003; Mbonyane and Ladzani, 2011). Formal education might not be necessary for entrepreneurial development, but entrepreneurial training for aspiring entrepreneurs is essential. Skills development on how to manage finances, better strategies to market products and basic management skills are important especially for rural youth characterized by relatively low levels of literacy. It is essential to note that although they have low levels of cognitive knowledge/ formal educational, they are endowed with relatively higher levels of tactic skills through experience and observation, especially in primary agriculture. The majority were raised in households that practice smallholder farming thus they are familiar with most of the duties and responsibilities required for most agricultural activities. Therefore, entrepreneurial development in rural areas, especially within the agricultural sector, requires intervention strategies that focus on entrepreneurial skills training that will enable the youth to operate and manage businesses successfully.

(iv). Psychological capital

Various factors affect one's willingness and ability to take advantage of the opportunities available to them. An individual's state of mind is one of the most overlooked yet vital factors that influences not only the decisions that one makes but also affects the productivity and efficiency of that individual (Luthans *et al.*, 2015). When one has a positive psychological state of development is said to have psychological capital. According to Luthans *et al.* (2007), psychological capital is determined through four constructs, namely (1) *Optimism* - is depicted by a positive approach to life. An optimistic person sees the good in every scenario and takes failure and setbacks as temporary situations. Such a mindset is important in entrepreneurship, as Maluleke (2016) describes entrepreneurship as a "challenging" journey. Thus, the ability of one to see setbacks and failure as temporary is very necessary.

Moreover, optimism is closely linked to (2) *hopefulness* as an optimistic person is a hopeful person. However, Luthans *et al.* (2007) stated that there are many misconceptions about the real definition of hope, as is it often confused with wishful thinking and even illusions. Snyder *et al.* (1991) defined hope as "a positive motivational state that is based on an interactively derived sense of successful agency (goal-directed energy) and pathways (planning to meet goals)." One of the unique and important components of hope is the "pathway". This is the ability to generate different ways of achieving the same goal. It is necessary for entrepreneurs to have diverse ways of marketing products and sourcing out finances. This will allow them to survive unanticipated changes in their businesses.

An individual endowed with psychological capital is hopeful, sets goals, and achieves them through proactivity and self-determination. However, for one to actively use their “agency” and “pathways” in hope, they need (3) *efficacy*. People set goals that are realistic to them; that is, they set goals that they believe they will be able to achieve. Efficacy is generally defined as the trust in oneself to produce desired results. It is closely linked to self-confidence, which can be defined as having the self-belief that one has the abilities, skills, and capabilities to achieve desired and aimed goals (Oxford Dictionary, 2002b). Self-confidence and self-efficacy create an inherent ability to be motivated by challenging and difficult situations, and this results in one utilizing the acquired skills and abilities to resolve those challenges.

Self-efficacy provides one with the ability to be persistent and “bounce back” after difficulties because of the belief that one can achieve the set goal. Resilience is the 4th construct of psychological capital. Resilience is defined as the ability to bounce back after experiencing a challenging situation like failure, conflicts, and even increased responsibilities (Luthans *et al.*, 2007). Entrepreneurs need to have the ability to “bounce back” from a financial setback, loss, or even failure of the business.

The four constructs of psychological capital are interlinked in such a way that it is almost impossible to have one construct and lack the other. To be deemed as an individual that has psychological capital, one needs to be able to be hopeful, resilient, optimistic, and have self-efficacy. Lacking one of these constructs can result in one being unable to venture successfully and profitably into entrepreneurial activities. Past research that indicated the importance of psychological capital in influencing decision-making for smallholder farmers includes that of Chipfupa and Wale (2018), and Cele (2017). These studies show that other than the common resources that an individual is exposed to (social, financial, physical capital), the state of one’s mind is very crucial in the decision that one makes. According to Luthans *et al.* (2015), psychological capital can be learned or developed intentionally (reading, *etc*) and not intentionally (experiences), however, gaining its capital can be a long process. It should be highlighted that in terms of research, the prevailing challenge is on how to measure and construct an index that better captures the four constructs of psychological capital.

2.3. Youth Participation in Primary Agriculture

Presently in South Africa, there is a very limited number of young people in the agricultural sector, and this affects the future and growth of the sector as a whole. Abdullah *et al.* (2012) indicated that the challenge of limited youth in agriculture is a global challenge, particularly in the SSA. This is consistent with finding by Bezu and Holden (2014), who indicated low engagement of youth in agricultural activities in Ethiopia, and Naamwintome and Bagson (2013) reached the same conclusions for Ghana. Multiple studies that were conducted in many SSA countries reached the similar conclusions (Adekunle *et al.*,

2009; Aphunu and Atoma, 2010; Bahaman *et al.*, 2010; Abdullah *et al.*, 2012; Ahaibwe *et al.*, 2013; Gichimu and Njeru, 2014; Adesina and Favour, 2016). According to Swarts and Aliber (2013), the “dualistic nature” of the agricultural sector and the wealth gap that exists between farmers (commercial and smallholder farmers) turn to make smallholder agriculture less attractive. The following are factors considered by literature to be hindering youth involvement in primary agriculture:

(i). Access to financial capital

Lack of access to finance is one of the prolonged challenges in SSA agriculture (FAO, 2014). This challenge is most chronic to smallholder farmers in remote areas. Past studies highlighted that the inability of smallholder farmers to keep records of their financial transactions is one of the causes leading to their difficulties accessing finances (Baloyi, 2010). This is because, without any financial records, banks and other investors cannot validate the profitability of the farming enterprises, making it hard for them to invest. Also, the lack of collateral by smallholder farmers limits their access to loans from banks relative to commercial farmers (Anyiro and Oriaku, 2011; Gichimu and Njeru, 2014). The profile of smallholder farmers as far as collateral is concerned does not differ from that of rural youth; thus it is not irrelevant to assume that the same reasons that hinder smallholder farmers from accessing financial support are homogenous to that of rural youth. It is then vital to introduce programs that will facilitate access to finance for rural youth as an incentive to involve them in agriculture.

(ii). Land access

Access to land and land rights are among the major challenges hindering youth involvement in primary agriculture (Bezu and Holden, 2014; Gichimu and Njeru, 2014). According to FAO (2014), inheritance is still the most common form of land transfer used in most remote areas of developing countries. Usually, the land is transferred to the male child of the family (eldest or youngest, depending on the family tradition) without acknowledging the other siblings in the family. This tradition leaves the other siblings, especially the females, without access to land (Gichimu and Njeru, 2014). In most rural areas of South Africa, the land is under tribal authorities and cannot be sold. In such cases, the land is only given to elders and married people, and this further exposes the youth to minimal access to land.

In cases where the youth do have access to land, they often have challenges relating to land rights, the security of tenure, and ownership (Salami *et al.*, 2010). The youth or any other member of the community in rural areas do not own the land they have access to. They are given permission to occupy without title deeds making it hard to use the land as collateral when in need of finances, particularly credit (Nwaogwugwu and Obele, 2017). Although systems used by tribal authorities cannot be easily changed, there is a need for strategies to be formulated that will promote better land transfers and land rights to the youth, especially those that are often side-lined by traditional practices.

(iii). Poor agricultural support (agricultural extension)

Previous studies have highlighted that access to extension support/services has a positive impact on participation in agricultural activities (Adekunle *et al.*, 2009; Bezu and Holden, 2014). This is because most, if not all, agricultural trainings received by smallholder farmers is provided/facilitated by extension officers. However, past studies indicated that there is a lack of access to such services for the majority of smallholder farmers. For farmers who do have access to these services often receive trainings of poor quality or trainings that are not relevant/applicable to them (Kising'u, 2016). Attracting and sustaining thereof, the participation of youth in agriculture will require well-developed and well-trained extension officers to disseminate relevant information and provide support to the youth.

(iv). Access to information

Information dissemination has always been a challenge among smallholder farmers in remote areas as past research pinpoints the lack of information as one of the major factors contributing to the inability of smallholder farmers to access competitive markets (Zeller *et al.*, 1998; van Tilburg and van Schalkwyk, 2012). It is in this scenario that smallholder farmers are continuously excluded from the market chains that have the potential to generate for them sustainable livelihoods. They lack access to information and knowledge of better and more productive ways of running their farms. The majority of smallholder farmers rely mainly on extension officers and fellow farmers for the transmission of information (Baloyi, 2010). Thus, improvements in access to relevant agricultural information are important when seeking to attract rural youth into agriculture. The creation of digital platforms through ICTs and the integration of agricultural information on social media is one of the strategies that can be used to disseminate agricultural information to the youth.

(v). Perception, attitude, and mindset

Youth perceive agriculture as a laborious, nonprofitable, and dirty sector that does not have the potential to be a livelihood strategy (Adekunle *et al.*, 2009; Bahaman *et al.*, 2010; Bezu and Holden, 2014). This perception, together with their need for social validation, drives them away from primary agriculture, thus forgoing the potential economic benefits that can be derived from their involvement (Nwaogwugwu and Obele, 2017). It is, however, worth noting that youth are not homogenous; thus, this perception is not shared among all youth. Because if it is assumed that this perception is shared among all youth, it will delay the formulation and implementation of strategies catering specifically to rural youth in agriculture.

Interestingly, Ahaibwe *et al.* (2013) highlighted that the concept of youth interest and involvement in agriculture is controversial. He urges that youth interest in agriculture is often measured by youth engagement in the sector. This forsakes the possibility that youth who are currently engaged might be because they have access to resources, they are forced by their parents or they are involved because of

necessity (have no alternative for work) and not because they are purely interested in agriculture. Furthermore, youth who are currently not engaged in agriculture might be interested but lack resources, especially for rural youth with parents currently not engaged in agriculture and do not have access to agricultural land.

Other factors that have an impact on rural youth participation in agriculture include lack of market access, institutional support, and poor infrastructure (Baloyi, 2010). Kahan (2012) highlighted that when strategies are formulated to address these issues, attention should also be given to rural entrepreneurial development. When farming practices are running as business entities, more profit can be generated, and this is likely to induce youth's interest in the sector. However, given that entrepreneurship is multi-dimensional, and its challenges are also multi-dimensional, the intervention has to be holistic, coordinated, and participatory, which is hardly happening in many rural development interventions in SSA.

2.4. Agricultural Value Chains: Opportunities and Challenges for Youth.

The complexity of agricultural value chains depends on the product at hand. However, in general, agricultural value chains consist of two constructs, namely, horizontal and vertical chains. The horizontal chain includes the relationships between actors of the same level. These can be producers, processors, or even retailers. The vertical dimension refers to the chain itself that initiates from the input supplier to the end consumer. Figure 2.1 below shows a typical agricultural value chain.

Not all agricultural products follow through all the stages of the value chain. The stages that a product passes through depends mostly on the end product desired. When fresh produce is sold as fresh produce, it can be sold directly from the farm without going through all the other actors in the chain. However, Ngore (2010) highlighted that selling value-added produce results in more monetary gains relative to selling them raw. It is for this reason that attention should be given to the formulation of effective strategies to involve rural people, especially rural youth, in value-adding economic activities. Although there are no South African studies that show the current level of rural youth participation and the types of activities they practice within the agricultural value chain, O'Planick (2016) highlighted the following as possible opportunities within the agricultural value chain that rural youth can explore:

(i). Farm service agent

According to van Tilburg and van Schalkwyk (2012), smallholder farmers experience challenges penetrating competitive markets as a result of their inability to meet market standards. Smallholder farmers produce products in small quantities with poor quality that are then neglected in the output markets, regardless of the support they receive from extension officers. Kising'u (2016) highlighted that the ratio of smallholder farmers per extension officer limits both the frequency and attention given to

individual farmers, thus affecting the outcomes of such engagements. Rural youth then have the opportunity to fill in the knowledge gap for farmers while creating employment for themselves.

Dispensations of information regarding land preparations, correct application of herbicides and pesticides, effective ways of weeding and pruning crops, tips on better ways to harvest, and post-harvest handling are still highly needed in remote areas. In addition, smallholder farmers lack information about markets. The transmission of such information to farmers in the form of workshops and training can create employment and engage youth in agriculture. Although the provision of such services/information may require formal education in agriculture, O'Planick (2016), highlighted that the advanced usage of ICTs among youth would assist in accessing the required information without necessarily having an agricultural education.

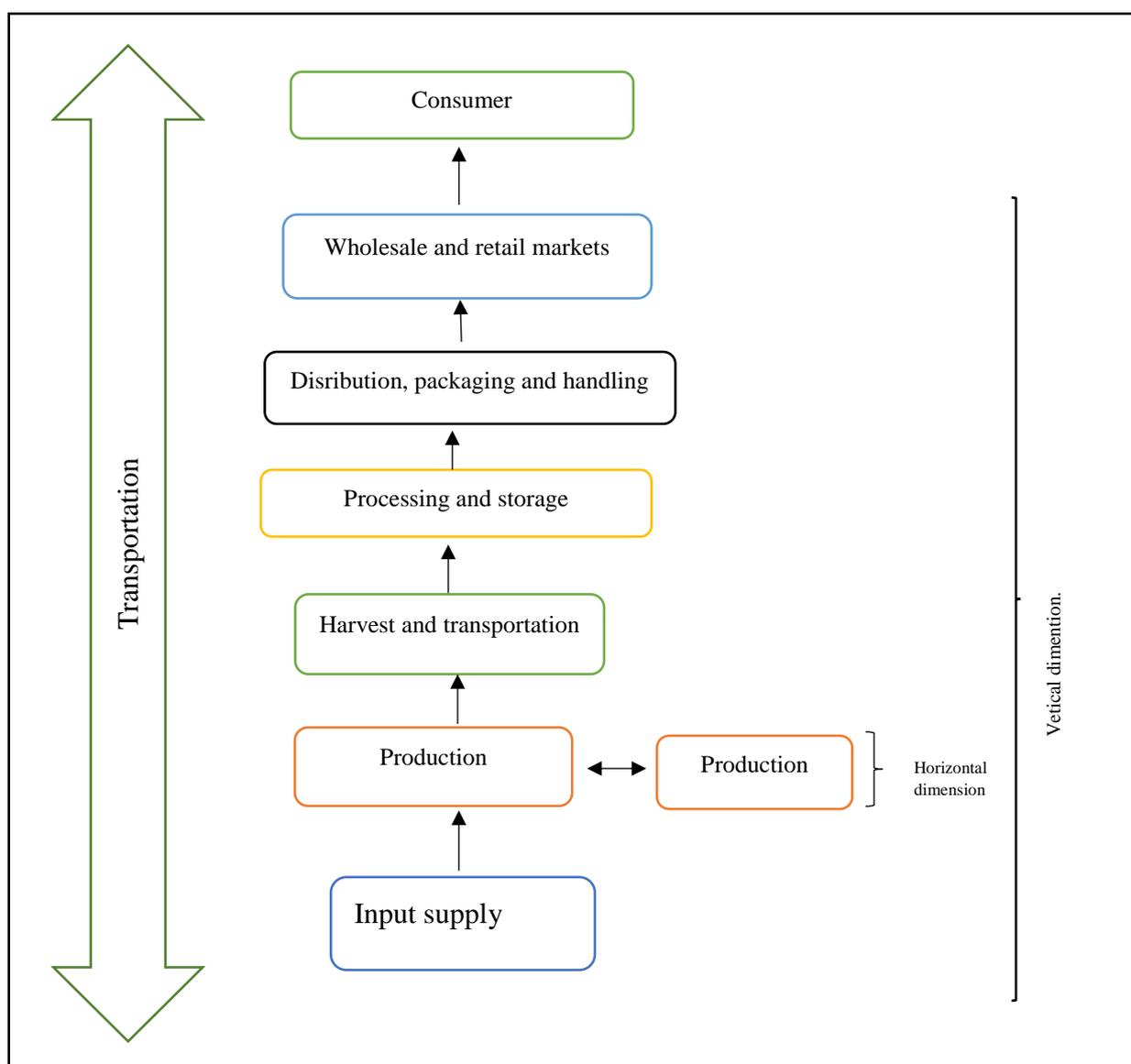


Figure 2.1: Typical agricultural value chain

Source: Adapted from Gereffi and Fernandez-Stark (2011), (Nang'ole *et al.*, 2011), and (Trienekens, 2011).

(ii). Transportation services

Most smallholder farmers do not have cars and rely on rented vehicles for transportation of their produce to relevant markets. According to Baloyi (2010), rented cars are often reluctant to assist farmers because of poor road infrastructure in remote areas. This then gives youth an opportunity to transport produce from the farm-gate to relevant markets and generate income. However, the challenge that comes with this opportunity is that rural youth do not own/have access to cars. Furthermore, the transportation of agricultural goods is not as profitable as the transportation of passengers and other goods; thus, youth might be reluctant to be involved.

(iii). Retailing

Markets are located far from where smallholder farmers reside, and because of poor infrastructure, they experience difficulties assessing both input and output markets. Youth who are not interested in agriculture have an opportunity of buying the inputs in towns and retail them to smallholder farmers at a markup price. This decreases the transportation costs and transaction costs while saving time for farmers as they will easily access the input near them. Furthermore, youth can purchase the farmer's output at farmgate and sell them to relevant consumers also at a markup price. The challenge of exploring this opportunity as youth is that it requires high investments in the capital (storage facilities of the fresh produce and/or car for mobility) which youth have less access to (O'Planick, 2016).

(iv). Farm business service facilitator

According to Barrett (2008), one of the reasons why smallholder farmers lack access to financial capital in the form of loans from formal institutions is that they do not keep their farm financial records. Facilitation workshops on bookkeeping and financial management are vital for smallholder farmers as it assists in monitoring the financial performance of the business. According to O'Planick (2016), a minimum of a diploma is required to explore this opportunity. Furthermore, since the majority of smallholder farmers are characterized by relatively low levels of numeracy, facilitating such information and expecting them to grasp the content effectively can be a challenge. Educated youth with diplomas might not be attracted to such an opportunity as the remuneration is only temporary compared to the white collar positions in the corporate world.

(v). Agro-processing

The National Growth Path and other policies recognize agro-processing as a sector bearing a critical role in promoting manufacturing-based value addition, employment, and increased industrialization. Also, it has the potential to assist South Africa break from the commodity dependency trap. Agro-processing can be defined as the set of activities that processes and transform raw materials and intermediate products

derived from the agricultural sectors (Johnson *et al.*, 2008; ARC, 2018). Agro-processing processes can be clustered into two clusters, namely, primary and secondary processing.

Primary processing includes the most straightforward processes, such as the milling of grains and the processing of sugarcane, and the washing, peeling, chopping, and aging of fresh produce. The secondary agro-processing entails transforming primary processed products into complex products and adding value through complex procedures like mixing, depositing, layering, extruding, drying, fortifying, fermentation, pasteurization, clarification, heating, etc. Secondary processing has more barriers to entry as it requires advanced knowledge in the processes involved while requiring a considerable investment in equipment, technology, and human resource. Given the challenges that rural youth have accessing financial capital, engagement in secondary processing will be low without the intervention strategies from the government, and other stakeholders.

Considering the structure of the South African rural areas, involving rural youth in common value chains might be considered far-fetched. However, there are other value-adding activities, outside the scope of O'Planick (2016), that youth can engage in that include buying and reselling livestock, milling of grains, operating an abattoir, or butchery and transformation of animal skin into traditional clothes. It is, however, worth noting that introducing and maintaining the engagement of rural youth in agricultural value chains will be a long-term process (Trienekens, 2011). This is because such engagements will require a holistic shift in the current mindset of the youth themselves, changes and /or improvements in present policies, creative platforms to disseminate information, skills development, better rural infrastructure, improved access to markets and finance, and such changes cannot be done overnight.

2.5. Synthesis: The Nexus of Youth, Rain-Fed Agricultural Value Chains, and Entrepreneurial Development

Literature details that youth involvement in both agriculture and entrepreneurial activities is very limited. This is despite the recommendations that the two are essential in alleviating the high rates of unemployment, particularly among the youth. Apart from the common challenges that have consistently been identified by research as constraints to entering into smallholder agriculture (poor extension services, lack of access to agricultural land, lack of access to financial capital, *etc*), recent studies have highlighted that the perception that youth have regarding agriculture is among the vital factors accounting for the lack of succession plan in the sector, particularly in primary agriculture. Youth perceive agriculture to be a physically demanding low-status job with relatively low monetary rewards; thus, they prefer jobs from other sectors. These perceptions are partly influenced by their exposure to ICT, particularly social media. On these platforms, the youth are exposed to wealthy and luxurious lifestyles from people with jobs from other sectors like the entertainment industry, resulting in them aspiring such careers other than engaging

in agricultural activities. Considering that literature highlights that the youth of today (millennials) want instant gratification, this is expected.

Agricultural value chains as a subset of agriculture have the potential to attract youth into the sector as it is perceived to not entail “dirty” groundwork like primary agriculture. Such opportunities include retailing and transportation of fresh produce, farm agent, and processing, among other activities. At present, there is very limited involvement, if any, in value-adding activities in remote areas. The majority of the value-adding is done by commercial companies, which leads youth to believe further that engagement in agriculture can only be through primary agriculture. The lack of engagement in AVAEAs by rural people in remote areas might be constrained by many factors, but the potential economic impact (employment creation, sustainable livelihoods, *etc*) that their engagement can provide cannot be overlooked. It might be farfetched to expect rural residents, particularly the youth, to actively engage in value chains due to their limited access to multiple resources, however, engagement through relatively less resource-extensive activities along the chain can be the first step they take.

The importance of entrepreneurial spirit in agriculture cannot be overstated. When aiming to attract the youth into agricultural activities, especially those along value-adding, there is a need for them to be entrepreneurial. Endowment in entrepreneurial spirit and business skills is essential when seeking to attract them into sustainable and profitable economic opportunities along the value chain. However, past research shows very limited youth engagement in entrepreneurial activities, particularly among rural youth from households that do not have entrepreneurial parents. There is a potential to engage rural youth in entrepreneurial agricultural value-adding economic activities. However, this engagement will be a long-term process and will require a lot of transformation.

2.6. Summary

Youth perceive agriculture as a dirty and nonprofit sector; thus, they prefer careers in other sectors. Among other factors, their lack of interest is caused by their exposure to ICTs platforms like social media. Also, the majority of rural youth think that engaging in agriculture means through primary agriculture only forsaking other available opportunities in the agricultural value chain. When seeking to attract the youth to value-adding activities along the value chain, capacitating them with an entrepreneurial spirit and managerial skills is essential. The following chapter details the methodology and conceptual framework that was employed to conduct the study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

This chapter presents a detailed description of the research methodology. It starts by describing the areas where the study was conducted in Section 3.2, followed by an explanation of the procedures for data collection in Section 3.3. Sections 3.4 and 3.5 entail the conceptual framework and the empirical methods used to analyze the data, respectively. The last section of this chapter provides the summary.

3.2. Description of the Study Areas

The ideal areas for this study would be districts within KwaZulu-Natal (KZN) that are dominated by rural youth unemployment and practice or rather have the potential for rain-fed agriculture. The focus was narrowed down to KZN because this research/study is implemented as part of an ongoing project in the province. Furthermore, the province is the second most populated in South Africa (after Gauteng Province) and has more than 60 percent of its population living in poverty. The chosen districts are shown in Figure 3.1 below and discussed in detail in Sections 3.2.1 and 3.2.2.

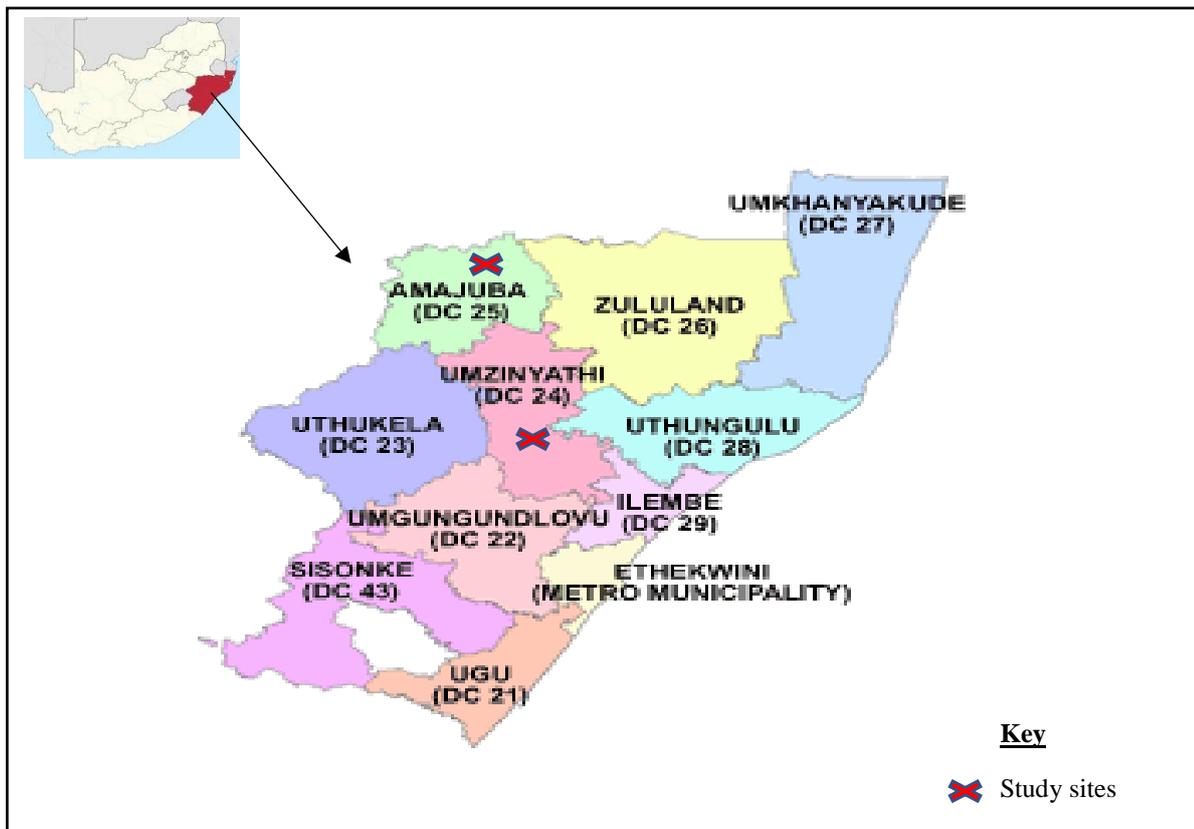


Figure 3.1: KwaZulu-Natal provincial map showing study sites

Source: (Google Maps, 2019)

3.2.1. Umzinyathi District

Umzinyathi is located in the central north of KwaZulu-Natal province, with an estimated population of 510, 337, and area size of 8,589 km² (Brigid *et al.*, 2013). This population accounts for about five percent of the total population of the province. The district is classified as one of the poorest and under-developed rural areas in the province. According to a report by Umzinyathi District Municipality (2018), about 84 percent of the district population reside in rural areas with more than 60 percent living in poverty and food insecurity. The district comprises four local municipalities, namely, Msinga, Umvoti, Nquthu and Endumeni with the economic centres being Greytown and Dundee.

The population structure of the district is dominated by youth and young adults (14 to 34 years) accounting for 33 percent of the total population (Umzinyathi District Municipality, 2018). About 37 percent of the youth is unemployed with an overall district unemployment rate of 29.5 percent (Umzinyathi District Municipality, 2018). Furthermore, the district is characterized by a lack of skills endowment with very low levels of literacy, worsening the socio-economic profiles of the residents, and limiting their potential for development. Also, the backlog on infrastructure in the district does not improve the situation.

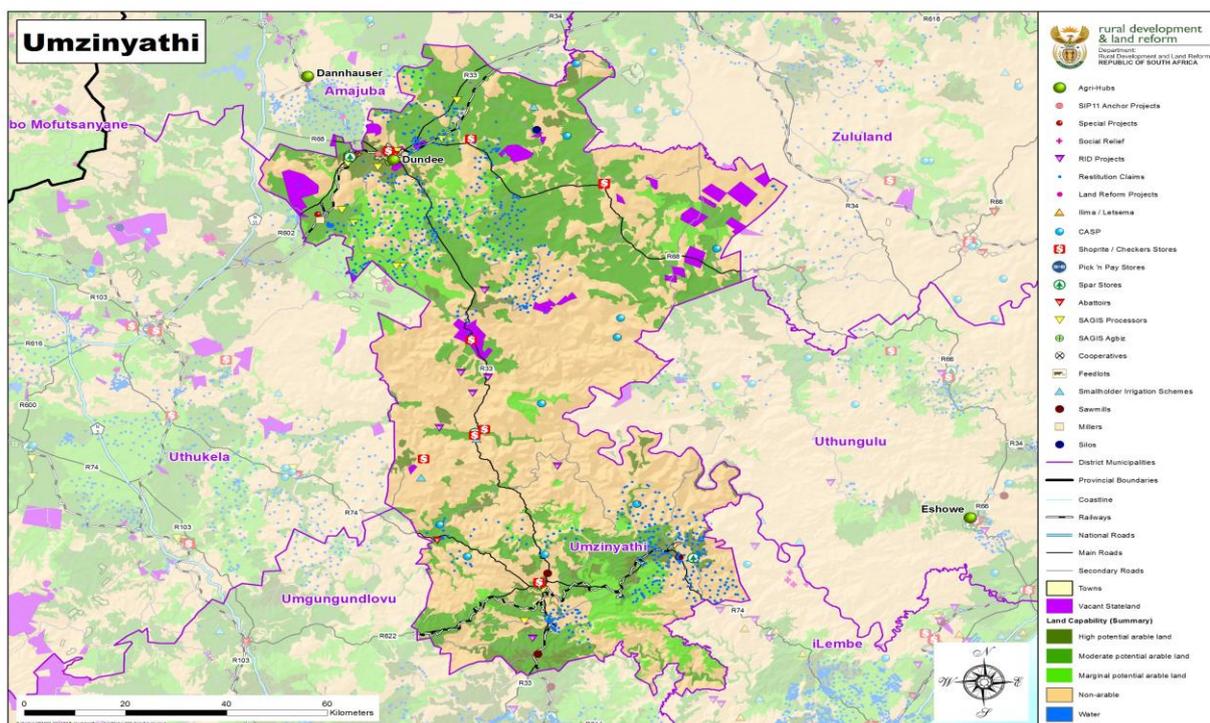


Figure 3.2: Umzinyathi District land potential.
Source: DARD (2015)

The dominant economic activities in the district include community services, manufacturing, transport, and agriculture. According to Umzinyathi District Municipality (2018), the latter is the second highest employer, after community services, accounting for 21.7 percent employment of the district's total labor force. This indicates that agriculture plays a vital role in the economic status of the district and in the lives of the people that reside in it. It is then not surprising that agriculture is one of the earmarked sectors for development in the district.

The high potential arable land in Umzinyathi is depicted in Figure 3.2 above. According to (Umzinyathi District Municipality, 2015), 24.4 percent of the land in the district is used for agriculture and forestry. The district practices both commercial and subsistence agriculture. However, subsistence agriculture is the most dominant occupying 8.9 percent of the land, followed by plantations and annual dryland crops occupying 7.7 percent and 4.1 percent of the land, respectively. The agricultural enterprises in the district include sugar, timber, maize, soya and sugar bean, groundnut, and livestock (Umzinyathi District Municipality, 2016). Umzinyathi District is very cold in winter and mild in summer with a mean annual temperature of 15-20 degrees Celsius, and this is generally good for agriculture (Umzinyathi District Municipality, 2016). The average annual rainfall ranges from 600mm – 1200mm, thus indicating a potential for rain-fed agriculture.

3.2.2. Amajuba District

Amajuba district is located in the north of KwaZulu-Natal near the Umzinyathi district, as shown in Figure 3.1 above. The district has an estimated population of 499 839 in an area of 6 911km². It is predominantly rural and dominated by extensive commercial farmlands. However, some of the farms/land was allocated to local residents through the land distribution programs and have now been utilized for smallholder farming. The district comprises three local municipalities, namely Dannhauser, Newcastle, and Emadlangeni, with the latter being the largest local municipality in the district. Newcastle is the main urban center and economic hub in the district, while towns such as Dannhauser and Utrecht serve as secondary service centers.

Amajuba is categorized by relatively high levels of unemployment, youth-headed families, and poverty. According to Statistics SA (2011), more than 40 percent of the total working-age population in the district were unemployed compared to the provincial average of 33 percent. Furthermore, 50.3 percent of youth in the district were unemployed in 2011, that is, the latest statistics found (Statistics SA, 2012). This is a cause for concern given that the population structure of the district is a pear shape showing a large proportion of children and youth relative to adults.

According to (Amajuba District Municipality, 2014), the district is endowed with an abundance of water, developing infrastructure, and quality education with many destinations for tourist attractions. Thus, there are diverse entrepreneurial opportunities that can be derived from the district. The dominant economic activity in the district is manufacturing. According to Amajuba District Municipality (2014). The district is the largest producer of chrome chemicals in Africa. Unlike in Umzinyathi district, agriculture is not a major employer nor a major contributor to the economic status of the Amajuba District. However, the district is well endowed with very fertile land and suitable climatic conditions that allow for rain-fed agriculture.

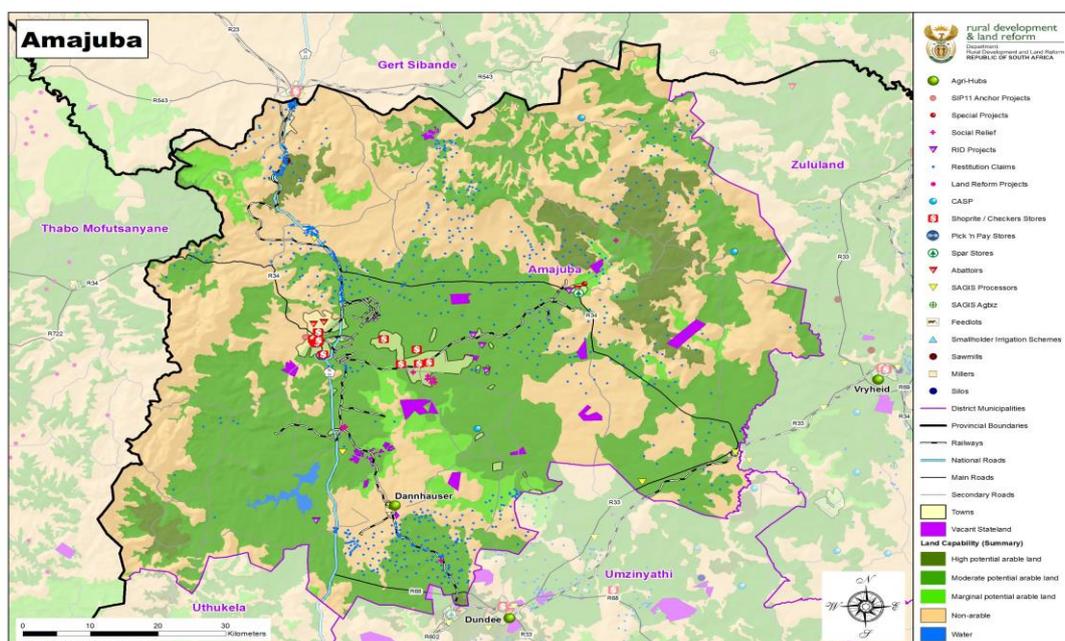


Figure 3.3: Amajuba district land potential.
Source: DARD (2015)

Estimates are that good to high potential land (as presented by the green color in Figure 3.3 above) make up 105 847 hectares or 15.3 percent of the total area in the district (Lazarus Developments, 2014). This means that Amajuba district has a relatively high agricultural land potential compared to other districts like Zululand and Ugu district municipalities. Of the 15.3 percent, approximately 10 percent area is cultivated, with 6 percent being commercial dryland (rainfed) production, 1 percent commercial irrigated production, and 3 percent subsistence dryland (rain-fed) production. The district practices both livestock and crop production. The dominant crops produced are maize, wheat, and Lucerne (Shabalala, 2007). The average annual temperature is 17 °c with a minimum and a maximum of 0 and 30 degrees Celsius, respectively. The average rainfall ranges from 650mm to 1000mm. This condition favors most of the agricultural field crops in rain-fed agriculture.

3.2.3. Justification of the Choice of the Study Areas

The decision to choose the two districts was made as part of the Water Research Commission (WRC)'s project titled "*Entrepreneurial development for establishing small farming businesses and employment by youth in rain-fed crop farming*" of which this study is a part. The selection of the districts under the identified project was based on the following criteria:

- Districts already engaged in rain-fed agriculture;
- Districts that have a high potential for rain-fed agriculture which relates to temperature and rainfall patterns;
- Districts with high agricultural land potential;
- Districts that have high rates of youth unemployment; and
- Limited/absence of research fatigue.
- The two selected districts seem to be in line with the selection criteria as shown in the discussion of the respective districts above.

3.3. Data Collection Procedures

The following section explains the sampling and data collection procedures.

3.3.1. Sampling Procedures

Purposive, stratified, and random sampling were all employed to collect the required data for the study. The study purposefully selected youth (aged between 18 and 35) only instead of focusing on the whole population. The youth were then divided into two strata, namely, youth already engaged in agriculture and youth not currently engaged in agriculture. The sample was stratified in order to compare the two youth typologies in terms of their resource endowment. The study aimed to interview 100 youth in each stratum as statistics on the total number of youth and their distribution in each stratum for both districts were unavailable both at the local districts and provincial offices. In both strata, random sampling was employed to collect the required sample. For the first strata (youth engaged in agriculture), there were difficulties encountered with random sampling due to the limited number of youth engaged, thus, the researcher employed snowball sampling as an alternative. A total number of 72 youth currently engaged in agriculture were then interviewed. In the second stratum (youth not engaged), random sampling successfully resulted in 152 youth being interviewed.

Primary data was collected for a period of two weeks in April 2019 in the two districts, one week in each. With the on-site supervision of the principal investigator, the data were collected by five local native

language (IsiZulu) speaking enumerators in each study area using a structured questionnaire. The enumerators all had a minimum of a national diploma. The questionnaire was written in English and was translated by the enumerators into the native language during the administration. Training was conducted beforehand to make sure the enumerators had the same understanding of the questions and were able to translate them correctly. The completed questionnaires were checked by the researcher to ensure that they were accurately and comprehensively filled. Meetings were also held at the end of each day to discuss and attend to questions and inquiries that the enumerators might have.

Before the actual data collection, pre-testing was done for 2 days, and a total of 15 youth were interviewed. The pre-testing was done primarily to validate the consistency, reliability, and relevance of the questionnaire to the youth. Also, to check repeated or missed variables as well as to verify that the translation of the questionnaire from English to the native language does not lead to changing or misinterpretation of the intended question. After the pre-testing, amendments were done to the questionnaire. These amendments include eliminating all questions that were relevant to youth engaged in value-adding economic activities and value chains after realizing that youth in the selected districts were only engaged in primary agriculture. SPSS 25 and STATA IC15 were then used to capture and analyze the data.

3.3.2. Data Collection Process and Instruments

The questionnaire used to collect the data is attached in Appendix 1 of this thesis. The questionnaire collected data on basic socio-economic information of the youth, such as their age, gender, marital status, and main occupation. More importantly, information on the family structure of the youth (such as household size and whether any household members are engaged in agriculture) was also collected. The questionnaire also included the measures of household wealth such as household assets, sources of income and the estimated amount received from each source, and livestock (total number of livestock and their total estimated monetary value). Moreover, the questionnaire captured the natural, physical and psychological capital of the youth together with their entrepreneurial characteristics and perceptions about agriculture. Questions used to capture variables such as perceptions, entrepreneurial spirit, and psychological capital was structured using a stated preference (SP) approach. The primary reason for selecting this approach over the revealed preference is primarily that the study depended on what the youth stated and would not reveal their behavior as the empirical objectives of the study are mainly *ex-ante*. The author is, however, aware of the hypothetical biasedness of the SP approach and, thus, has made an effort to minimize this impact by carefully structuring the questions asked to measure the above variables. For example, the majority of the questions were closed-ended with a Likert scale answer. On open-ended questions, the answers were censored within a particular range (time the youth were willing

to spend in AVAEAs was censored from 8 am to 5 pm). This method was adapted from Özdemir *et al.* (2009) in this theory of “cheap talk” as a remedy to ease theoretical biasedness. However, it should be noted that the SP disadvantages cannot be fully eliminated given the scope and nature of the study. The same questionnaire was used for both strata of the sample, though, a portion of the questions related to the costs and income generated from agricultural activities was only answered by the youth already engaged in agriculture. The usage of the same questionnaire was done to ensure that the collected information is consistent across both strata of youth for comparison purposes. The study data collection instrument and procedures were approved by the Human and Social Sciences Research Ethics Committee (HSSREC) of the University of KwaZulu-Natal (Protocol reference number: HSSREC 00000470/2019) and informed consent was obtained from each respondent.

3.4. Conceptual Framework

A conceptual framework is generally the inter-link of all the concepts and variables used to achieve the research objectives set. Figure 3.4 below shows the importance of youth engagement in agricultural value chain activities. The current state of livelihood for most rural youth is characterized by poverty, unemployment, and endless social illnesses. Their inability to find employment often results in psychological problems such as depression, social degradation, and loss of morale, and they usually become discouraged (O'higgins, 2001). This is even worse for the youth who have graduated with university degrees. These social ills, in turn, expose them to multiple social issues such as teenage pregnancy, drug abuse, and violence.

It then becomes essential for the rural youth to participate in economic activities (employment or entrepreneurship) that will assist them in generating income and earning a living, improving their livelihoods, and minimizing the psychological and social impacts of unemployment. However, the emphasis should not only be on what the youth can do to alleviate poverty and generate income. Attention should also be given to various factors that can affect the opportunities, capabilities, and prevailing institutions for the youth in earning their living, i.e., choice of livelihood strategy. This is better understood within the context of the Sustainable Livelihood Framework (SLF) for poverty reduction. This is a framework that has been applied in various rural development contexts. It considers all the possible opportunities and/or constraints that can hinder people’s ability to adapt and sustain a livelihood strategy in an economical, ecological, and social manner (Krantz, 2001). This approach considers not only opportunities and constraints but also the vulnerability (weaknesses) of the individual at hand and the social exclusion that can result from choosing a particular livelihood strategy. It goes beyond the conservative approaches to poverty alleviation.

Similarly, when investigating the interest / potential engagement of youth in agricultural value chain activities, under the guidance of the SLF, attention should be paid to the possible opportunities, strengths, constraints, and vulnerabilities that the youth might encounter. There are internal and external factors that have the potential to affect this decision. Internal factors are factors that are in the control of the youth, such as the resources they own/have access to. This includes natural, physical, human, financial, psychological, and social assets. Youth's endowment with these assets is essential according to the SLF; a livelihood can only be managed and sustained with access to various livelihood assets. Ownership/access to particular resources increase the propensity to take up available opportunities, while lack of resources can be a constraint to engaging in certain activities (Barrett, 2006). Thus, for rural youth to be able to achieve the potential livelihood outcomes shown in Figure 3.4, they need to be endowed with various livelihood assets.

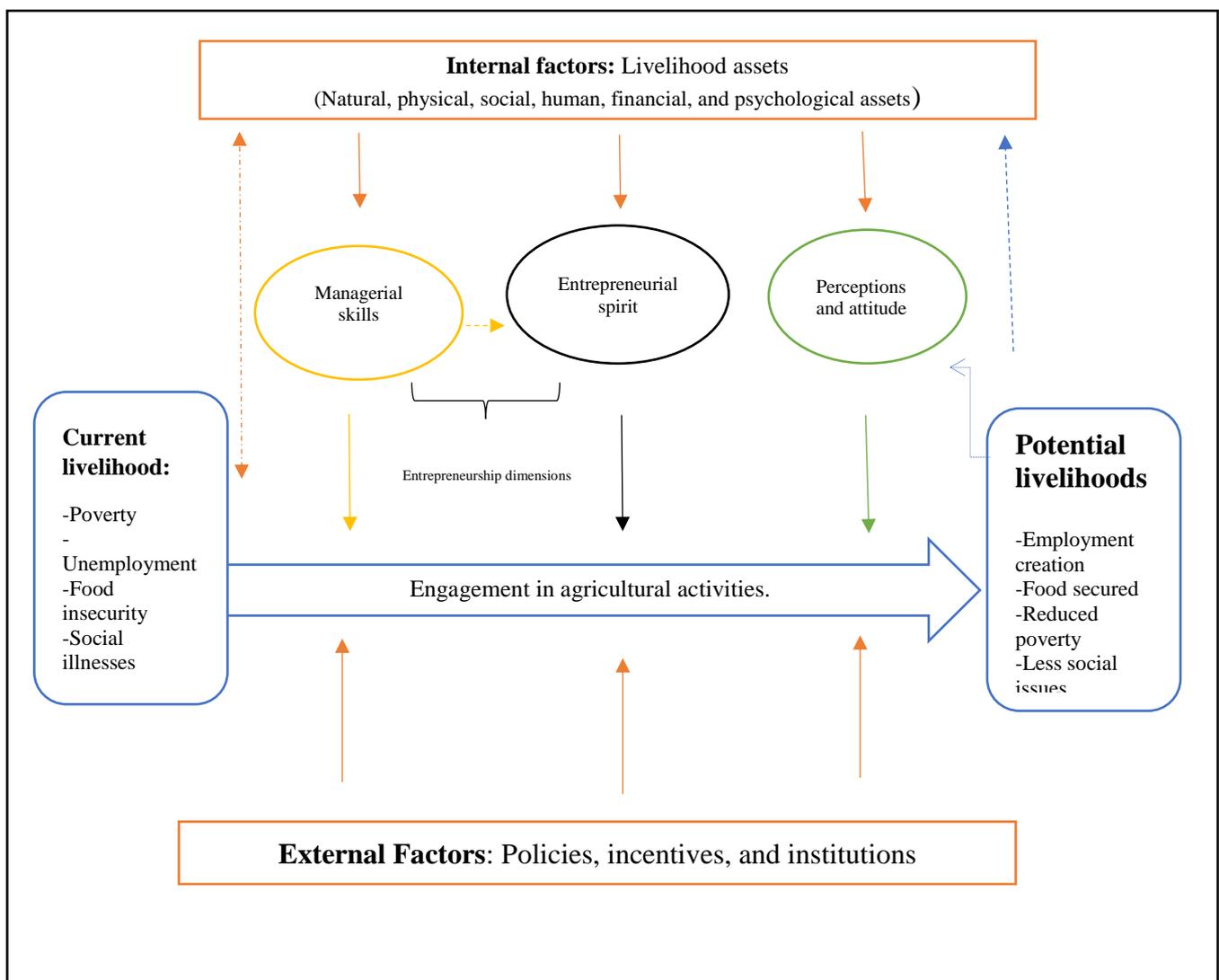


Figure 3.4: Interlinkage of factors affecting youths' interest to engage in agricultural value chain activities.
Source: Adapted from (Luthans *et al.*, 2015; Maluleke, 2016; O'Planick, 2016)

For rural youth to engage in a typical agricultural activity within the value chain, access to or ownership of natural assets (such as land and water) is necessary. Furthermore, one needs to have access to financial assets (income, savings, credit) that will enable one to purchase all the inputs, services, and technologies required to initiate and manage an agricultural activity successfully. Skills, training, and knowledge on how to manage and operate the agricultural initiative are also necessary (Abdullah and Sulaiman, 2013). Access to market and market information will require the youth to have access/own physical assets such as a motor vehicle for mobilization purposes, mobile phones for access to information, *etc.* Furthermore, according to Maluleke (2016), people normally prefer to buy from people they know. This means that endowment in social capital (access to a network of people, groups they belong to, spaces they spend their time within, *etc.*) is also essential. Taking into account that the youth are deemed to be individuals that derive their motivation and aspirations from the achievements of people around them, the kind of people they know and spend time with are important in affecting the decisions they make (demonstration effect and social validation), and this includes decisions on the type of livelihood strategy they engage in (Morrow *et al.*, 2005; Bernard *et al.*, 2014).

Another asset that is essential in affecting the decision to engage in any activity within the agricultural value chains is psychological capital, which focuses on the state of one's mind at a given period in time. This asset is often overlooked in the sustainable livelihoods framework literature (Chipfupa and Wale, 2018). The mindset of an individual affects his/her ability to identify and take advantage of available opportunities (like engagement in agricultural activities) around them. Also, it affects how individual views and reacts to shocks and challenges. This asset focuses more on who you are and how you see the world as an individual. Endowment in this asset enhances the ability of an individual to take up opportunities when they present themselves and also to be resilient to constraints and setbacks that might emerge along the journey. It should be noted that endowment in one livelihood asset and lacking the other is likely to result in an unsustainable livelihood. It is necessary for the endowment in the livelihood assets to be realized and recognized as a package when engaging in a livelihood strategy.

According to O'Planick (2016), the majority of agricultural opportunities available in remote areas require youth to be more entrepreneurial relative to being employable. Retailing, for example, will require the youth to initiate and manage a retail enterprise for fresh produce and/or inputs. Thus, it is essential for rural youth willing to engage in agricultural activities to be entrepreneurial and have an entrepreneurial spirit. As defined in Chapter 2, entrepreneurship is a multidimensional and controversial concept. According to Kahan (2012), entrepreneurship comprises two dimensions. The first dimension entails managerial skills that are important and needed to initiate and successfully manage an enterprise. These include relevant experience, educational background, bookkeeping, and leadership skills (Maluleke,

2016). This dimension of entrepreneurship is closely related to human capital and can be learned and improved with time.

The second dimension of entrepreneurship, according to Kahan (2012), is that of internal drive/motivation to initiate and manage an enterprise successfully, which is often referred to as the entrepreneurial spirit/trait. This is the internal ability that the individual has, which includes the ability to take calculated risks, have confidence, and the ability to seize available opportunities (Maluleke, 2016). This dimension of entrepreneurship is closely related to psychological capital and cannot be learned but can be improved with time. Individuals that are well endowed with managerial skills (educated and have experience) are more likely to be confident and willing to take advantage of available opportunities (like engagement in agricultural activities).

Also, since this study investigates interest and potential participation, not actual participation, it adopted the theory of reasoned behavior to explore the factors affecting youths' interest to partake in agricultural activities. According to this theory, perceptions and social validation (how people around you perceive the given activity/choice) that one has regarding a particular activity/choice affect how she/he will react towards that choice/action (Fishbein and Ajzen, 2011; Montano and Kasprzyk, 2015). The theory assumes that an individual that perceives a particular activity as a bad act is less likely to be interested to engage in/doing it. Thus, following this theory, the perceptions that the youth have regarding agriculture have an impact on their interest to engage in such agricultural activities.

External factors that have the ability to affect the engagement of the youth in agricultural activities include policies, incentives, and institutions. These are factors out of the control of the youth but have an impact on the type of decisions that they make. For instance, the institutional requirement for credit access limits their access to financial assets that might be a constraint in engaging in agricultural activities. Furthermore, cultural norms practiced in rural areas like land being available to elders and married individuals only also have an impact on the ability of the youth to engage in agriculture. In sum, the modified sustainable livelihoods framework and empirical studies in the past have guided the author's decision on the variables to include in the empirical analysis of the current study.

3.5. Empirical Methods of Data Analysis

Multiple econometric methods were employed to achieve the objectives set in this thesis. Table 3.1 below shows a recap of the specific objectives of the study and the econometric model used in each. The models are then explained in detail in Sections 3.5.1 –3.5.4 below.

Table 3.1: Specific objectives and econometric models

Specific Objectives	Econometric method
Investigate the factors affecting rural youths' interest to engage in agricultural activities	Multinomial logistic regression
Evaluate the impact of rural youths' entrepreneurial spirit and managerial capabilities on their potential participation in AVAEAs.	Principal component analysis Fractional logit regression

3.5.1. Descriptive Statistics

Descriptive statistics were used to explain and compare the resource endowment of the two strata of youth involved in the study. Also, it was used to understand the interest of rural youth to engage in primary agriculture relative to other agricultural activities along the value chain. The descriptive statistics included the usage of percentages, frequencies, means, tables, and graphs. Furthermore, statistical tests like the Pearson correlation *chi-square* test and the *t-test* were also employed. The chi-square test was used to test the degree of association of categorical variables among the two strata the t-test was used to compare the continuous variables among the two strata. Chapter 4 details all the descriptive statistics results relevant to the study.

3.5.2. Multinomial Logistic Model

Multinomial Logistics (MNL) is a categorical choice regression model that explores the likelihood of an individual selecting a certain choice over other choices given a particular set of independent variables (Gujarati and Porter, 2009). The model is only applicable to choice models that have a polychotomous dependent variable i.e., have a dependent variable that has more than two choices /alternatives/options. For such dependent variables, the application of binary models like probit and logit models is not possible. There exist other polychotomous models like the ordered logit that can be used to analyze polychotomous dependent variables. However, as the name suggests, the dependent variable should have some form of ordering. For this study and for the objective given in Table 3.1, it would not be possible to apply the ordered logit since the dependent variable does not exhibit any form of ordering. This leaves the MNL as the most appropriate regression to achieve consistent parameter estimates.

The polychotomous dependent variable used in the MNL captured agricultural activities that rural youth have an interest to engage in. For this study, there were three available agricultural activities that rural youth can be interested in participating in, namely “primary agriculture only,” “AVAEAs only,” and the “whole value chain” as shown in Figure 3.5 below. Because the study is not product-specific, the option “primary agriculture only” entails all the activities involved in the production stage of crop, vegetable, and livestock farming. “AVAEAs only” includes all the other activities outside the agricultural production stage such as retailing, buying and reselling of livestock, agricultural market agents, *etc.* The option “Whole value chain”, due to a lack of a better word, entails simultaneously incorporating the production stage and the value-adding activities jointly. Considering the possibility that some of the youth might have no interest in any of the three options/activities, a fourth option/activity was added as one of the options for youth which is “not interested in any agricultural activity”.

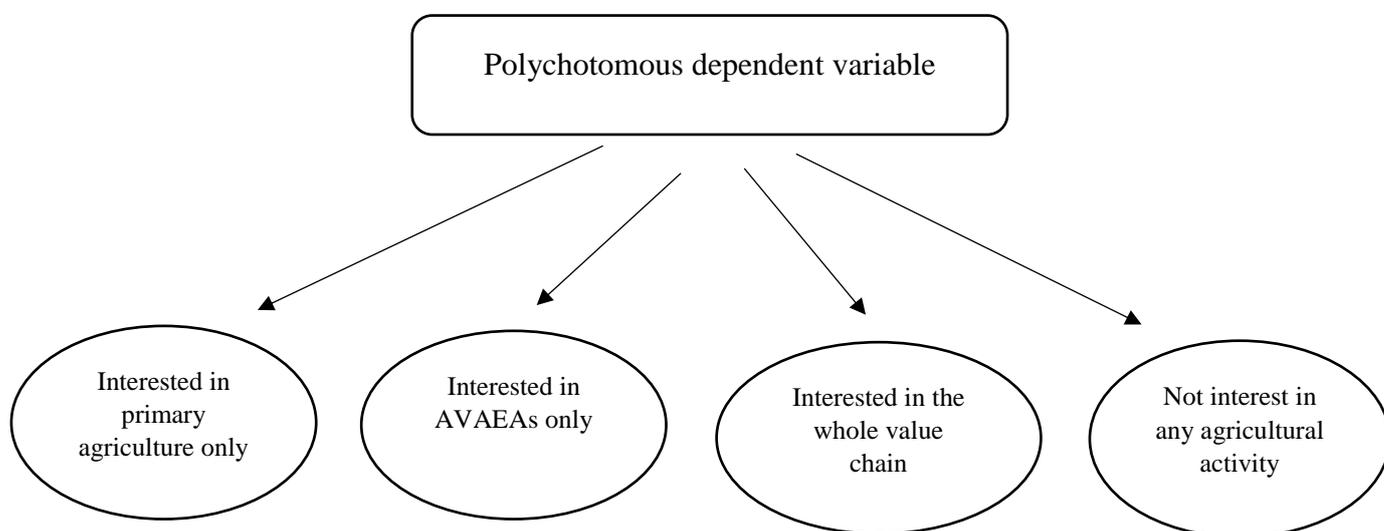


Figure 3.5: Structure of the dependent variable.

Given the above explanation, the structure of the dependent variable as structured in the questionnaire to capture the above-listed options is presented in Table 3.2 below.

Table 3.2: Structure of the dependent variable

Activity	Please tick one box that is relevant to you
Interested in primary only	
Interested in AVAEAs only	
Interested in the whole value chain	
Not interested in any agricultural activity	

Source: Survey questionnaire (April 2019)

(i). *Independent variables in the MNL model:*

The independent variables that were included in the MNL are listed in Table 3.3 and discussed in detail below. The description of the variables and their expected signs are presented for categories 1, 2, and 3 combined relative to category 4. This means that the explanations and the expected signs are for youths' interest to partake in agricultural activities relative to not being interested to participate in any. This was done inclusively so that the expected signs and unit of measure for all the variables are similar across all the three categories relative to the reference category.

Location - This is a dummy variable meant to see if rural youth's location/district has an impact on the youths' interest to partake in agricultural activities. This variable is included after realizing the difference in the dominant economic activities of the two districts where the data was collected.

Age – Age is measured as the age of the youth in years. Past studies have associated agriculture with old age. According to Bezu and Holden (2014), smallholder farming in rural areas is dominated by elderly people with youth shying away from the sector. For this reason, the expected sign for this variable is positive. That is, as the youth age, they are more likely to show interest to engage in agricultural activities.

Table 3.3: Description of variables in MNL

Variables	Unit of measure	Expected sign
<i>Independent Variables</i>		
Location	2= Umzinyathi, 1= Otherwise	-/+
Age	Years	+
Age ²		
Gender	1= Male, 0=Otherwise	-/+
Dependecy_ratio	Ratio	-
Education	Grades	-
Training	1 = Yes, 0 = otherwise	+
Land	Hectares	+
Credit	1 = Yes, 0 = otherwise	+
Household_Agric	1 = Yes, 0 = otherwise	+
Social group	1 = Yes, 0 = otherwise	+
Social media	1 = Yes, 0 = otherwise	-/+
LogICT	Rands	+
LogHhldWealth	Rands	+
Pos_Psych	Scoring	+/-
Perception_Agric	Scoring	+
Prior_Know	Likert scale	+

Gender – Gender is included in the model as a possible factor that can influence youth’s interest to partake in agricultural activities given the stereotypes and cultural norms that exist in rural. According to Bezu and Holden (2014) and Akpan *et al.* (2015), females participate more in agriculture relative to males as males become susceptible to urban migration. This study aims to find out if the gender of the youth influences their interest to participate in agriculture.

The dependency ratio – This variable captures the dependency ratio of the household where the youth resides. It is calculated by dividing the number of people who are not in the working-age group (under 15 years of age and above 65 years of age) by the number of people in the working-age group (between ages 15-65). It is expected that the higher the dependency ratio, the lower the likelihood of that youth being interested to partake in time-demanding agricultural activities. This is because they might have to take care of the dependents in the family and thus might not have time to engage in agricultural activities (Yobe *et al.*, 2019).

Education – This is a continuous variable measured by the highest grade the youth have achieved. It is expected that with higher education, youth will prefer modern jobs with relatively competitive salaries in other sectors. Also, past studies indicated that educated people do not have a preference for agricultural-dominated livelihood strategies (Ellis, 1998; Nwaogwugwu and Obele, 2017; Yobe *et al.*, 2019).

Training – Past studies have identified a lack of agricultural training as a limiting factor to participation in agriculture (Aphunu and Atoma, 2010; Abdullah and Sulaiman, 2013; Bezu and Holden, 2014). For this reason, the study included a dummy variable that captures if the youth have attended an agricultural-related training. It is expected that youth who have attended such training will be more likely to be interested in partaking in agricultural activities as they have skills and knowledge on how to initiate and run such activities.

Land – Access to land is a limiting factor for smallholder farmers' participation in agriculture, specifically primary agriculture (Abdullah *et al.*, 2012). Even though engagement in AVAEAs might not require access to relatively large amounts of land, the place/space where the businesses will be operated is still required. The expected sign for this variable is positive. That is, youth who have access to land are more likely to be willing to partake in agricultural activities. The variable is a continuous variable that captures the amount of land that the youth own / have access to.

Credit – Access to credit is a dummy variable that was created using the World Bank (2005) measure. The above reference measured access to financial capital by using two factors, namely, if the individual in question has accessed credit in the past 12 months and if they are actively involved in savings (group

savings or alone). For this study, this variable was constructed using the first factor only as a measure of access to financial capital. The expected sign for this variable is positive. That is, youth who have access to financial capital (in this case credit) are more likely to be interested in partaking in agricultural activities.

Household_Agric – The study aims to investigate the impact of the demonstration effect on youth interest to partake in agricultural activities. This follows the notion that young people are more likely to derive their motivation/interest from people they know (Morrow *et al.*, 2005). The variable is meant to look at the possibility that the demonstration effect has an impact on the youth's interest to partake in agricultural activities.

Social groups and Social media – These two variables were meant to capture the social capital endowment of the youth, in addition to the demonstration effect above. When assessing social capital, particularly for youth, it is eminent to include social media in this age of digitalization (Irungu *et al.*, 2015). Social groups capture youth membership of any community social group while variable social media assesses if the youth have a social media account (Facebook, WhatsApp, Twitter, *etc.*).

LogICT – The log of ICT is a natural log of the total monetary value of all the ICT assets that the youth have access to. These assets include TV, Radio, cellphones, laptops, *etc.* The natural log was used to reduce the range/variation of the variable. Access to ICT affects social capital, and usage of ICT assets impacts access to information affecting the decisions and knowledge that the youth have. The expected sign is positive as one would expect an individual with more access to information to know about various income generation agricultural opportunities that are available and can be explored within their surroundings.

LogHhldWealth – Log of household wealth is a natural log of the total monetary value of all the household assets that the youth resides in minus the ICT assets as this is a variable on its own. The expected sign for this variable is positive as youth from relatively wealthier families have access to relatively more assets giving them more advantages / limited constraints that can hinder them from being interested in engaging in agricultural activities (Bezu and Holden, 2014).

Pos_Psych - This variable measures positive psychological capital, and it was created by summing the Likert scale (1 to 5, with 1 = strong, disagree, and 5 = strongly agree) scores of 8 positive statements that captured the four constructs of psychological capital. The minimum and maximum values of this variable were 8 and 40, respectively. A score of 8 indicates no endowment in positive psychological capital (youth that lacks confidence and resilience while also not hopeful and optimistic), while a score of 40 indicates that the youth is well endowed with positive psychological capital. This variable was added as the study

adopted the Sustainable Livelihood Framework and with guidance from studies that applied a similar approach, such as that of Cele (2017) and Chipfupa and Wale (2018).

Perception_Agric – This variable was created by summing the Likert scale scores of 4 positive statements that captured rural youths’ perceptions regarding agriculture. The minimum and maximum values of this variable were 4 and 20, respectively. A score of 4 shows that the youth has negative perceptions of agriculture, and a score of 20 will indicate the opposite. This variable was added with the guidance of the theory of reasoned behavior by Montano and Kasprzyk (2015) as discussed in the conceptual framework.

Prior_Know - This variable is a Likert scale that measures if rural youth had any prior knowledge about agricultural activities. The aim of adding this variable was to see if rural youths’ interest or lack of interest in agricultural activities is affected by what they already know as Kising’u (2016) found that lack of agricultural knowledge affected youth participation in agriculture. The variable is a close substitute for agricultural experience.

3.5.3. Principal Components Analysis

Principal Component Analysis (PCA) is a multivariate analytic technique that reduces the dimensionality of interrelated variables while simultaneously retaining the existing variation of the data. This prevents multicollinearity within the data set and also makes interpretation of the data relatively easier (Gujarati and Porter, 2009; Jolliffe, 2011). Within a given set of correlated variables, PCA creates orthogonal components where each component is a linear combination of the initial variables. The components are ordered so that the first principal component captures the largest variation within the original variables while the second component measures the second largest variation, etc. Since the PCA produces multiple components, past researchers used the Kaiser criteria to identify how many PCs to retain (Gujarati and Porter, 2009). This criteria’s rule of thumb is that components with eigenvalues greater than one should be retained while those with eigenvalues less than one should be dropped. Furthermore, a Kaiser-Meyer-Olkin (KMO) test is required when one uses PCA as this test verifies the validity of the PCA. If the KMO value is less than 0.5, this indicates that the given variables do not need PCA while the opposite is true. PCA was used to create indexes for entrepreneurial spirit and managerial capabilities that are used in the Fractional Logit Model as independent variables.

3.5.4. Fractional Logistic Regression

The second objective of the study sought to examine the impact of entrepreneurial spirit and managerial capabilities on the potential participation of rural youth in AVAEAs. The model was estimated twice with different dependent variables that attempted to measure potential participation. The first model was

estimated using the proportion of time the youth were willing and able to spend on a particular AVAEAs every day. The youth had to choose the number of hours within the normal working hours period (from 8 am to 5 pm). Time spent on an activity as a measure of participation was also used in other studies such as Akpan *et al.* (2015).

The second model was estimated using the proportion of money the youth are willing to contribute towards initiating an AVAEAs if they had the money. Although there is no available study that was done using money invested in a business opportunity as a measure of participation, it is essential to note that people only invest in businesses they perceive to be profitable. This means that if a youth is willing to invest more money towards initiating an AVAEAs they perceive that initiative to be profitable, and this means that they are relatively more likely to participate in AVAEAs. The maximum amount of money the youth would contribute was limited to R20 000. Both dependent variables were then divided by their maximum limit value (for the time it was 8 hours and for money was R20 000) to obtain proportions per individual youth.

This means that both dependent variables in the two models are proportions. Thus, Ordinary Least Squares and other binary methods can not be used to estimate consistent estimates. Other available methods used to analyze proportional dependent variables include the Fractional Probit Model (FPM). However, the FPM can not be used in this case as both the proportional dependent variables are not normally distributed (test for normality of the dependent variables are reported in Section 5.3). This then makes the Fractional Logit Model the appropriate model. In addition to the PCA variables, other independent variables used in the fractional models are similar to those discussed in the MNL model above.

3.6. Summary

The purpose of this chapter was to give a detailed explanation of the areas where the study was conducted and to also highlight the criteria that were followed in selecting them. Furthermore, sampling and data collection procedures are explained in detail. The data collection instrument and the conceptual framework which was followed to structure the study were also explained. The latter part of this chapter gives a detailed description of both the empirical methods (descriptive statistics, MNL, Principal Component Analysis, and Fractional Logistics Model) and the variables used in each objective.

CHAPTER 4: DESCRIPTIVE ANALYSIS

4.1. Introduction

This chapter presents and discusses the descriptive analysis results of rural youth. The analysis is done to summarise the data collected and, also, to understand the characteristics of the youth interviewed. The data presented in this Chapter was analyzed using frequencies, means, percentages, t-tests, and chi-square test statistics. The statistics compare the socio-economic and demographic characteristics of the youth according to youth typology and location. Also, the statistics compare the asset endowment of the different types of youth. Some of the variables discussed in this Chapter are then later used in the empirical models as dependent and independent variables.

4.2. Descriptive Analysis: Results and Discussion

4.2.1. Youth Typologies

The sample drawn comprises two different types of youth. Youth who are already actively engaged in agricultural activities and youth who are currently not engaged in any agriculture-related activities. For simplicity purposes, youth engaged in agricultural activities will be referred to as “engaged,” and youth who are currently not engaged in any agricultural activities will be referred to as “not engaged” for the rest of the study. Youth engaged referred to engagement in primary agriculture only due to the absence of youth engaged in other agricultural activities in the selected districts. Table 4.1 below shows the frequency of the two types of youth in the two districts where the data was collected. The majority of the sample was collected from the Umzinyathi district relative to Amajuba particularly because of the differences in the total population (Amajuba total population = 499 839 and Umzinyathi total population is = 510 838) of the two districts.

Table 4.1: Types of Youth (n = 224)

Youth typology	Districts		Total
	Amajuba	Umzinyathi	
Engaged	41.0	31.0	72.0
Not engaged	63.0	89.0	152.0
Total	104.0	120.0	224.0

Source: Survey data (April 2019)

A total of 224 youth were interviewed, and of this total, 72 were already engaged in primary agriculture. This is because there is very limited youth participation in agricultural activities not only in the two districts but in most parts of the SSA (Aphunu and Atoma, 2010; Abdullah and Sulaiman, 2013; Ahaibwe *et al.*, 2013; Bezu and Holden, 2014; Adesina and Favour, 2016). The empirical analysis presented in Sections 5.2 and 5.3 included only youth who are currently not engaged in agriculture as the study uses the ex-ante approach to investigate the interest and potential participation of the rural youth to engage in agriculture. However, the youth who are engaged in agriculture are also included in most of the descriptive statistics to understand the difference in resource endowment of the two types of youth.

4.2.2. Description of the Youth Demographics

Tables 4.2 and 4.3 detail the demographics and household characteristics of the sampled youth, respectively, according to youth typology and location. Table 4.2 compares the youths' demographics using the chi-square test and t-test for categorical and continuous variables, respectively. According to the figures presented in Table 4.2 below, there is a significant difference in gender among the youth typology and location. In general, the sample is dominated by females with a percentage of 60.7. The reason for this can be that in rural areas, males often migrate to search for employment opportunities in cities, often leaving females in rural areas. Also, within the youth already engaged, the same pattern is realized as more than 50 percent of the sample are females. This can be that the remaining males in the rural areas often take up responsibilities like taking care of the livestock or do relatively more demanding jobs like bricklaying, thus their limited involvement in agriculture.

The results also indicate that most of the youth interviewed were unemployed. This is not surprising given the unemployment statistics of the country and that of the province in which this study was conducted, as highlighted in Chapter 3. The average age of the sampled youth is 26.4 years. The t-test, however, highlights a statistical difference in the age distribution between the two types of youth. The average age of youth engaged is 27.7 years, which is slightly higher than that of youth not engaged (25.8 years). The results indicate that relatively older youth are engaged in agriculture. The relationship between age and youth's interest to engage in agriculture is explained further in Chapter 5. There is no statistical difference in the dependency ratio among the youth typology and location. However, households, where youth engaged reside, have a higher dependency ratio relative to those not engaged. Similarly, Amajuba has a relatively higher dependency ratio relative to Umzinyathi district.

Table 4.2: Description of the demographical characteristics of the youth in percentages (n = 224)

Demographical characteristics in %		Districts			Youth Typology			Total n = 224
		Amajuba (n = 104)	Umzinyathi (n = 120)	Chi square test	Engaged (n = 72)	Not engaged (n = 152)	Chi-square test/t-test	
Gender	Female	53.8	66.7	3.8**	52.8	64.5	2.8*	60.7
	Male	46.2	33.3		47.2	35.5		39.3
Marital status	Single	94.2	98.4	2.9	94.4	97.3	6.7**	96.5
	Married	3.8	0.8		5.6	0.7		2.2
	Cohabiting	1.9	0.8		0	2.0		1.3
Main occupation	Full time farmer	22.5	39.4	20.2***	94.4	0.0	216.1** *	30.4
	Regular salaried job	0	0.8		1.4	0.0		0.4
	Temporary job	7.7	5.0		4.2	9.2		6.3
	Self-employed	1.0	5.0		0.0	2.6		3.1
	Student	12.5	4.2		0.0	11.8		8.0
	Unemployed	39.4	62.5		0.0	76.3		51.8
Age		26.1	26.6	-0.8	27.7	25.8	2.6**	26.4
Household size		6.4	6.9	0.0	6.3	5.9	0.4	6.9
Dependency ratio		2.3	1.4	0.9	1.9	1.2	1.1	1.6

Source: Survey data (April 2019)

Table 4.3 below shows the family structure of the sampled youth classifying them by type of youth. The chi-square test indicates a significant difference between the two types of youth with regard to their household member engagements in agricultural activities. A total of 83.3 percent of the youth engaged have family members already participating in the sector compared to the 58.3 percent of the youth not engaged. This is in line with Eddy *et al.* (2010a), who identify youth as people whose interests/aspirations are evidence-based. Thus, it then becomes plausible to assume that the engagement of the youth in the sector is a direct influence by the members of the households already engaged. However, one can argue that the engagement of the youth in the sector, given the household member participation, does not reflect interest. It can be that the youth are obligated to assist their parents in maintaining the family farm/garden (Ahaibwe *et al.*, 2013). Such a claim is also supported by the family structure of the sampled youth. Most of the youth stay with their paternal/maternal families (86 percent), with a very limited percentage (4 percent) that stay with their own families. Nevertheless, the impact of the demonstration effect should be noted.

Table 4.3: Household characteristics of the youth (in percentages)

Household characteristics		Type of youth			Total (n = 224)
		Engaged (n = 72)	Not engaged (n = 152)	Chi-square test	
Any of the household members involved in primary agriculture?	Yes	83.3	58.6	13.5***	66.5
	No	16.7	41.4		33.5
Family structure	Stays alone	3.0	9.0	0.9	10.0
	Stays with own family	13.0	5.0		4.0
	Stays with ma/pa-tenal family	84.0	86.0		86.0

Source: Survey data (April 2019)

4.2.3. Resource Endowment of the Youth

The research utilizes the SLF that considers all the resource base of an individual, including their vulnerability, challenges, and strength in choosing and maintaining a livelihood strategy (Ellis, 1998). This section details the resource endowment of the youth comparing them according to youth type. To avoid biased comparisons between the types of youth since the sample size is not evenly distributed, the percentages presented in the tables and graphs were calculated per type of youth, not as a percentage of the total sample. This section compares youth not engaged and youth engaged in terms of their endowment in human, financial, social, natural, physical, and psychological capital. Also, the descriptives compare perceptions and entrepreneurial traits endowed by the two different types of youth.

(i) Human capital

The skills and cognitive knowledge that one is endowed with have a role in influencing one's ability and interest to partake in or initiate a particular activity, as explained in Chapter 3. Human capital forms part of the managerial skills component of entrepreneurship, as explained in Chapter 3. Endowment in education, personal skills, and training plays an important factor in enhancing the entrepreneurial capabilities of an individual. Thus, Table 4.4 below presents the human capital endowment of the sampled youth. A relatively higher percentage (45.8) of the youth not engaged in agriculture have post-matric qualifications relative to those engaged (28.3). This suggests that educated youth might not have an interest to participate in agricultural activities, therefore keen to do something else. This supports findings

by Bezu and Holden (2014) and Abdullah and Sulaiman (2013) that linked formal education to exposure and preference for off-farm wages and/or livelihood strategies.

Table 4.4: Human capital endowment of the youth (in percentages)

<i>Types of skills</i>	Not engaged (n=152)	Engaged (n=72)	Chi-Square test
<i>Formal Education</i>			
Have tertiary qualification (post matric)	45.8	28.3	8.5**
<i>Training</i>			
Have received agriculture-related training	26.3	46.5	7.6*
Have attended leadership related training	75.7	66.7	4.0
Have exposure to business planning	57.9	47.2	2.5
Have exposure to financial recording	63.2	55.6	4.2
<i>Managerial skills (Soft skills)</i>			
I am able to allocate tasks (delegation)	51.3	69.4	8.2*
I prefer planning things before I execute them (Planning)	91.4	94.4	5.1
Often manage to finish tasks at the time I set to complete the tasks (time management)	38.8	34.7	7.1
Prefer to be in leadership positions whenever I am in a group	58.5	58.3	0.1

Source: Survey data (April 2019)

Over the years, the South African Department of Agriculture, Forestry, and Fisheries have initiated programs and projects with the aim of transferring skills and knowledge to all youth regardless of whether they are engaged in the sector or not. These initiatives include the offering of agriculture-related learnerships, internships, and training/workshops (AgriSETA, 2016). However, the results of the study suggest that these trainings did not reach all youth. Table 4.4 shows that only 46.5 percent of the youth engaged in agriculture received agricultural-related training relative to 26.3 of those who are not engaged. These statistics suggest a need for agricultural training among the youth in the sampled areas.

The study further shows that about 47.2 and 57.9 percent of the youth engaged and not engaged, respectively, have exposure to business planning. This is unexpected as one would expect youth already in agriculture to have more exposure to business planning as they are currently managing and running their agricultural businesses. These low statistics support Kahan (2012) and Wale and Chipfupa (2018),

who stated that farming initiatives in remote areas are often run as a means of living, not as a business initiative. This explains why the majority of youth who are running agricultural initiatives do not have business plans or exposure to business planning. This mindset should be changed for any transformation to be realized in rural communities. Farming enterprises should be recognized and operated as business entities.

Concerning soft skills, that form part of the managerial skills component of entrepreneurship, both the two types of youth show a relatively high percentage of endowment in planning, delegation, and leadership skills. However, the two groups have a low percentage of individuals endowed with time management skills. Their inability to manage time is likely to affect their productivity when/if such youth initiate businesses. Since time management can be learned and improved over time, it should not be seen as a constraint.

(ii) Social capital and access to information

The importance of social capital endowment among the youth cannot be ignored given the impact it has on decisions the youth make. Also, considering the influence of the demonstration effect and social validation on the behavior and choices of the youth, it is essential to consider the youth’s social capital endowment as an active factor when exploring their interest in agriculture or any sector for that matter. Morrow *et al.* (2005) identify youth as individuals who make decisions and choices based on what they see. Also, Ray (2006) and Bernard *et al.* (2014) have highlighted that people’s aspirations are often derived from the achievements of others around them. Given this, the study investigated if youth have role models, that is, people they admire and want to imitate, as presented in Figure 4.1 below.

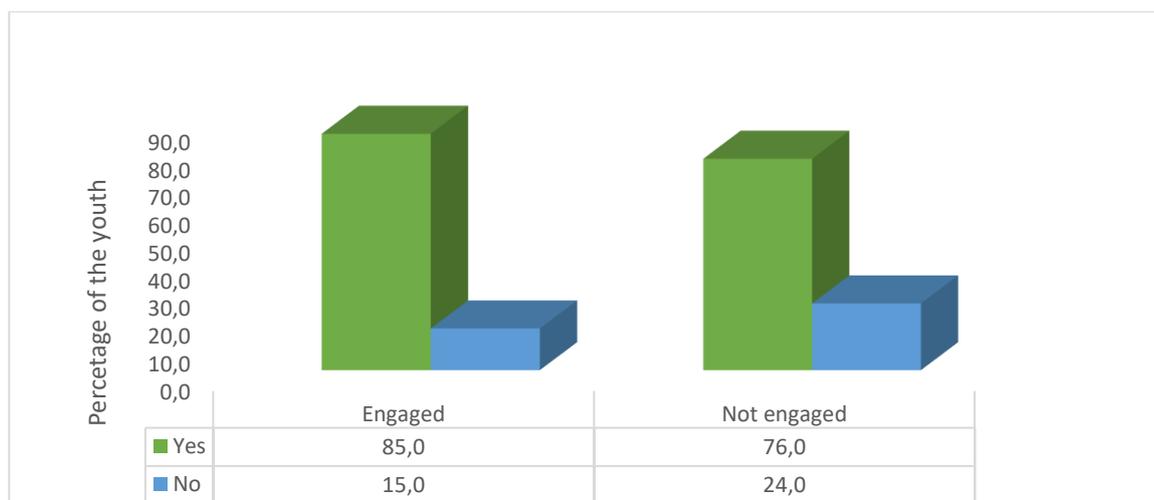


Figure 4.1: If the youth have a role model (n = 224)
Source: Survey data (April 2019)

The majority of the youth from both groups do have role models. The study further investigated the sectors in which the youth have role models. Figure 4.2 below indicates that the majority of the youth engaged in agriculture have role models in the entertainment industry, education, and agriculture, respectively, while those not engaged have role models in entertainment, education, and manufacturing, respectively. The commonalities of these findings suggest that youth from both groups look up to individuals in entertainment, that is, the singers, actors, vloggers, *etc.* This is as expected, given their exposure and the time they spend on social media, as indicated in Table 4.5 below. This finding alone highlights the impact of social media on the choices that the youth make. This then makes it essential to integrate agriculture into social media. Agriculture should be marketed and promoted the same way the entertainment industry markets and promotes itself on social platforms. The distinguishing factor among the two youth typologies is the third sector where their respective role models are in. For engaged youth, the third frequent sector of their role models in agriculture. They are inspired and want to imitate people who are doing the same thing as they are doing. Again, the demonstration effect comes into place.

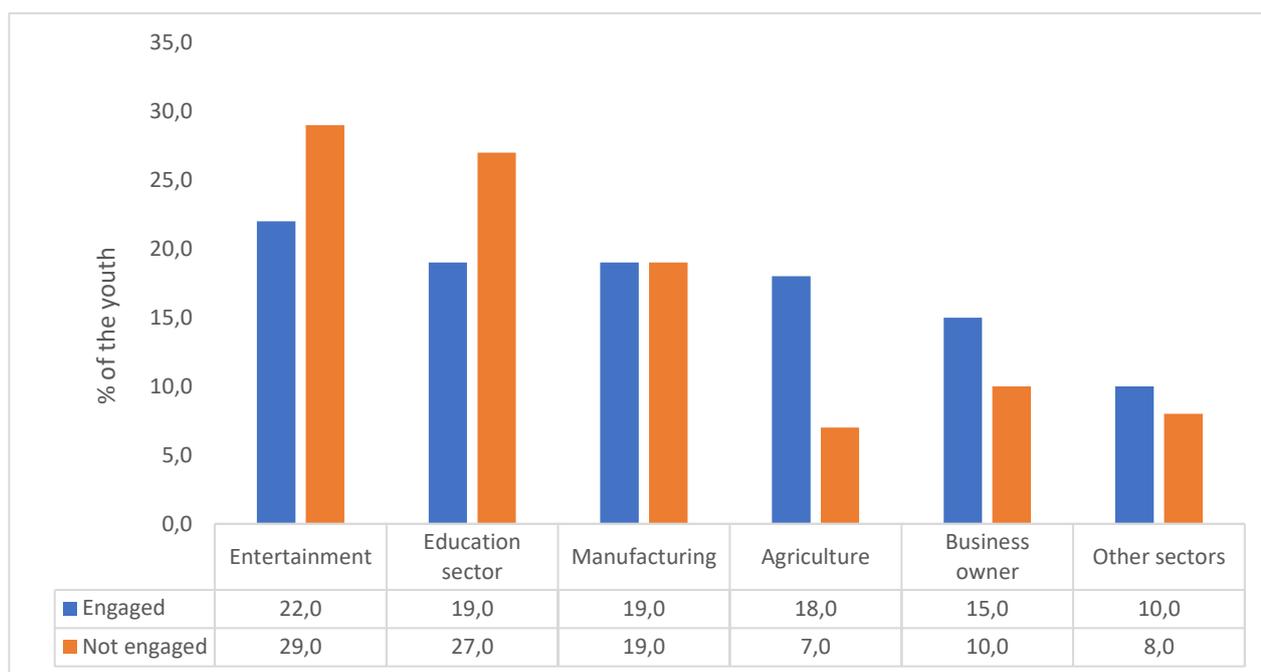


Figure 4.2: Youth role models per sector per youth type (n = 224)

Source: Survey data (April 2019)

Figure 4.3 presents the role models per district where data was collected. Youth from Umzinyathi have role models in the entertainment, education sector, and agriculture, respectively, while those from Amajuba have role models from entertainment, manufacturing, and education. Given the economic structures of the two districts, referring to the detailed explanation of the districts in Chapter 3, it is expected for the youth in Amajuba to have role models in the manufacturing sector. It is worth noting that the majority of this manufacturing is for chrome chemicals, not agro-processing. However, the presence

of these manufacturing activities in the district might be an indication that the district has an environmentally allowing structure for manufacturing-related activities. Thus, there might be potential agro-processing initiatives that youth from this district can initiate.

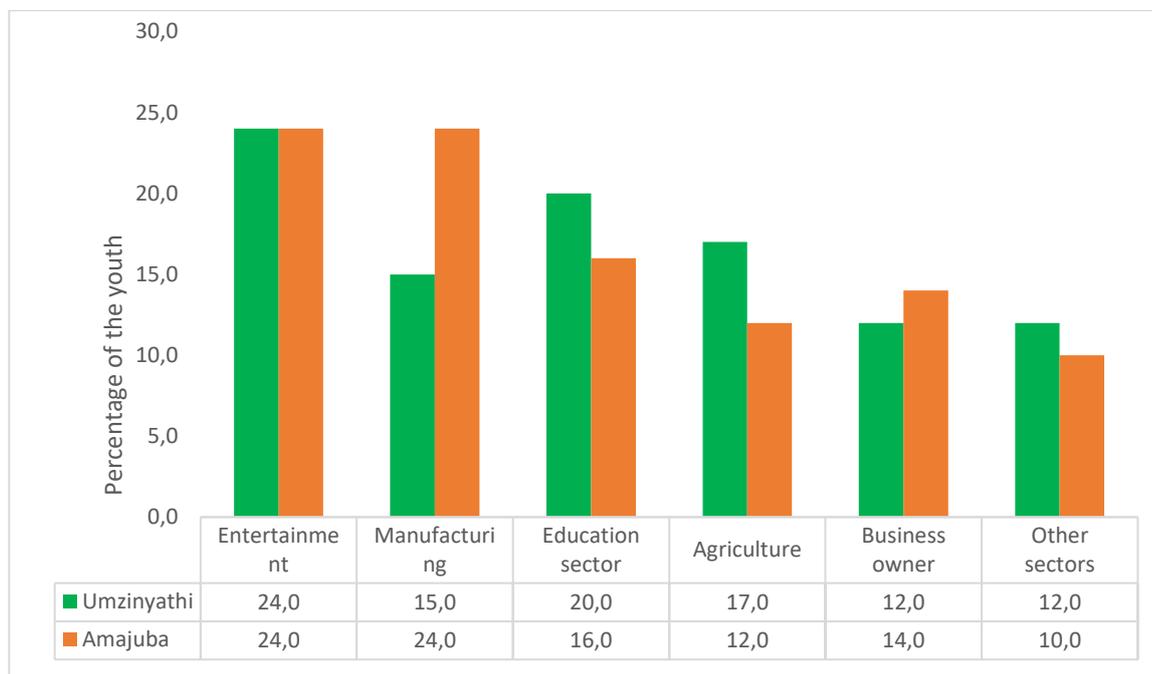


Figure 4.3: Youth role models per sector per location (n=224)

Source: Survey data (April 2019)

Access to information has been identified as one of the major challenges faced by smallholder farmers in remote areas irrespective of age (Munyua, 2007; Nakasone *et al.*, 2014). Also, Adesina and Favour (2016) have linked the lack of access to adequate and relevant information as a contributing factor to the minimal youth participation in agriculture. Given that the majority of the youth in the study are not currently engaged, data was collected on the common sources of information (not limited to agricultural information) used by the youth. This is to understand where the youth access information and to understand which platforms can be used to disseminate information to the youth. Figure 4.4 below indicated that the majority of the youth had reported electronic media (TV, radio, *etc.*) as their primary source of information, followed by phones (calls and SMS) and social media. This is as expected, given the youth’s exposure to ICTs. Some youth have indicated community meetings as their source of information. According to FAO (2014), one should be cautious with information received from informal sources as such information is often not reliable as the saying “*Information is as good as its source.*”

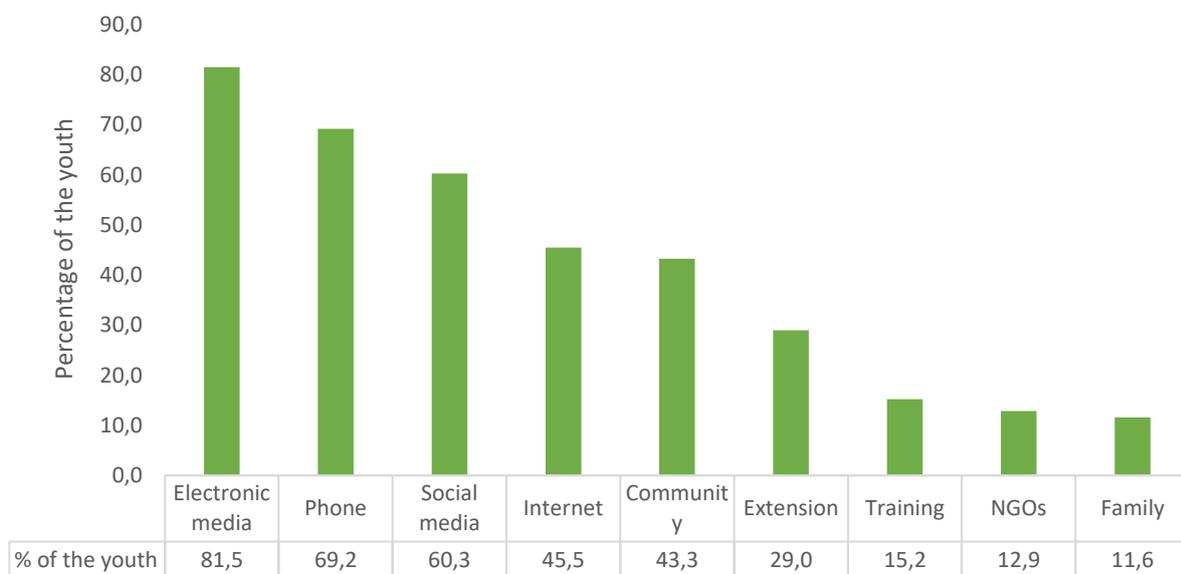


Figure 4.4: Typical sources of information for the sampled youth
Source: Survey data (April 2019)

In rural areas, the commonly used sources of agricultural information are agricultural extension officers (referred to as extension in the graph), trainings, and NGOs (Non-Government Organizations). However, the results show that these are the least identified sources of information by rural youth. Although one can argue that the low statistics of extension (29 percent) can be due to the limited number of youth engaged in agriculture included in the study, it should be noted that the study also found very limited access to agricultural training in Table 4.4 as discussed. This highlights a need for agricultural information dissemination in the rural areas, ideally through platforms that rural youth have access to, such as social and electronic media platforms.

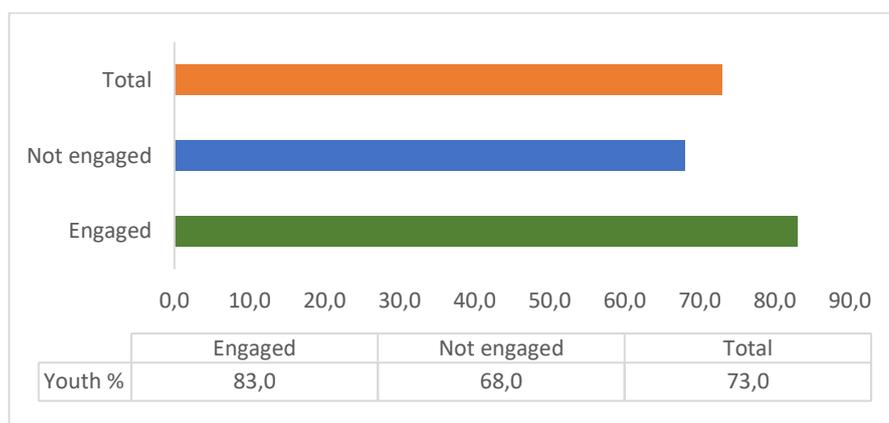


Figure 4.5: Social media accounts (WhatsApp, Facebook, Twitter, etc.)
Source: Survey data (April 2019)

It is almost impossible to talk about youth and not mention social media in this digital age of the 4th industrial revolution (4IR). Figure 4.5 above shows that 73 percent of the total sampled youth have social media accounts. Among the two types of youth, those already engaged in agriculture have a high percentage of individuals with social media accounts relative to those not engaged. The study shows that there are developments in integrating ICT usage in the agricultural sector. Although the study did not investigate the type of information accessed from these accounts, it is important to acknowledge the usage of ICT by young farmers as this can assist in the development of platforms that can be used for agricultural information dissemination. Table 4.5 below shows that youth not engaged in agriculture, on average, spend 8.5 hours on social media compared to 3.7 hours spent by youth engaged, per day. This means that youth not engaged spend twice the time youth who are engaged spent on social media. This can be because most youth not engaged are unemployed and thus have too much spare time. However, spending more than 8 hours every day on social media is a time not spent productively. Some of this time can be spent productively on activities that have the potential to provide the youth with income. The study found that youth engaged spend relatively more money on data and airtime relative to the youth not engaged. This might be because the money spent on data/airtime includes transaction costs incurred when searching for agricultural information and potential markets.

Table 4.5: Hours and money spent on data to access social media

Type of youth	Hours spent on social media per day		Money spent on data/airtime per month	
	Mean	Std. Dev	Mean (Rands)	Std. Dev
<i>Engaged</i>	3.7	0.5	235.3	153.0
<i>Not engaged</i>	8.5	1.6	76.3	17.3
<i>Total</i>	6.8	1.1	131.9	54.6

Source: Survey data (April 2019)

(iii) Financial capital

Figure 4.6 below shows the different income sources of the sampled youth. Salaries include money from temporary work and permanent employment, while agriculture refers to money generated through primary agriculture, livestock sales, and AVAEAs. The percentage distribution in the figure below shows that the majority of households receive social grants as their source of income. This is in line with findings from several studies done in South Africa's rural areas (Chipfupa and Wale, 2018; Yobe *et al.*, 2019). Given the high rates of unemployment and poverty in rural areas, this is as expected. The study found that the second most common source of income is money received from family members (spouse, parents, siblings) that do not stay within the household (remittance). Remittance is one of the income sources that rural households employ to diversify their livelihood strategies (Chapman and Tripp, 2004; Yobe *et al.*,

2019). Agricultural income is among the least common sources of household income among the sampled youth, regardless of the statistics in Table 4.3 that indicated a high percentage of household members engaged in agriculture. Even among the youth who are engaged in agriculture, agricultural income is not among their major sources of income. This suggests that, among other reasons, the majority of these young farmers practice farming for other reasons like family consumption other than running the farm as a profitable enterprise. This can serve as a discouraging tool for rural youth interested to engage in agriculture and further contribute to the perception that agriculture is/cannot be profitable. Cultivating the culture of entrepreneurial spirit among rural smallholder farmers, in this case, youth, becomes a daunting task.

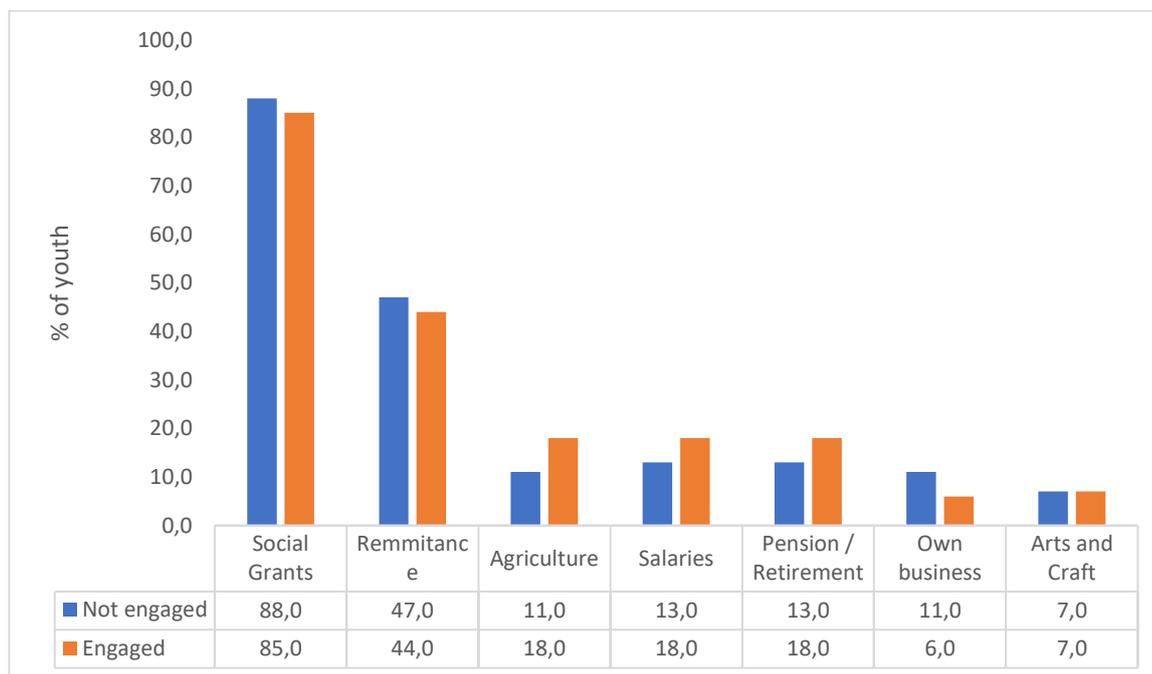


Figure 4.6: Sources of household income
Source: Survey data (April 2019)

Literature highlights challenges faced by youth regarding access to credit. Worldwide, lack of access to financial capital is ranked the major constraint for aspiring entrepreneurs, especially among the youth (Lewis, 2001; Audretsch and Keilbach, 2004; Herrington *et al.*, 2017). World Bank (2005) indicated that farmers' access to financial capital can be measured using their participation in credit organizations and saving clubs. The same measure was used to access youth's access to financial capital. Table 4.6 below indicates that, on average, the sampled youth do not have access to financial capital as only 10.0 percent accessed credit/loan facilities in the last 12 months prior to the study. Figure 4.7 below indicated that the primary source of credit for the few that have access are formal banks. Meaning that these are youth who are already economically active. That is, they already own their businesses or are employed full-time.

Table 4.6: Perceived and actual access to credit

		Not engaged (n=152)	Engaged (n=72)	Total (n=224)
<i>Perceived access to credit</i>				
Know a source where they can take a loan if they needed one		42.8	50.3	43.4
If yes, where / who is the source?	Formal source	54.7	59.5	56.4
	Informal source	45.3	40.5	43.6
Believe they'd qualify for a formal loan if they applied		13.4	28.3	15.5
<i>Actual access to credit</i>				
Have you taken any loan in the past 12 months?		10.5	14.2	10.5

Source: Survey data (April 2019)

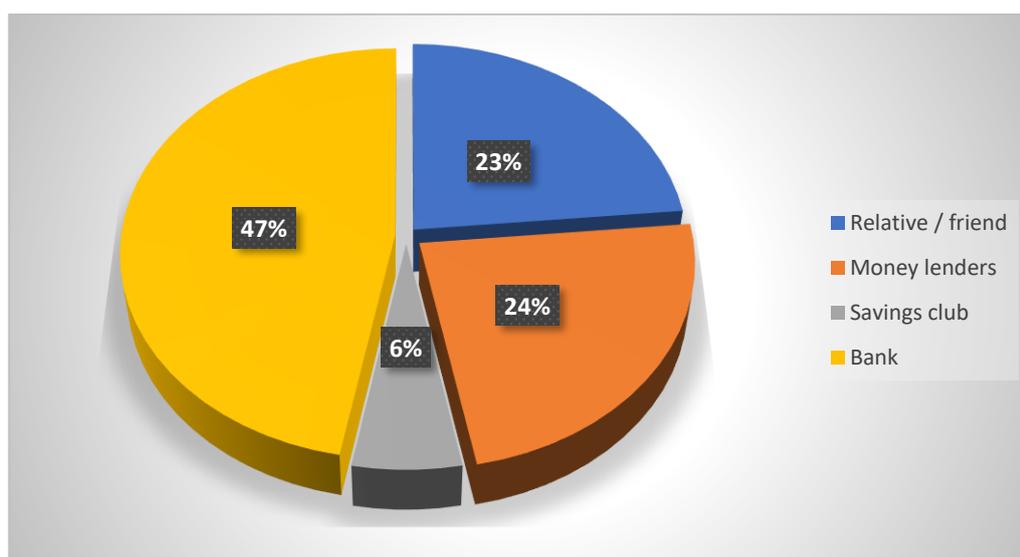


Figure 4.7: Sources of credit

Source: Survey data (April 2019)

Since the majority of the youth interviewed reported not to have taken credit because of the reasons listed in Figure 4.8 below, the study assessed the youths' perceived access to credit. This is to see whether or not the youth believe they would qualify to access credit facilities if they wanted/ needed to. About 28.0 and 13.0 percent of the youth engaged and not engaged indicated that they believe they would have access to loans if they wanted to access them, respectively. Also, only 43.4 percent of the sampled youth know where they can apply for a loan if they needed one. These statistics highlight the lack of information among the youth. This means that intervention strategies that provide loans and grants to youth aspiring to initiate entrepreneurial activities will not be of assistance to such youth if information dissemination is

not improved. In general, the sampled youth do not have access to financial capital, but in comparison between the two types of youth, those engaged in agriculture have more access to financial capital relative to those not engaged. Chapter 5 assesses if access to financial capital (in this case, credit) has an impact on the interest of the youth to partake in agricultural activities.

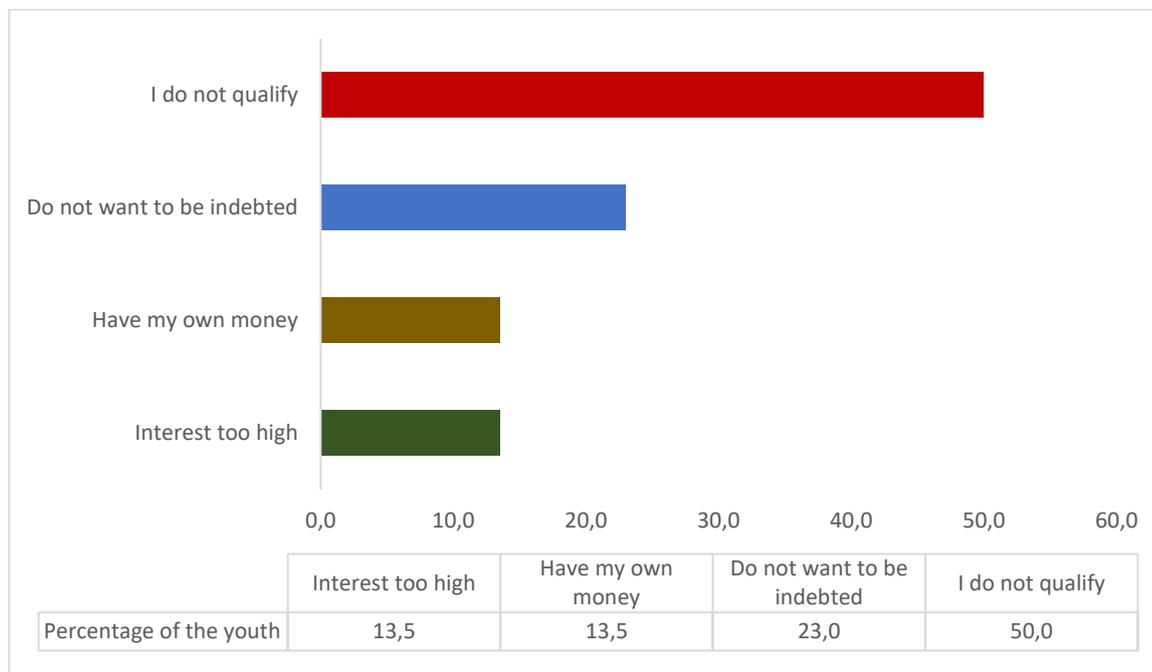


Figure 4.8: Reasons for not taking credit
Source: Survey data (April 2019)

(iv) Natural and physical capital

Natural capital in this study refers to the land that the youth own/have access to while physical capital refers to the physical assets owned/accessed by youth such as tractors, motor vehicles, *etc.* Considering that the study investigates factors affecting rural youth’s interest to engage in agricultural activities, assessment of the youth’s access to land is deemed essential. The youth were asked if they own/have access to land. Table 4.6 below indicates that 100.0 percent of youth already engaged have access to land, the average land size being 5.9 hectares. However, only 55.6 percent of the youth not engaged have access to land, and, on average, they have access to 2 hectares of land per youth. This means that youth already engaged have more access to land relative to youth not engaged, and this is as expected. During the data collection, some youth reported that the land is available but not fenced, and there is not enough water. This means they cannot use it for agricultural production. Even the youth who are engaged in agriculture reported their inability to utilize all their land due to stray animals. Given these statistics, one would conclude that youth in the two districts do not have challenges accessing land. However, when one looks closely, challenges relating to ownership of the land emerge. Majority of the youth who reported having access to land referred to land that is owned by their parents. This is not their land and some of the youth

do not even have control over what should be produced on that land. Thus, at face value, the youth have access to land, but in reality, they do not have access to land.

Table 4.7: Youth endowment in natural capital (percentages)

	Engaged (n = 72)	Not engaged (n = 152)	Total (n = 224)
Have access to land	100.0	55.6	70.5
Land size in hectares	5.9	2.0	3.7

Source: Survey data (April 2019)

Figure 4.9 below shows the household assets that the youth own/have access to. Most of the youth are from households that own livestock (ranging from chickens, cattle, goats, sheep, and piggery). Also, the majority of youth have access to/own televisions, radios, and smartphones. This is as expected as electronic media was identified as a major information source by the youth. A minority of the youth have access to agriculture-specific assets like tractors. A sum of the monetary value of these assets is used as an independent variable in Chapter 5.

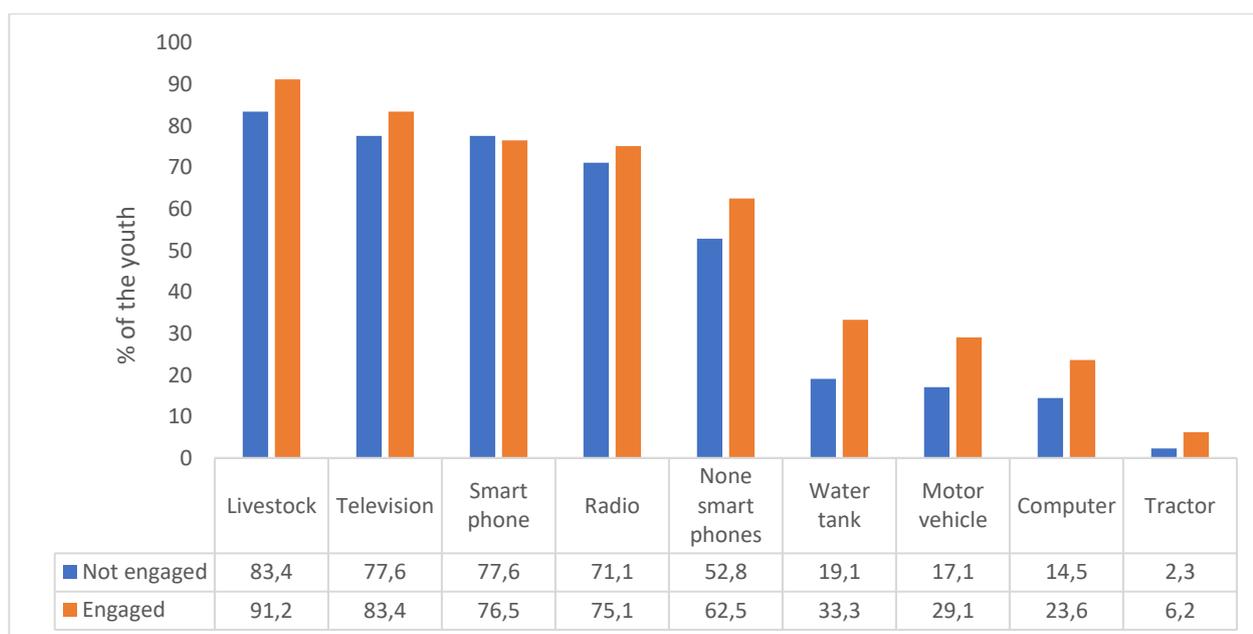


Figure 4.9: Physical endowment of the youth

Source: Survey data (April 2019)

(v) *Psychological capital*

The state of one’s mind has an impact on the decisions and choices one makes. Table 4.8 below shows the psychological capital endowment of the two types of youth. In general, the majority of the sampled youth are endowed with positive psychological capital. It should be noted that even though, on average, both types of youth have psychological capital, the youth currently engaged in agriculture are more endowed relative to those not engaged. This is as expected as the majority of the youth look down on agriculture-related activities. It will require, among other factors, a confident individual to overlook such sentiments and actively partake in the sector nevertheless.

Table 4.8: Psychological capital of the youth

Psycho capital constructs	Positive psychological capital statements	Not engaged (n=152)	Engaged (n=72)
<i>Hope and optimism</i>	Could engage family and friends to parcel me land	68.4	77.8
	Could engage traditional authorities/ leaders to parcel me land	61.8	76.4
<i>Resilience and persistence</i>	Could reapply when they re-advertise if I was rejected before	75.0	87.5
	Could apply to a different place when rejected	79.6	90.3
	Could continue with the business even if it was not making a profit and try to make changes	70.4	76.4
	Could continue with the business even if it was not making a profit and seek for advice	88.1	91.7
<i>Self-confidence</i>	Could accept a leadership position if elected	67.1	68.0
	Could oppose my leaders’ opinion if it is against my beliefs	63.8	79.2

Source: Survey data (April 2019)

(vi) *Entrepreneurial spirit endowment*

O'Planick (2016) stated that opportunities in AVAEAs require one to be entrepreneurial. Also, Kahan (2012) highlighted the need for farming enterprises to be operated as entrepreneurial activities. It then becomes essential to investigate the entrepreneurial traits and endowment of the two different types of youth. Chapter 5 further analyses the impact of entrepreneurial spirit on youths’ potential participation in agricultural activities. Table 4.9 below shows that, on average, the majority of the interviewed youth are proactive, innovative, creative, and embrace change. However, they are not risk-taking. Their non-risk-taking tendencies are also highlighted in Figure 4.8, where the youth reported not to have taken any loans because they do not want to be indebted. This is understandable given their exposure to poverty. Literature suggests that smallholder farmers are risk-averse because of multiple reasons, including lack of information and poverty of resource endowment (France, 2000; Pannell *et al.*, 2000; Domingo *et al.*,

2015). It then becomes relevant to assume that the youth as the descendants of the rural smallholder farmers share the same reasoning and perceptions towards risk. In general, the youth who are engaged in agricultural activities are relatively more endowed with entrepreneurial traits relative to their counterparts

Table 4.9: Entrepreneurial endowment of the youth

Entrepreneurial spirit constructs	Not engaged (152)	Engaged (n=72)
Risk-taking	20.4	29.2
Seizing the opportunity	48.0	52.8
Problem-solving	50.7	54.2
Proactive	83.6	83.3
Innovation and creativity	76.3	80.6
Embracing change	67.8	77.8

Source: Survey data (April 2019)

(vii). Perception, attitude, and social norms regarding agriculture

According to the theory of reasoned behavior, people’s perceptions and attitudes affect their reactions towards a particular activity. The study assessed the youth’s perceptions regarding agriculture and also included perceptions in Chapter 5 as potential factors that can affect youths’ interest to engage in agricultural activities. Table 4.10 below shows that most of the youth from both groups perceive agriculture as a sector that can create employment opportunities for the youth and also as a sector that can produce profitable businesses. An interesting finding in the study is that only 52.8 percent of the youth engaged in agriculture believe that they can be wealthy/rich from their engagement in the sector compared to the 84.2 percent of those not engaged. It is worrying to find out that a reasonable percentage of the youth who are engaged in agriculture do not believe that agriculture has the potential to provide for them the wealthy/rich lifestyle they want. This can be attributed to the youth witnessing people known to them (parents, grandparents, neighbors) who are engaged in agriculture and not becoming wealthy through smallholder farming. Also, the sources of income that showed that agriculture is the least source of income among youth engaged highlight that the monetary gains from their involvement are not exactly realized. Does this mean that there is no money in smallholder agriculture other than just to make ends meet, or are there structural challenges that need to be addressed?

Table 4.10: Youth perception of agriculture

	Not engaged (n = 152)	Engaged (n = 72)
Perceptions of agriculture		
Agriculture can provide employment opportunities for the youth.	84.2	88.9
Agricultural enterprises can be run as profitable businesses.	80.9	88.9
One can be wealthy/rich through engagement in agricultural activities	84.2	52.8
Agriculture is not for old and uneducated people only	55.9	52.8

Source: Survey data (April 2019)

4.3. Youth's Interest to Engage in Agricultural Activities.

4.3.1. Youth engaged in primary agriculture

As noted, youth who were already engaged in agriculture at the time of the study were 72. Within this group, the study aimed to assess their interest to engage in other agricultural activities i.e., AVAEAs or the whole value chain relative to engaging in primary agriculture only. This was done to check if, given the opportunity, rural youth already engaged in primary agriculture would continue practicing primary agriculture, or they would switch to other “better” agricultural activities. Taking into account that youth regard primary agriculture as a low-status job, this assessment was necessary. The questions that were asked to the youth were structured as presented in Table 4.11 below.

Table 5.11: Structure of the questions

Interest to engage in other agricultural activities	Response (Yes / No)
I am currently engaged in primary agriculture and would like to stay in this activity	
I am currently engaged in primary agriculture and would like to switch to AVAEAs	
I am currently engaged in primary agriculture and would like to do both	

Source: Survey questionnaire (April 2019)

Figure 4.10 below shows that 78 percent of rural youth who were already in primary agriculture aspired to participate in the whole value chain, meaning they aspired to incorporate AVAEAs in their existing primary agricultural activities. On the same note, only 18 percent of the youth already engaged had no aspirations of switching to or adding AVAEAs to their primary agricultural activities. The graph also shows that only 4 percent of the youth were willing to switch from primary agriculture to AVAEAs. In

general, the results show that the majority of rural youth are willing to learn and incorporate AVAEAs in their already existing primary agricultural activities. However, only a few are willing to switch to AVAEAs. This is reasonable given that switching will require a major change in the activities they are already comfortable and familiar with. Thus, from the results, it can be concluded that the expansion of AVAEAs engagements within the rural youth practicing primary agriculture should be done as an additional diversification strategy to their already existing agricultural activities, not as a solitary option. There is a need, however, for further research to identify factors influencing the above-discussed shifts, that is, the willingness to stay in primary agriculture, switch or incorporate AVAEAs for youth already engaged in primary agriculture.

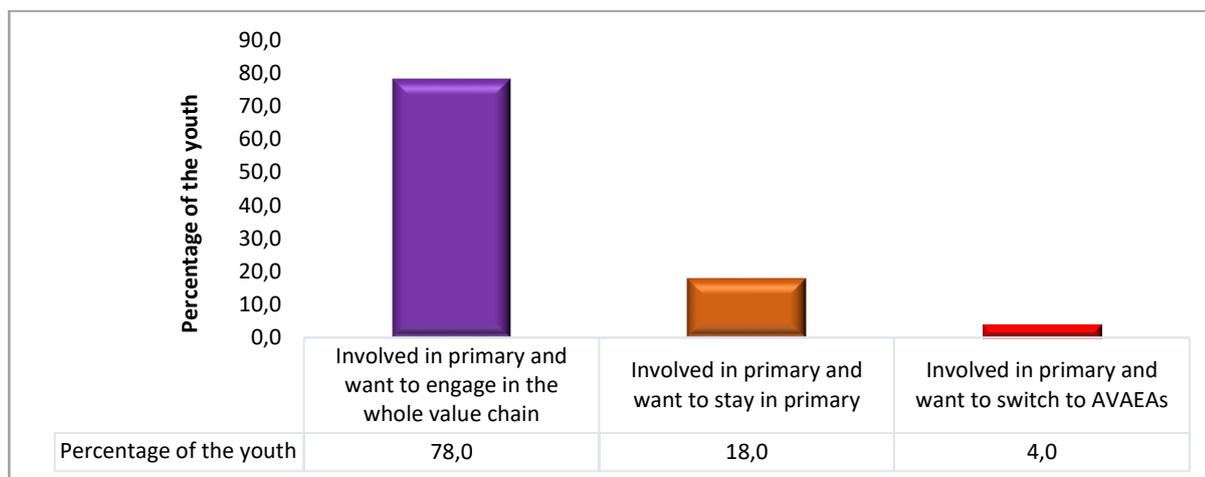


Figure 4.10: Aspirations of rural youth already in primary agriculture
Source: Survey data (April 2019)

4.3.2. Youth currently not engaged in agriculture

Literature highlights that youth have no interest in engaging in agriculture as they perceive the sector to be low status and dirty (Hung, 2004; Nnadi and Akwiwu, 2008; Adesina and Favour, 2016). A total of 152 youth who were not engaged in any agricultural activities were asked about their interest to engage in the sector. The structure of the question asked is presented in Chapter 3. The results indicate that more than half of the youth do have the interest to engage in agricultural activities (Figure 4.11). The majority of the youth prefer to engage in the whole value chain (incorporating primary and AVAEAs) rather than engaging in primary agriculture *per se*. Only 18 percent of the youth are interested in engaging in primary agriculture, and this highlights very limited interest. These results are in line with findings by Bezu and Holden (2014), who found that rural youth do not prefer primary agriculture to be their main livelihood strategy. In general, the results suggest that there is potential to engage the rural youth in agricultural activities, especially along the value chain. However, the question that remains is that since the rural youth do aspire to engage in agricultural activities, why have they not initiated such activities already? Chapter

5 presents the MNL results that answer this question. The variable discussed here (Figure 4.11) is used as a dependent variable of an MNL regression model that seeks to investigate the factors affecting rural youth's interest to engage in agricultural activities.

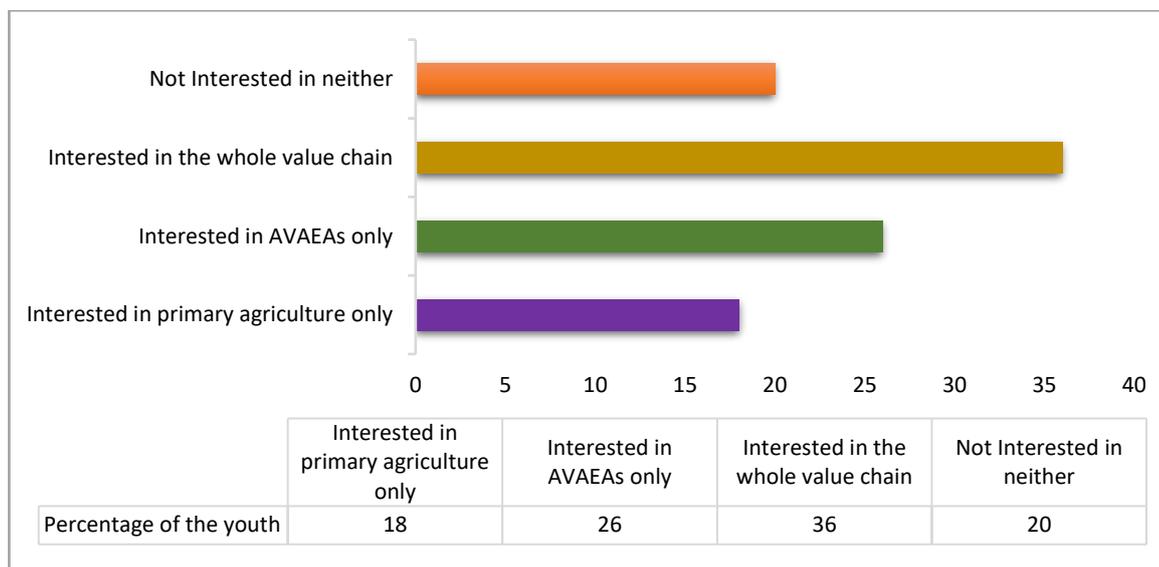


Figure 4.11: Aspirations of rural youth not currently practicing agriculture
Source: Survey data (April 2019)

4.3.3. Interest to engage in AVAEAs for youth not engaged

Given the interest of youth in AVAAEAs, the study sought to find out what kind of AVAEAs would they be interested in and able to engage in without major external support. The youth have identified transportation of agricultural produce, the transformation of animal skin, retailing of fresh produce, and inputs as such activities, as shown in Figure 4.12 below. In their reasoning, the above-identified activities require less financial investments and relatively manageable skills endowment. Thus they will be easy to initiate. However, according to O'Planick (2016), transportation of agricultural produce is deemed to be less sustainable as it is periodic and does not make the same remuneration as the transportation of passengers (taxi driving). Thus, such an activity might attract the youth but the sustainability of the engagement is less likely to be long-term.

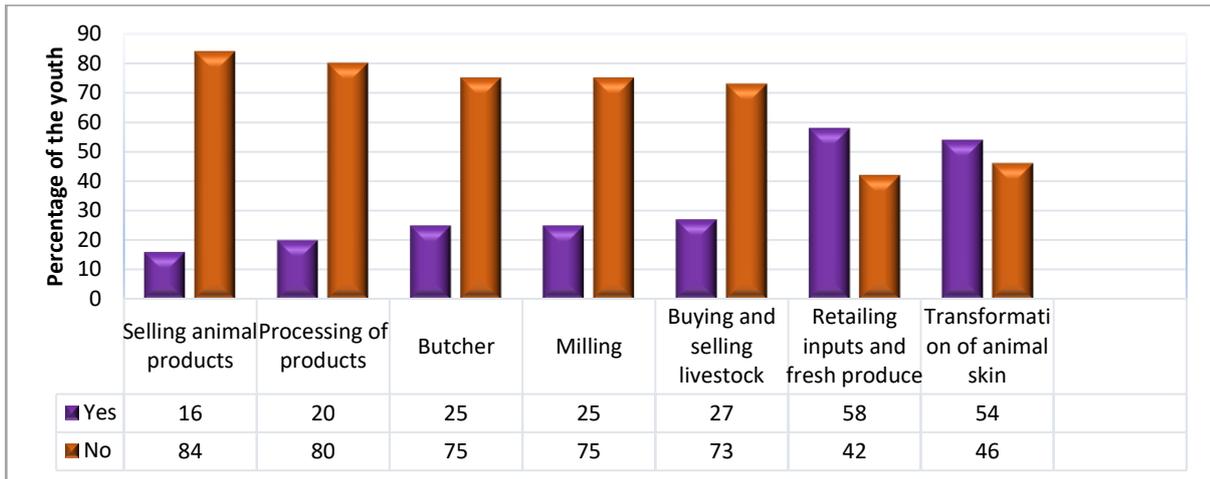


Figure 4.12: AVAEAs aspired by rural youth

Source: Survey data (April 2019)

Buying and selling of animals together with the selling of animal products were the least of the AVAEAs that rural youth aspired to engage in. The main challenge with this activity is that there are high rates of livestock theft in rural areas. Also, the youth indicated that the family would use the livestock for family consumption if it is kept in the household yard. Figure 4.13 below depicts the major challenges that youth perceive to be limiting them from engaging in AVAEAs. Insufficient initial finance, lack of skills, and lack of equipment are the leading constraints hindering rural youth from engaging in AVAEAs. The results are in line with findings by Ngore (2010), who identified finance as the main constraint limiting youth engagement in agribusiness. Also, the study results are in line with Mitchell and Coles (2011) and Adekunle *et al.* (2009), who also found lack of skills and/or knowledge to be the limiting factors affecting youth participation in agricultural entrepreneurial activities.

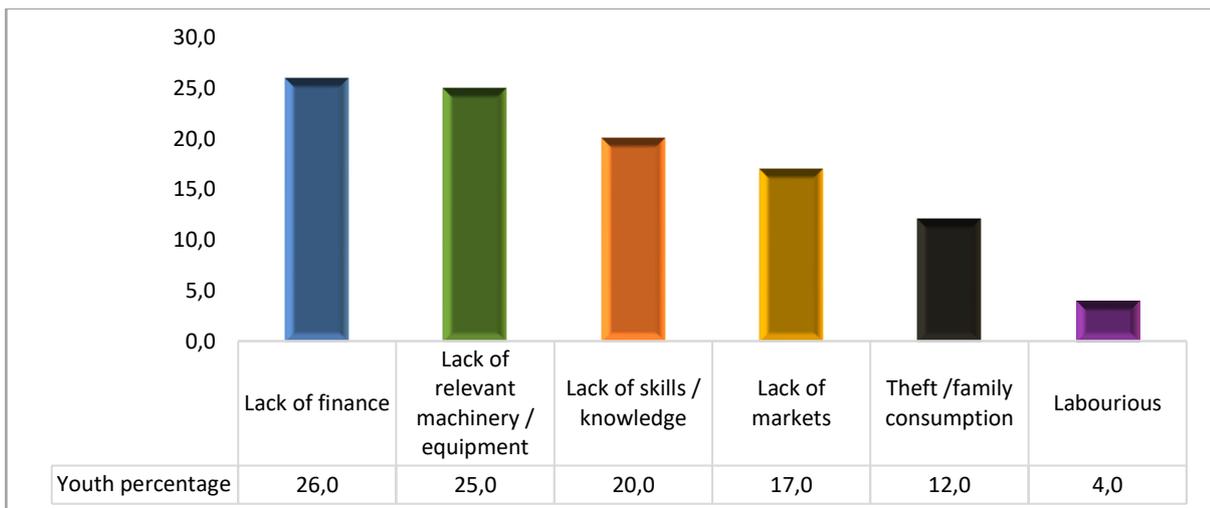


Figure 4.13: Perceived constraints hindering youth participation in AVAEAs

Source: Survey data (April 2019)

4.4. Summary

The main aim of this chapter was to analyze and present descriptive statistics of the two groups of youth. With the usage of different descriptive statistics methods, socio-demographics, and resource endowment of the youth, we assessed and compared. Most of the demographic characteristics of the youth are not different. However, there was a marginal difference in the endowment of financial, social, natural, and psychological capital, as well as entrepreneurial spirit between the two groups. In general, the descriptives highlighted that the sampled youth do not have access to credit. However, in comparison, the youth already engaged have relatively more access. Also, both groups are well endowed with psychological capital and entrepreneurial spirit. However, the youth engaged are relatively more endowed. The descriptives further show the impact of the demonstration effect. The majority of the youth engaged in agriculture have family members already practicing agriculture relative to the youth not engaged. The study also found that rural youth have an interest to engage in agriculture through AVAEAs. Only a few youth indicated interest to engage in agriculture through primary agriculture. In general, this chapter highlights the importance of resource endowment in engaging youth in agriculture. Given the difference in the resource base and their interest in different agricultural activities, the next chapter presents the estimated results of factors affecting rural youth's interest to participate in different agricultural activities. Furthermore, the impact of entrepreneurial spirit and managerial traits on the potential participation of the youth in AVAEAs is also presented.

CHAPTER 5: MODEL ESTIMATION RESULTS AND DISCUSSION

5.1. Introduction

This chapter aims to give a presentation and detailed discussion of the empirical estimation results of the analysis done to investigate the factors affecting youths' interest to participate in rain-fed agricultural activities and the impact of entrepreneurial spirit and managerial capabilities on rural youths' potential participation in rain-fed AVAEAs. To achieve these objectives, Section 5.2 presents the MNL results and the discussion, while Section 5.3 presents the Fractional Logistics results and their discussion. The last section provides a summary of the chapter.

5.2. Explaining rural youth interest to participate in rain-fed agricultural activities: Multinomial Logistics Regression (MNL)

5.2.1. Description of the independent variables

Table 5.1 below presents the descriptive statistics of the explanatory variables included in the MNL regression. The table presents the mean of each variable with the associated standard errors in parenthesis for the four categories. The *P-values* obtained from the F-test analysis used to compare the statistical differences between the variables were also reported. Category 1 is for youth interested in primary agriculture only, category 2 is for youth interested in AVAEAs only, category 3 is for youth interested in the whole value chain (simultaneously engaging in both primary agriculture and AVAEAs), and category 4 is for youth not interested in any agriculture-related activity. The p-values show that there are statistical differences in perceptions that youth have regarding agriculture, access to social media, access to agricultural training, positive psychological capital endowment, household wealth, and having a household member already engaged in agriculture between the four categories. The majority of youth who are not interested to engage in any agricultural activities (category 4) do not have household members who are already engaged in agriculture compared to youth in other categories. Also, most youth in categories 3 and 4 have social media accounts relative to youth from other categories.

Table 5.1: Descriptive statistics for MNL variables

	Category 1	Category 2	Category 3	Category 4	F-test
<i>Variables</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>P-value</i>
<i>Location</i>	1.556 (0.608)	1.825 (0.097)	1.4 (0.067)	1.633 (0.089)	0.000***
<i>Age</i>	25.667 (0.709)	25.200 (1.232)	26.636 (0.721)	25.033 (0.632)	0.426
<i>Education</i>	11.00 (0.449)	11.075 (0.256)	11.482 (0.229)	11.833 (0.229)	0.357
<i>Gender</i>	0.259 (0.076)	0.350 (0.086)	0.400 (0.067)	0.367 (0.089)	0.668
<i>Dependency_Ratio</i>	1.336 (0.191)	0.997 (0.274)	0.778 (0.091)	1.202 (0.261)	0.158
<i>Household_Agric</i>	0.741 (0.057)	0.850 (0.086)	0.673 (0.064)	0.333 (0.088)	0.000***
<i>Credit</i>	0.037 (0.529)	0.125 (0.037)	0.109 (0.042)	0.1667 (0.069)	0.482
<i>Training</i>	0.000 (0.072)	0.275 (0.061)	0.419 (0.067)	0.100 (0.056)	0.002***
<i>Land</i>	0.556 (0.163)	1.338 (0.145)	1.00 (0.147)	0.767 (0.206)	0.887
<i>Perception_Agric</i>	15.260 (0.382)	16.275 (0.516)	17.263 (0.263)	16.100 (0.617)	0.0230**
<i>Pos_Psych</i>	26.037 (0.567)	27.600 (0.794)	28.400 (0.563)	28.167 (0.844)	0.098*
<i>Social Group</i>	0.370 (0.215)	0.350 (0.095)	0.309 (0.063)	0.300 (0.085)	0.921
<i>Social Media</i>	0.593 (0.076)	0.550 (0.096)	0.818 (0.052)	0.733 (0.082)	0.024**
<i>LogHhldWealth</i>	8.547 (0.332)	10.048 (0.420)	8.468 (0.270)	9.852 (0.339)	0.000***
<i>LogICT</i>	7.396 (0.199)	7.629 (0.226)	7.509 (0.154)	7.375 (0.301)	0.834
<i>Prior_Know</i>	3.045 (0.215)	3.450 (0.245)	3.054 (0.216)	3.367 (0.251)	0.728

Notes: *, ** and *** denotes statistical significance levels at 10, 5 and 1%, respectively (Standard errors in parenthesis)

Source: Survey data (April 2019)

The majority of the youth from all four categories did not receive agricultural-related training. However, in comparison, youth who are interested in engaging in category 3 have received more training relative to the other categories. The influence of these variables on youth interest to partake in agricultural activities is shown and explained in detail in Section 5.2.3 below.

5.2.2. Specification tests for MNL

As noted in Chapter 3 under Section 3.5, one of the assumptions of the MNL is the low multicollinearity of the independent variables included in the model. To check if this assumption holds, Variance Inflation Factors (VIFs) were obtained for each variable. The mean VIF was 1.40, which is below the critical value of 10, indicating that there is no multicollinearity within the data. Also, a Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was conducted. A chi-square value of 0.00 with $p < 0.94$ was obtained, which led to the conclusion that the data was homoscedastic.

Another important test for the choice model is the Hausman McFadden test for the Independence of Irrelevant Alternatives (IIA) test. This test is used to check if the MNL assumption that the ratio of probabilities for existing categories in the model will not be affected by an extra category added or deleted from the model. That is, to check for the mutual exclusivity of the categories included in the dependent variable. The chi-square value of 0.91 and $p (1.00)$ indicate that we fail to reject the null hypothesis that an additional category will not change the probabilities of the existing categories, indicating that the categories included in the dependent variable are mutually exclusive and this means that the MNL assumption holds.

5.2.3. MNL results and discussion

Table 5.2 below shows the MNL results on the factors affecting rural youths' interest to participate in agricultural economic activities. The base category for the MNL is category 4. The reason for this is that Category 4 is the only category of youth with no interest to engage in agriculture relative to the other three categories with youth showing interest to engage in different agricultural activities. In the table below, unstandardized β estimates, and the marginal effects (dy/dx) are reported. The two estimates measure the influence of the explanatory variables on the likelihood of youth showing interest in different agricultural economic activities relative to choosing none, with all other factors being held constant. The estimated model suggests that location, age, education, social media, land, credit, having a household member in agriculture, training, positive psychological capital, dependency ratio, ICT, and wealth have a significant influence on the choice of agricultural economic activities rural youth are interested to engage in.

The similar variables that are statistically significant in all three categories relative to the base category are household_agric, education, and access to credit. Having a household member currently practicing any form of agricultural economic activity increases the likelihood of youth being interested to participate in category 1, category 2, and category 3, relative to category 4, by 15 percent, 22 percent, and 2 percent, respectively. The results are in line with Morrow *et al.* (2005) and Casson and Giusta (2007), who classified youth as individuals whose decisions and aspirations are derived from the actions and successes

of people around them. They both found that youth from successful entrepreneur-headed households were more willing to initiate their own businesses relative to their counterparts. Also, Nnadi and Akwiwu (2008) found that rural youth who participated in agricultural activities were those whose parents were already involved in agriculture. Although questions as to whether their participation was voluntary or not remain unanswered, it is worth the attention to highlight the impact of social capital endowment, particularly the demonstration effect, on rural youth as an important aspect of engaging them in agriculture.

Table 5.2: Multinomial logistics regression results

<i>Independent Variables</i>	Category 1 (n = 27) Primary agriculture only		Category 2 (n = 40) AVAEAs Only		Category 3 (n = 55) Whole value chain	
	<i>B</i>	<i>dy/dx</i>	<i>B</i>	<i>dy/dx</i>	<i>B</i>	<i>dy/dx</i>
Location	0.502	0.072	2.509***	0.287	0.389	0.113
Age	-0.133	-0.007	-0.140	-0.012	-0.013	0.012
Age ²	3.23e-15**	2.40e-16	1.40e-15	5.71e-18	1.01e-15	6.78e-17
Education	-0.459**	-0.011	-0.650***	-0.036	-0.516**	-0.016
Gender	-0.554	-0.044	0.041	0.54	-0.5422	-0.040
Dependency_ratio	-0.012	0.043	-0.310	0.005	-0.772**	-0.090
Household_Agric	4.526***	0.152	4.583***	0.220	3.207***	0.020
Credit	-2.951*	-0.100	-2.875**	-0.122	-2.199*	0.112
Training	0.861	0.157	2.876***	0.162	3.090**	0.230
Land	-0.488	-0.089	0.297	0.025	0.607*	0.090
Perception_Agric	-0.176	-0.015	-0.167	-0.020	0.100	0.031
Pos_Psych	0.658	0.039	0.490*	0.025	0.623**	0.056
Social_group	1.031	0.088	0.397	0.013	0.104	0.050
Social_media	-1.670*	-0.113	-1.792**	-0.186	0.375	0.224
Prior_Know	0.132	0.027	0.064	0.026	-0.398	-0.065
LogHhldWealth	-0.320	-0.005	-0.179	-0.037	-790***	-0.088
LogICT	0.312	0.016	0.639*	0.039	0.541	0.026
Number of Observations = 152						
Likelihood ratio test: Chi-square = 152.250			df=48		p-value= 0.000	
Log likelihood = -128.522						
Overall % youth correctly classified = 78.200%						

Notes: *, ** and *** denotes statistical significance levels at 10, 5 and 1%, respectively. The base category is category 4 = youth not interested to participate in any agricultural activity.

Source: Survey data (April 2019)

Formal education significantly decreases the probability of rural youths' interest to engage in category 1, category 2, and category 3 by 1 percent, 4 percent, and 2 percent, respectively, relative to category 4 *i.e.*, the higher the level of formal education, the lesser the likelihood of the youth being interested to engage in agricultural economic activities. Although the study results are in agreement with the findings by Bezu and Holden (2014) who found formal education to be associated with youths' preference for off-farm employment, they are in contrast with findings by Nnadi and Akwiwu (2008) who found education to have a positive relationship with youth participation in agriculture.

The reason for the negative association between formal education and youths' interest in agriculture, as found in this study, might be that in the selected districts where the data was collected, especially in Amajuba District, the common active economic activity is manufacturing. Thus, youth in possession of matric might prefer to engage in such economic activities, not agriculture. Also, educated youth may believe that they stand a better chance of getting more rewarding employment in other sectors relative to their uneducated counterparts. The difference in active economic activities in the two districts is also highlighted by the significance of the variable "Location." This variable indicates that youth who reside in Umzinyathi district are more likely to be interested to participate in AVAEAs, and this likelihood is by a magnitude of 29 percent compared to youth residing in Amajuba district.

Furthermore, rural youth who have access to credit are less likely to be interested to participate in any agricultural activity relative to having no interest to engage in any. Their likelihood decreases by 10 percent for category 1, 12 percent for category 2, and 11 percent for category 3 relative to category 4. Given the findings in Chapter 4 that show that most of the youth who take up loans access them from the banks, it is appropriate to assume that such youth who qualify for bank loans are those who are already employed in other sectors or those who have already initiated businesses thus their lack of interest to participate in agricultural-related activities.

Access to social media (WhatsApp, Twitter, Instagram, *etc.*) significantly decreases the likelihood of rural youth being interested in engaging in primary agriculture only and AVAEAs only relative to participating in none. In general, the results indicate that rural youth who are more engaged in social media have a decreased likelihood of being interested to engage in agricultural activities relative to participating in none. One would have expected this given that, currently, there is very limited agricultural content on these platforms. Information typically found on these social platforms is related to entertainment, celebrities, and luxurious lifestyles. This results in youth aiming for such lifestyles through careers that will make them famous like those in the entertainment industry. This can be attested to by the descriptive statistics from Chapter 4, where most of the youth indicated that their role models are people in the

entertainment industry and not agriculture. The impact of the demonstration effect of social media content on youth choices cannot be overstated.

It is then unexpected to realize that access to primary ICTs assets like radio and television significantly increases the likelihood of youth being interested to partake in AVAEAs only by 4 percent relative to not participating in any given agricultural activity. This can be that the content displayed in social media is dictated and controlled by the preference of the user while that displayed on TV and radio is not. Youth with access to TV and radio have access to a variety of information, including agricultural information through shows like “Living Land” on SABC 2, and this can be the reason for their interest to partake in category 1.

Rural youth with positive psychological capital have an increased likelihood of being interested to participate in AVAEAs only and primary agriculture only by 3 and 6 percent, respectively. Given the demanding volatile nature of income in the agricultural sector, it is understandable that only youth who are endowed with psychological capital are more likely to partake in agriculture. Also, considering the negative attitude that youth have towards agriculture-related activities, it will require a very confident youth to choose to overlook the challenges involved and actively engage in agriculture-related activities, nevertheless.

Agricultural training significantly increases the probability of rural youth being interested to engage in AVAEAs and the whole value chain by 16 and 23 percent, respectively, relative to engaging in none. This means that youth who received agriculture-related training are more likely to be interested to engage in agricultural activities. This is in line with the findings by Adekunle *et al.* (2009), who indicated that lack of skills is a hindering factor for youth involvement in agricultural economic activities. Taking into account the findings in Chapter 4 that indicated that only a few youth have received agricultural training, skills development in the rural areas through the provision of relevant training is necessary. Also, the results of the study indicate that rural youth who have access to land have an increased probability of engaging in the whole value chain by 9 percent relative to not engaging in any agricultural activity. This is as expected as land has been identified by studies in the past studies as one of the major factors affecting youth participation in agriculture. These findings are one of the most consistent results found in the literature (Abdullah *et al.*, 2012; Bezu and Holden, 2014; FAO, 2014; Gichimu and Njeru, 2014).

The results show that an increase in household wealth will decrease the likelihood of youth’s interest to engage in the whole value chain by 9 percent compared to not participating in any agricultural activity. This means that youth from relatively wealthier families, who saw that most of the wealth comes from non-agricultural sources, are less likely to be interested to engage in smallholder agricultural-related activities. These findings are in line with Zizzamia (2018) who highlighted that youth or “young adults”,

as the author refers to them, who have financial support from their families are more likely to wait for what they perceive as “better jobs” than their fellow counterparts. Also, youth from wealthier families have the relevant resources to explore opportunities in urban areas. However, the results oppose that of Bezu and Holden (2014), who found that youth from families with relatively high asset value preferred farming as a livelihood strategy. In their reasoning, the authors stated that such youth have all the necessary resources to take advantage of agriculture-related opportunities around them. The difference in the findings might be accounted for by the endowment in agriculture-related assets. Both studies, including this one, did not separate agricultural assets from the total household assets. Youth from a wealthier family that is endowed with more agricultural assets might have the interest to engage in agriculture and utilize the assets. Also, youth from a wealthier family not endowed with agricultural-related assets might not be interested to engage in agriculture. Youth in this study are mostly from households that are not well endowed with agricultural assets as indicated in Section 4.3 of Chapter 4.

The more the number of dependents (children and elders) in the household (labor-constrained households), the lesser the likelihood of the youth from such a household being interested in participating in the whole value chain. Yobe *et al.* (2019) also found that households with more dependents were less likely to choose an agriculture dominant livelihood strategy. This might be that the available working population, including the youth, are then responsible for fostering the dependents in the household and also do household chores, leaving them with less remaining time to engage in other activities, including agricultural economic activities. These findings are similar to those of Todes *et al.* (2010) and Mutenje *et al.* (2010), who indicated that dependency ratio has a significant influence on economic activities that household members choose to engage in.

The square of the variable age (Age^2) shows a very interesting trend with youth’s interest to participate in primary agriculture only. The trend indicates that age and rural youths’ interest to engage in primary agriculture have a “u” shaped relationship. This means that at first, the interest to engage in primary agriculture decreases until a certain age and starts to increase again as the youth gets older. This is not surprising as the findings in Chapter 4 show that the average age of youth already in agriculture is higher compared to those who are not engaged. Also, at a younger age, the youth might show no interest in agriculture as they still have hope and aspirations of getting employment in other sectors. As they get older, they realize the limited opportunities and increased responsibilities that come with age and start to show an interest to engage in primary agriculture.

5.3. The impact of entrepreneurial spirit and managerial skills on rural youth’s potential participation in AVAEAs: Fractional Logistic analysis

5.3.1. Entrepreneurial spirit indices: PCA results

PCA was performed on eight variables that were used to measure the entrepreneurial spirit of the rural youth and only three PCs with eigenvalues above one were retained (see scree plot in Appendix 4a). The results are presented in Table 5.3 below. To test the significance of the PCA results, a Bartlett test of sphericity was performed and was found to be statistically significant, indicating that the variables are inter-correlated. Also, a Keiser-Meyer-Olkin (KMO) test that measures the sampling adequacy was performed (0.55) and found to be greater than 0.50, indicating that a valid PCA can be implemented on the given data set.

Table 5.3: Entrepreneurial spirit indices: PCA results

Variable	Principal Components		
	PC ₁ Embrace change	PC ₂ Innovation	PC ₃ Risk-taking
Risk taking	0.388	-0.142	0.765
Embrace change	0.607	0.031	0.196
Seize Opportunity	0.594	0.027	-0.330
Proactive	0.519	-0.272	-0.576
Problem solving	0.325	0.619	-0.055
Innovation and creativity	0.241	0.732	0.067
Eigen value	1.595	1.175	1.097
% of variance	22.8	16.8	15.7
Cumulative % of variance	22.8	39.6	55.2
Keiser-Meyer-Olkin (KMO)	0.554		
Barlett’s Test of Sphericity	Chi-square	Df	Sig
	42.6	21	0.003

NB: Only component loadings greater than |0.45| were included in the results.

Source: Survey data (April 2019)

The three retained PCs accounted for 55.23 percent cumulative variation in the data. The first PC had relatively high loadings on three variables, namely, embrace change, seize the opportunity, and proactive. This represents youth who embrace changes around them, who are able to seize opportunities when they arise and are also proactive. The PC was named “Embrace Change.” The second PC had relatively high loadings on innovation and creativity, and problem-solving representing youth who are innovative and creative hence are able to come up with solutions for addressing challenges they face. The PC was named “Innovation.” The third PC had relatively high loadings on risk-taking and proactive variables. However, the two have opposite signs (the loading of risk was positive while the loading for proactive was negative)

representing youth who are risk-takers but are more reactive (they wait for something to happen first before they act). The PC was named “Risk-taking.” The three PCs were then added as independent variables in the Fractional Logit Models.

5.3.2. Managerial skills indices: PCA results

Table 5.4 below presents the PCA results used to measure the managerial skills of the rural youth. KMO (0.54) and Barlett test of sphericity ($p=0.00$) indicated the appropriateness of the PCA for the data set. Only four PCs were retained as they had Eigenvalues greater than one (see scree plot in Appendix 4b). The four retained PCs accounted for 60.95 percent of the cumulative variation in the data. The first PC had relatively high loadings on financial record keeping skills, business planning skills, and the ability to delegate. However, financial record keeping skills and business planning skills have opposite signs with the ability to delegate. This component represents youth who do not possess or have limited record-keeping and business management skills but possesses delegation skills. The PC was named “Limited business skills.” The second PC had relatively high loadings on three variables, namely, confidence, leadership, and planning skill. This component represents youth who are confident, are able to show leadership skills, and possess planning skills. The PC was named “Confidence.” PC₃ had high loadings on two variables, namely, agricultural training and formal education representing youth who have received agriculture-related training and have relatively higher levels of formal education. The PC was named “Agricultural training.” The fourth PC had a high loading on the “time management variable.” It represents youth who cannot manage their time properly and this PC was named Poor time management. PCs 1, 3 and 4 (Limited business skills, Agricultural training, and Poor time management) were included in the Fractional Logit Model as independent variables. While PC₂ (Confidence) was excluded because it is already accounted for by the variable “Psychological capital”.

Table 5.4: Managerial skills indices

Variable	Principal Components			
	PC ₁ Limited business skills	PC ₂ Confidence	PC ₃ Agricultural Training	PC ₄ Poor time management
Formal education	-0.088	0.399	0.475	0.305
Received agricultural training	-0.113	-0.077	0.769	-0.157
Financial record keeping skills	-0.703	0.081	-0.207	-0.317
Business planning skills	-0.694	0.139	-0.340	0.169
Leadership	0.311	0.697	-0.085	-0.040
Confidence	-0.165	0.802	-0.105	-0.011
Time management	0.063	-0.097	-0.121	-0.893
Planning skills	0.056	0.452	0.291	-0.115
Ability to delegate	0.683	-0.116	0.335	0.208
<hr/>				
Eigen value	1.797	1.524	1.085	1.038
% of variance	19.9	16.9	12.1	11.5
Cumulative % of variance	19.9	36.9	48.9	60.9
Keiser-Meyer-Olkin (KMO)	0.544			
Barlett's Test of Sphericity	Chi-square	Df	Sig	
	108.936	36	0.000	

NB: Only component loadings greater than $|0.45|$ were included in the results.

Source: Survey data (April 2019)

5.3.3. Model Specification Tests

To ensure that the two models were correctly specified, various post-estimation tests were performed. Wald X^2 tests for both models were statistically significant at one percent, indicating that the FLMs correctly fitted the data. Also, the mean VIF for the independent variables was 1.23, indicating that the variables were not correlated. Breusch-Pagan tests for heteroskedasticity were statistically not significant showing that the data is homoskedastic. Shapiro-Wilk tests for normal distribution were also statistically significant at one percent indicating that the dependent variables used in both models were not normally distributed (see histograms on Appendix 5 (a) and (b)). The results of the above tests are presented together with the estimated coefficients and marginal effects of each model in Table 5.5 below.

5.3.4. Fractional Logit Models: Results and Discussion

A Fractional Logit Model was used to estimate the impact of entrepreneurial spirit and managerial skills on youth's potential participation in AVAEAs. As indicated in Section 3.5, the model was estimated twice using: (i) proportion of time the youth were willing to spend engaged on an AVAEA of their choice and (ii) the proportion of money the youth would be willing to contribute/invest, if they had the money, towards initiating an AVAEA of their choice. Table 5.5 below shows the mean values of the two dependent variables in both absolute and proportional values together with their respective standard errors. On average, the youth were willing to spend 6.2 hours engaged in AVAEAs of their choice while, on average, they were willing to contribute/invest R9 066.4 amount of their money, if they had the money, towards initiating AVAEAs of their choice. The results of the two models are presented in Table 5.6 below. Throughout the discussion of the FLM results, the proportion of time and the proportion of money the rural youth were willing to spend/invest towards AVAEAs is referred to as their potential participation in AVAEAs.

Table 5.5: Summary of the dependent variables

Variable name	Mean of absolute value	SE	Mean of proportion	SE
Time	6.200	0.199	0.668	0.023
Money	R9 066.36	525.90	0.554	0.643

Source: Survey data (April 2019)

The results indicate that similar variables are found to be statistically significant in both Models. Holding other factors constant, variables: Innovation; limited business skills; Age of the youth; psychological capital; and perceptions toward agriculture were found to be statistically significant in affecting rural youth's potential participation in AVAEAs in both Models. Agricultural training and poor time management skills were statistically significant in Model 1 only while the gender of the youth and household wealth were found to be statistically significant in Model 2 only.

Innovation as one of the entrepreneurial constructs was found to have a negative relationship with potential participation of rural youth in AVAEAs at 5 percent level of significance in both Models. This relationship is by a magnitude of 4 percent and 1 percent for Model 1 and Model 2, respectively. The results suggest that youth who are innovative, creative, and problem-solving have limited potential participation in AVAEAs. This could be because such youth are attracted to jobs, and business opportunities in other sectors as the majority of them do not perceive agriculture as a sector with profitable entrepreneurial opportunities. This perception can be attributed to the current state of smallholder farming in these areas where smallholder farmers do not operate their farming activities as a business resulting in

them generating very limited gross margins from them (Wale and Chipfupa, 2018). This shows a negative entrepreneurial behavior towards AVAEAs . Considering that O'Planick (2016) indicated that AVAEAs opportunities available in remote areas require entrepreneurial behavior among the youth, this explains among other reasons, why there are no initiated AVAEAs that are run and managed by the youth in remote areas, particularly where the data was collected. At face value, this suggests that rural youth endowed with entrepreneurial spirit are less likely to participate in AVAEAs as they opt for entrepreneurial opportunities in other sectors, and this is not good for smallholder agriculture in South Africa.

Limited business skills negatively affect rural youth's potential participation in AVAEAs by 14 percent in both Models. This relationship is statistically significant at 10 percent and 5 percent level of significance in Model 1 and Model 2, respectively. This means that youth who have limited financial recording and business planning skills show limited potential to participate in AVAEAs. This is in line with Herrington *et al.* (2017), who have highlighted that the lack of business skills among the youth contributes significantly to their limited engagement in entrepreneurial activities, including AVAEAs. There is a need for rural youth skills development focusing mainly on business-related skills as an empowerment tool that will enable them to engage in entrepreneurial activities. Furthermore, both models indicate a positive relationship between age and potential participation at 5 percent level of significance. This relationship is by a degree of 4 percent and 3 percent in Model 1 and Model 2, respectively. This suggests that as youth age, they might be losing hope of securing alternative non-farm economic activities that will generate them income, thus opt for agriculture-related activities. This is in line with the results from the MNL in Section 5.2. that highlighted that as youth age, they begin to have the interest to engage in agricultural activities. Also, Akpan *et al.* (2015) showed that age is positively associated with participation in agriculture.

Table 5.6: Fractional Logit results

Fractional Logit Model				
Variables	Independent variable			
	The proportion of time (Model 1)		The proportion of money (Model 2)	
	β	dy/dx	B	dy/dx
Risk-taking	0.109	0.039	0.036	0.013
Innovation	-0.120**	-0.077	-0.172**	-0.066
Embrace_Change	-0.043	-0.016	-0.007	-0.003
Agricultural training	0.069*	0.017	0.064	0.029
Limited business skills	-0.136*	-0.039	-0.143**	-0.052
Poor time management	-0.181**	-0.050	-0.038	-0.023
Youth Age	0.039**	0.011	0.029**	0.008
Youth Gender	0.107	0.024	0.268*	0.101
Dependency ratio	-0.058	-0.023	-0.024	0.054
Household_Agric	-0.069	-0.030	0.0615	0.057
Access to credit	-0.170	-0.068	-0.054	-0.062
Social Media	0.138	0.047	0.0250	0.029
LogICT	0.045	0.033	0.042	0.001
Land size	0.086	0.034	0.004	0.005
LogWealth	-0.009	-0.004	-0.075**	-0.022
Positive Psychological	0.050***	0.011	0.041***	0.014
Perceptions	0.106***	0.037	0.110***	0.040
Constant	-4.960***		-0.914	
Pseudo R ²	0.110		0.084	
Wald X ²	55.47		53.75	
Prob > chi2	0.000***		0.000**	
Log pseudo likelihood	-93.693		-95.482	
VIF (mean)	1.23		1.23	
Breusch-Pagan (<i>p-value</i>)	0.7166		0.865	
Shapiro-Wilk (<i>p-value</i>)	0.000***		0.000***	
Number Of Observations	152			

NB: *, **, & *** denotes the level of significance at 10, 5, and 1 percent, respectively.

Source: Survey data (April 2019)

Positive psychological capital has a positive effect on the potential of rural youth to participate in AVAEAs in both models. This effect is by a magnitude of 5 percent and 4 percent in Model 1 and Model 2, respectively. This suggests that youth who are optimistic, hopeful, confident, and resilient have a higher probability of participating in AVAEAs. This corresponds with findings from Section 5.2 that also linked positive psychological capital with interest to engage in different agricultural activities. This is in line with Maluleke (2016), who pinpointed resilience and confidence as important traits for individuals engaging in self-employment opportunities. He emphasized the need for one to be able to bounce back when faced with challenges and obstacles as a determining factor in initiating and maintaining a business, including businesses in AVAEAs. Positive perceptions regarding agriculture also have a positive effect on the potential participation of rural youth in AVAEAs in both models. This is by a scale of 11 percent, and it is statistically significant at 1 percent in both Models. This is in line with the theory of reasoned behaviors by Ajzen (1985) and Montano and Kasprzyk (2015), who indicated that individuals who have good/positive perceptions towards an activity are likely to do that activity.

In Model 1, rural youth who have received agriculture-related training are more likely to participate in AVAEAs by 7 percent, and this relationship is statistically significant at 10 percent. This is a PC component representing youth who have received agriculture-related training and also have relatively high levels of formal education. The positive relationship can be that the educated youth have the necessary skills and knowledge to take advantage of AVAEAs opportunities around them. Also, given the time they spent on skills development and acquiring cognitive knowledge, the opportunity cost of them not utilizing these skills is relatively high. Although there are no available studies that investigated the combined impact of agricultural training and formal education on potential participation, several studies that examined the individual impact of these two variables have often shown a positive relationship between them and participation in agriculture (Abdullah *et al.*, 2012; Ahaibwe *et al.*, 2013). Poor time management has a negative effect on the potential participation of rural youth in AVAEAs. This relationship is significant at 5 percent, indicating that rural youth who lack time management skills show a decreased potential to participate in AVAEAs. This is as expected given the time these youth spend on social media, as shown in Chapter 4. Also, agricultural activities are time demanding; thus, youth who do not know how to manage their time might find it hard to engage in agriculture and still be able to do their other activities.

In Model 2, variables gender and household wealth were found to have a significant effect on rural youths' potential participation at 10 and 5 percent level of significance. Rural male youth are 27 percent more likely to participate in AVAEAs relative to females. This is in contrast with studies by Akpan *et al.* (2015) and Bezu and Holden (2014), who found that females have better participation in agriculture relative to males. The studies indicated that males often become susceptible to urban migration. The descriptives of

the study also highlight that currently, there is more female youth engaged compared to males. However, the negative relationship found by the model can be that the persistent unemployment rates and the social and cultural pressure imposed on males as they are deemed to be providers of their families forces them to be willing to engage in any available income-generating activities including AVAEAs.

Household wealth has a negative effect (8 percent) on rural youths' potential participation in AVAEAs, and it is statistically significant at 5 percent. This corresponds with the result of the MNL in Section 5.2 that indicated that youth from relatively wealthier families have enough financial support to explore other opportunities in urban areas and are also under no pressure to contribute financially in the households they reside in. As a result, they might see the opportunity cost of waiting for what they perceive as a better job relatively low.

5.4. Summary

The two objectives of the study were to (i) investigate the factors affecting rural youth interest to engage in agricultural activities using MNL, and (ii) to examine the impact of rural youth entrepreneurial spirit and managerial capabilities on the potential participation of rural youth in AVAEAs using FLM. The MNL found that location, age, education, social media, land, credit, having a household member in agriculture, training, positive psychological capital, dependency ratio, ICT, and wealth have a significant influence on the choice of agricultural economic activities rural youth are interested to engage in.

Furthermore, the two FLMs show that entrepreneurial spirit and managerial skills have an impact on the potential participation of rural youth in AVAEAs. The findings further indicate that endowment in managerial skills and agriculture-related trainings have a positive impact on potential participation. Other factors like gender, age, household wealth, psychological capital, and perceptions were also found to have a significant impact on youth's potential participation in AVAEAs.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1. Recapping on the Purpose of the Research

Unemployment has been relatively high in South Africa and continues to increase, especially among the youth. It has resulted in multiple socio-economic challenges such as poverty, food insecurity, and numerous social ills (drug abuse, crime, social unrest, *etc.*), with the severity of these issues experienced by the rural population, particularly the rural youth. This is despite the implementation of various strategies from the government and different stakeholders that seek to reduce the level of unemployment in the country. In acknowledging the ineffectiveness or failure of these strategies to produce the intended outcomes at the expected rate, the government has been promoting entrepreneurship as an active and potential solution to the youth unemployment challenge. Considering their exposure, knowledge and experience at the disposal of rural youth regarding agriculture, it is expedient for them to utilize these skills in opportunities that will potentially create for them income through self-employment.

However, the challenge is that the empirical studies of the past highlight that youth are not interested in agriculture or farming as they perceive the sector to be of low status and dirty with no potential to create the luxurious lifestyles they desire. Most of this literature emanates from studies done mainly on primary agriculture. It largely ignores the possibility that, although youth might not be interested in primary agriculture, they might be interested and willing to engage in other available opportunities along the agricultural value chain. Hence, this study aimed to examine the potential of agricultural value chains in enhancing rural youth entrepreneurial development and creating employment in the agricultural sector. This was done through two empirical objectives, namely, (i) the investigation of factors affecting rural youth's interest to participate in different agricultural activities, and (ii) the examination of the impact of entrepreneurial spirit and managerial capabilities on rural youth's potential participation in agricultural value-adding economic activities (AVAEAs). The rest of the chapter details the conclusion and recommendations in Section 6.2 and directions for future research in Section 6.3.

6.2. Conclusion and Recommendations

Chapter 5 has highlighted that factors affecting rural youths' interest to engage in agricultural activities are relatively similar, and most of these factors emanate from the youths' limited resource endowment. This suggests that improving the resource base of the rural youth should be a starting point for intervention strategies that seek to address the challenge of limited participation of the youth in the agricultural sector. Sections 6.2.1 and 6.2.2 presents discussions on the conclusions and recommendations on youth engagement in primary agriculture and AVAEAs, respectively.

6.2.1. Primary Agriculture

The study has shown that access to agricultural land affects youths' interest to participate in agricultural activities, particularly primary agriculture. Thus, this suggests a need for cultural changes that have long existed in rural areas. These changes should be able to eliminate the cultural norms and gender stereotypes and be able to improve land access for rural youth regardless of their gender and marital status. Creation of an environment that will enable the youth to borrow, lease, and where possible, purchase agricultural land is necessary when attempting to attract rural youth to primary agriculture. The study further indicates that access to credit is essential in affecting rural youths' interest to participate in primary agriculture. Although the study found that access to credit decreases the likelihood of youth being interested to engage in primary agriculture, this does not ignore the importance of access to production credit in engaging rural youth into the sector. There is a need to necessitate institutional transformation that will improve youths' access to production credit as an enabling factor to engage them in primary agriculture. Reformulation of programs that will offer production credit packages with requirements that can be met by a typical rural youth with payment arrangements that will also consider the structure and growth (in terms of production) of the recipient are necessary.

The research further shows that social capital is vital in affecting youths' interest to engage in primary agriculture. The millennials spend most of their time on their phones and social network platforms. It is on these platforms that they gather most of their information and possibly inspiration. Thus, the lack of agriculture-related information on these platforms somehow contributes to the youths' lack of agricultural information and interest to engage in the sector. It then becomes important to integrate agricultural information into these platforms. This can be done by sharing different farmers' success stories and publications that break down the step-by-step processes required to initiate a primary agricultural activity. Agriculture should be marketed and promoted the same way the other sectors market and promote themselves on social platforms. Also, the creation of more TV and Radio programs that promote primary agriculture are necessary.

The interventions that improve the positive impact of the demonstration effect for rural youth are also important, particularly for youth without family members that are currently engaged in primary agriculture. Hosting of networking platforms, farm shadowing initiatives, mentorship programs and seminars that allow the interaction of rural youth with successful farmers can also assist in attracting these youth into primary agriculture and possibly change their perception of the sector as some of them perceive primary agriculture as a low-status job that cannot provide them the luxurious lifestyles they aspire.

6.2.2. AVAEAs

As discussed above, the impact of social capital in influencing the youths' interests cannot be ignored. Thus, the integration of agricultural information that not only promotes primary agriculture but also promote AVAEAs is essential. Similarly, to primary agriculture, the development of programs that will link youth with mentors/successful AVAEA business owners are vital. Workshops and shadowing initiatives that will provide the youth with practical experiences of different businesses along the agricultural value chain are necessary, particularly since there is very limited, if any, AVAEAs businesses currently operating in the remote areas. This will give the youth exposure to available businesses outside primary agriculture that one can initiate. Considering the resource base of most rural youth and taking into account the capital needed to initiate a typical AVAEA, the provision of production credit is just as necessary when aiming at attracting rural youth in AVAEAs. It then becomes essential for intervention strategies to formulate programs (with lenient requirements as the existing ones) that will provide input credit (*i.e.* processing equipment, storage facilities, *etc.*) specifically for rural youth aiming to engage in AVAEAs.

Moreover, the results of the study highlight a need for skills development related to agriculture in remote areas. Workshops, learnerships, and trainings that will disseminate and equip youth with AVAEAs-related skills and knowledge are important. Trainings relating to advanced AVAEAs (such as processing, proper procedures of drying, and storing fresh fruits and vegetables) are essential in attempting to engage rural youth in the downstream activities along the agricultural value chains. Attention/focus of such interventions should not only be youth but also smallholder farmers already engaged in agriculture. This will assist in diversifying the end products of these farmers and also limit the number of middlemen involved.

In addition to the technical skills development initiatives, there is a need for entrepreneurial and managerial skills development as these are essential inputs for a long-term self-employment initiative, including opportunities in AVAEAs. The results of the study indicate that rural youth endowed with entrepreneurial spirit have a decreased potential to participate in AVAEAs. This could be because they opt for what they perceive as better business opportunities in other sectors as they deem agriculture-related

businesses to be less profitable. Nevertheless, empowerment initiatives that will seek to equip rural youth with the necessary managerial and entrepreneurial capabilities are necessary, particularly for youth with interest to engage in agriculture-related businesses. Mentorship programs that will link rural youth with well-established people in the downstream agricultural activities that will mentor and teach them about business and agriculture are also necessary. This again emphasizes the importance of social capital, particularly the demonstration effect. These business-related skills interventions should not be limited to youth only, but also include smallholder farmers in remote areas to equip them with skills that will enable them to operate their farming enterprises as profitable businesses.

Also, the study highlighted the importance of psychological capital and agricultural perceptions as an important factor in influencing the interest of rural youth to engage in AVAEAs. Psychological capital and perceptions are internal factors of an individual, and there are only limited interventions that can be done to change such. With the dissemination of relevant information and provision of support with external factors (credit, training, *etc.*), it then becomes the responsibility of the individuals to shift/change or improve their psychological capital and perceptions. For active and sustainable engagement of youth in the agricultural sector, a mindset shift from the youth themselves regarding the sector is vital. It is important for youth to view agriculture as a sector that will be able to create for them sustainable income-generating opportunities. This perception will not only attract youth to agriculture but will also assist in reducing rural-urban migration and increasing the succession plan within the agricultural sector.

Overall, it should be noted that the creation and implementation of the various recommended strategies will not be of much assistance without, first, the mentality and attitude transformation from the youth themselves with regard to agriculture. It is worth highlighting that the majority of the factors affecting the youth's interest and potential participation in different agricultural activities are similar and this implies that strategies and policies that seek to attract youth to engage in different agricultural activities can adopt a holistic approach. From the findings of this study and lessons from previous studies, it is recommendable for intervention strategies to focus more on attracting the youth to AVAEAs as such activities are not deemed “dirty and low status” as primary agriculture. Nevertheless, attracting rural youth to primary agriculture is still important for the sake of the succession plan of the sector. These recommendations are directed to the youth of KwaZulu-Natal where the data was collected. However, lessons learned from this study can be a guide for future national policy and strategy formulation that seeks to attract youth into agricultural value chains.

6.3. Future Research Directions

Due to resource and time constraints, this study used data that was collected in one province. Future research can be expanded to other provinces. This will assist in identifying and understanding if the factors affecting rural youths' interest and potential participation in agricultural value chains are homogeneous or heterogeneous. This is essential in assisting policymakers to understand whether strategies aiming to attract South African rural youth into agricultural value chains require tailor-made interventions or a generic approach.

Furthermore, future research should seek a better approach of capturing the youth's perception on agricultural activities. This study used generic questions to capture this variable thus it was not activity specific. Future studies can seek to capture youth's perceptions of primary agriculture separately from their perceptions of AVAEAs. Furthermore, this study was generic in its definitions of AVAEAs (included processing of all agricultural products, milling, *etc.*) and primary agriculture (crops, vegetables, and livestock). Future studies can seek to be product specific. In addition to this, there is also a need to explore the impact of youths' perceptions of getting jobs from other sectors as an active factor in affecting their potential participation in agriculture. Future research can adopt the revealed preference method of asking questions other than stated preference method, particularly for variables/questions that seek to capture psychological capital, perceptions and entrepreneurial spirit of the youth. Also, for youth already engaged in agriculture, the future studies should seek to investigate factors affecting their willingness to incorporate AVAEAs to their current primary agricultural activities. Since this study used the ex-ante approach to investigate interest, future studies can use the ex-post approach and examine factors affecting participation of rural youth in AVAEAs from the perspective of those who are actually participating in farming.

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APPENDIX

Appendix 1: Questionnaire



The information to be captured in this questionnaire is strictly confidential and will be used for research purposes by staff and students at the University of KwaZulu-Natal. The information will be used for a MSc study titled “Value chain in rain-fed agriculture and rural youth entrepreneurial development in South Africa”. There are no wrong or right answers to these questions.

Participation is voluntary and that there is no direct benefit or gain that will be obtained from participating. Also, there is no penalty or loss of benefit for non-participation. You are under no obligation to participate. You are free to withdraw at any time during the completion of the questionnaire without giving a reason. Your personal details will be given a code and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Would you like to participate in this survey? 1 = Yes 0 = No _____

Date		Respondent name	
District		Cell No.	
Area/Municipality		Type of youth (code) ¹	
Ward No.		Family structure of the youth (code) ²	
Enumerator name		Questionnaire Number	

Codes¹ for type of youth:

1=Actively involved in agricultural value adding economic activities

2= Actively involved in primary agriculture

3= Not currently engaged in any agriculture-related activity.

Code² for family structure

1= stays with his/her own family at own house

2= stays with his family (under mother and father roof)

3= stays alone. Independently.

Definitions

- **Value adding economic activities** are all the activities that add value to an agricultural product at a given stage of production. Agricultural value adding activities include provision of inputs, retailing of fresh produce, abattoirs, milking, transportation of produce, etc. **Please note the VAEAs is an abbreviation for Value Adding Economic Activities as used in the rest of the questionnaire.**
- **Primary agriculture** refers to raw crop and livestock production.

MORE YOUTH (RESPONDENT) DETAILS

	Questions	Response
A9	Do you have a tertiary qualification? <i>1=Yes 0= No</i>	
A10	Number of years of experience in VAEAs	
A11	Number of years of experience in primary agriculture	
A12	Is any of the household members engaged in agricultural activities? <i>1=Yes 0= No</i>	
A13	Do you have any chronic illness (any condition/s) that requires you to be on medication always? <i>1=Yes 0= No</i>	
A14	Are you taking care of any chronically ill family member(s)? <i>1=Yes 0= No</i>	
A15	Do you have a role model? <i>1=Yes 0= No</i>	
A16	In what industry is that role model or what does the role model do for a living? code	

Code for A16. *1=Entertainment 2= Health 3=Education 4= Law Enforcement 5=Information and Technology 6=Agriculture 7= Business owner 8= others (please specify)*

A17. Are you a beneficiary of any government (or otherwise) youth/agricultural/rural development support programs (financial assistance/support with inputs/training, etc)? **1 = Yes 0 = No**

If **Yes**, please complete the table below. If **No** go to **SECTION B**

A18. Programme name	A19. Who is providing?	A20. Type/form of assistance (Code)
a.		
b.		
c.		

Code for A20. *1=Financial/funding 2=inputs (specify) 3=training (specify) 4= other (specify)*

SECTION B: HUMAN CAPITAL

Have you ever taken training related to the subjects listed below? 1=Yes 0=No

Discipline	B1: 1=Yes 0=No	B2. If Yes, who offered the training? (Code)	B3: Do you feel you understood the content taught in the trainings? (Code)
Agri. commodity marketing			
Packaging of fresh produce			
Processing of farm produce			
Pricing of products			
Financial Management			
Business planning			
Business start up (includes formation and registration)			
Crop production			
Livestock production			
Other (please specify)			

Code for B2: 1 = Extension officer 2 = Fellow farmers 3 = Private company 4 = NGO 5 = Parents/relative knowledge

6 = Other (please specify) _____

Code for B3: 1 = strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = strongly agree

Please complete the following table by indicating to what extent do you agree or disagree with the following statements:

Managerial skills and capabilities of the youth	B4: Responses (code)
Whenever am in a group or club, I often tend to be part of the leadership	
I have attended a leadership training / seminar before.	
I often share my ideas / concerns whenever I am in a meeting (stokvel, school, etc.)	
Most of the time, I complete tasks later than the agreed time, but I always have them completed.	
I prefer to plan things before I do them (e.g. have a business plan)	
I prefer to do everything by myself	
I find it easy to allocate task and responsibilities to other people	
I have exposure to financial recording, and I will not require training to successfully record financial transactions.	
I have exposure to business planning, and I believe I can successfully write one on my own.	

Code for B4: 1= strongly disagree 2= Disagree 3= Neutral 4= Agree 5 = strongly agree

SECTION C: PHYSICAL AND NATURAL CAPITAL

Complete the following table on ownership and access to assets

Assets	C1. Number of assets owned or have access to	C2. Current market value per unit (s) (Rand)
a. Cellphone (non-smart)		
b. Smart phone/ Tablet (ipad)		
c. Radio		
d. Television		
e. Computer/Laptop		
f. Trailer/cart		
g. Water tank		
h. Motor vehicle in running order (eg. bakkie)		
l. Tractor		
j. Other (specify)		

C3. Do you own or have access to land? 1 = Yes 0 = No (If YES PROCEED to C4, OTHERWISE go to C10)

C4. If yes to C3, what is the total number of plots you have? _____

C5. How much land in hectares do you own/have access to? _____

Please complete the following table regarding the land that you own/have access to.

Plot	C6. Size of plot (hectares)	C7. Means of ownership (Code)	C8. How much in Rands/ha do you pay for leased/rented plots	C9. Plot quality (fertility and drainage)(Code)
Plot 1				
Plot 2				
Plot 2				
Plot 4				
Plot 5				
Plot 6				

Code for C7: 1 = Hold the PTO rights (Land given by the Chief) 2 = Owned (have title deeds to the land) 3 = Leased or rented 4 = Borrowed 6 = Other (specify)

Code for C9: 1 = Very bad 2 = Bad 3 = neutral 4 = Good 5 = Very good

C10. As a youth, are there any other challenges you are facing in relation to land?

SECTION D: FINANCIAL CAPITAL

D1. Is any member of your family receiving a social grant? 1= Yes 0= No

If **Yes**, complete the following table and if **No**, go to **D3**:

Grant	D2: Number of people receiving
Child grant	
Old persons grant	
Disability grant	
Foster child grant	
Care dependency grant	
Grant in Aid	
Military veteran grant	

Note: **Foster grant** is support given to a family that is looking after a child not theirs, in their home, **Care dependency** – grant received by someone taking care of a person with a disability under the age of 18, **Grant in aid** - grant given to someone taking care of a social grant recipient above the age of 18 who cannot take care of themselves

Complete the table below on sources of household income

Source of income	D3: Source of income <i>1=Yes 0= No</i>	D4: Average income each time (Rands)	D5: How many times do you receive this income per year? E.g. once, 2, 3 or 4 times, per year, etc.
Remittances			
Arts and craft			
Permanent employment			
Temporary employment			
Retirement / Pension grant			
Primary agriculture (crop and livestock) sales			
Livestock products			
Agricultural value adding activities			
Own business			
Other (please specify)			

D6. Do you own any livestock? 1= Yes 0= No

If YES, answer the below questions on livestock ownership. If NO PROCEED to D13

D7. What is your main purposes of keeping livestock 1 = Sales (income) 2 = Consumption 3 = Wealth 4 = Draught power (ukulima) 5 = Cultural reasons 6 = Other (please specify)
(multiple answers possible)

Type of livestock	D8. Number owned	D9. If you were to sell them, what would be the average price	D10. Number sold in the previous six months	D11. The average price per livestock sold (Rand)	D12. Main market livestock sold (Code)
a. Goats					
b. Cattle					
c. Sheep					
d. Poultry (broilers)					
e. Domestic chicken					
f. Poultry (layers)					
g. Piggery					

Code for D12: 1=Local butchery 2= Abattoir 2=Supermarket 3=Community/Neighbors 4=Hawkers 5 = Livestock auctions 6=Other (specify)_____

D13: If you wanted / wished to take a loan, do you have a source where you can get it? **1=Yes 0=No**

D14. If **Yes to D13**, will you take it from a formal (banks) or informal source (Stokvel, friends, family, loan sharks)?

D15: Do you believe you would qualify for a loan/credit if you wished to apply to a formal source such as bank? **1= Yes 2=No 0=I do not know**

D16: Have you ever taken credit or used any loan facility in the past year? **1=Yes 0=No**

If no to D16, SKIP to D18

D17: If yes to D21, where did you get the loan? _____

Code for D17: 1= Relative or friend 2 = Money lender 3 = Savings club (e.g. stokvel or internal savings and lending schemes) 4 = Banks 5 = Government 6 = Microfinance institutions 7 = I do not qualify 8= Others (please specify)_____ **(multiple answers possible)**

D18. If No to D16, please specify the reason(s) for not taking and/or using credit **(multiple answers possible)**

1 = The interest rate is high 2 = I couldn't secure the collateral (*isibambiso*) 3 = I have got my own sufficient money 4 = It isn't easily accessible 5 = I do not want to be indebted 6= I do not qualify 7 = Other (please specify)

SECTION E: ENGAGEMENT IN AGRICULTURAL VALUE ADDING ECONOMIC ACTIVITIES

NB: Please explain the definition of AVAEAs as shown in the front page to the respondent. Make sure they understand the difference between primary agriculture and VAEAs before asking the questions in this section.

Please complete the following table by indicating to what extent do you agree/disagree with the following statements:

Agricultural value adding economic activities knowledge	E1: Response (Code)
I believe I have enough and relevant knowledge and information about agricultural activities.	

Code for E1: 1=strongly disagree 2=Disagree 3=Neutral 4=Agree 5=strongly agree

Please ask the below table for youth who are currently engaged in any primary agriculture activity and VAEAs. If not engaged, proceed to E3

Current activity	E2. Response (Yes / No)
a. I am currently engaged in primary agriculture and would like to stay in this activity.	
b. I am currently engaged in primary agriculture and would like to switch to VAEAs	
c. I am currently engaged in primary agriculture and would like to do both primary agriculture and VAEAs	
d. I am currently engaged in VAEAs and would like to stay in these activities	
e. I am currently engaged in VAEAs and would like to switch to primary agriculture	
f. I am currently engaged in VAEAs and would like to do both primary agriculture and VAEAs	
I am currently doing both.	

Please ask the below table to youth who are not currently engaged in any AVAEAs. If currently engaged ONLY in primary agriculture then skip to E7, If engaged in VAEAs only or both primary agriculture and VAEAs then skip to E10.

Which of the following economic activities are you willing/interested to participate in? Please tick only one relevant box.

Activity	E3: Please tick the relevant box
AVAEAs only	
Primary agriculture only.	
The whole value chain	
Not interested/not willing to participate in any agriculture-related activity	

If the youth indicated that they are **not interested in any economic activities (option D)**, answer E5a and E5b otherwise **SKIP to E6**

E5.a Why not interested AVAEAs, why?

E5.b Why not interested in primary agriculture?

If the youth have not indicated any interest in primary agriculture, please skip to E7, otherwise, proceed

E6. Within the normal working hours (8 am to 5 pm), how much time are you willing to spend on primary agriculture per day? _____

If the youth have not indicated any interest in AVAEAs, please skip to E10, otherwise, proceed,

Given your current **level of resources, skills and interest**, which of the following value adding economic activities would you be able to practice/engage in?

Value adding economic activities	E7. Which of the following will you be able to engage in without any external support/assistance?
Transportation of produce	YES / NO. If no, why? _____ _____ _____
Retailing of inputs	YES / NO. If no, why? _____ _____

Retailing of fresh outputs (spaza, street vendors)	YES / NO. If no, why? _____ _____
Selling animal products such as milk, eggs	YES / NO. If no, why? _____ _____
Transforming livestock skin into traditional clothing (Ukwenza imvunulo) & other household goods.	YES / NO. If no, why? _____ _____
Abattoir / butcher	YES / NO. If no, why? _____ _____
Processing of fresh produce (canned tomato/tomato sauce /peanut butter)	YES / NO. If no, why? _____ _____
Buying and selling livestock	YES / NO. If no, why? _____ _____
Milling (turning maize into maize meal)	YES / NO. If no, why? _____ _____ _____ _____
Any other (please specify)	YES / NO. If no, why? _____ _____ _____

E8: Assuming that you will need R20 000.00 to start the business, how much of this money are you willing contribute towards the business given that you had the money? **R** _____

E9: Within the normal working hours (8 am to 5 pm), how much time are you willing to spend on any of your chosen VAEAs above per day? _____

SECTION F: BEHAVIORAL DETERMINANTS

To what extent do you agree or disagree with the following?

Perceptions and attitude towards agriculture.	F1: Response
Agriculture can provide employment opportunities for the youth.	
Agricultural enterprises can be run as a profitable business.	
One can be wealthy/rich through engagement in agricultural activities	
Agriculture is not for uneducated and old people only.	

Code for all response: 1= strongly disagree 2= disagree 3= Neutral 4= Agree 5= strongly agree

Constraints to engagement in rain-fed smallholder agriculture	F2: Response
Lack of access to relevant and adequate information is a constraint in engaging in agricultural activities.	
Limited or lack of knowledge and skills are a major constraint in engaging in agricultural activities.	
Poor infrastructure (roads and telecommunication) is a major constraint in engaging in agricultural activities.	
Lack of funding opportunities for youth is a major constraint in engaging in agricultural activities.	
Failure to meet requirements to access financial services from banks is a major constraint in engaging in agricultural activities.	
Limited exposure to relevant opportunities is a major constraint in engaging in agricultural activities.	
Lack of adequate storage facilities for vegetables or fresh produce is a major constraint in engaging in agricultural activities.	
Poor access to markets is a constraint in engaging in agricultural activities.	
Poor network connectivity is a major constraint in engaging in agricultural activities.	
Financial constraint to buy data bundles and airtime to fully utilize our phone/gadgets to access information is a constraint in engaging in agricultural activities.	
Lack of access to land is a major constraint in engaging in agricultural activities.	

Code for Response: 1= strongly disagree 2= disagree 3= Neutral 4= Agree 5= strongly agree

SECTION G: PSYCHOLOGICAL CAPITAL AND ENTREPRENEURSHIP CHARACTERISTICS

DIMENSIONS OF PSYCHOLOGICAL CAPITAL (Read each statement separately and get a response for each)

HOPE AND OPTIMISM

G1. Youth in South Africa face challenges in trying to access land. Let's say you are one such youth who is interested in farming but facing challenges in trying to access the land.

To solve the problem, to what extent are you most likely to do the following:	Respond*
Engage your family so that they parcel out to you a piece of land	
Talk to traditional leaders to check for the possibility of renting land	
Do nothing and hope that land will be available land one day	
Any other (please specify)	
Any reason (s) for your responses?	

**1=strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

RESILIENCE AND PERSISTENT

G2. Suppose you made an application (for a job/bursary/ university/ college/ internship) and received an unsuccessful respond.

To what extent are you most likely to:	Response*
Apply again when they advertised	
Apply to a different institution	
Stopped making applications.	
Any other (please specify)	
Any reason (s) for your responses?	

**1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

G3. Making profit is one of the reasons why people start businesses. Suppose you're running a business and you have been making losses for the past three years?

To what extent are you most likely to:	Response*
Give up and forget about the business?	
Continue with the business and consult a business advisor/peer	
Continue with the business and change the way you run your daily business activities?	

Any other (please specify)	
Any reason (s) for your responses?	

**1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

SELF-CONFIDENCE & INTERNAL LOCUS OF CONTROL

G4. Suppose you are part of a Stokvel/sports club and they are nominating leadership for 2019 and you are nominated by one of your friends to be the chairperson of the club.

To what extent are you most likely to:	Response*
Accept the deal?	
Ask them to find someone else?	
Ask them to wait because you still want to think about it?	
Any other (please specify)	
Any reason (s) for your responses?	

**1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

G5. Suppose you are a member of a youth Stokvel/ sports club in your area and you attend monthly meeting. In these meetings, you do not always agree with some of the decisions taken by the leadership.

You are in one such meeting and wish to oppose some ideas raised by the leaders, to what extent are you mostly likely to:	Response*
oppose the leader's opinions that are not aligned with your beliefs?	
agree with the leaders to avoid conflict?	
agree with the leader to show respect for their position?	
Any other (please specify)	
Any reason (s) for your responses?	

**1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

ENTREPRENEURSHIP CHARACTERISTICS

G6. Risk-taking, tolerance for failure

Financial constraint is one of the major challenges facing young entrepreneurs. Suppose there is an investment introduced to you with two options.

To what extent are you most likely to:	Response*
a. Choose an investment with 50% chance of losing everything and 50% chance that your money will be doubled?	
b. Choose an investment with 100% guarantee that your money will generate a 15% return on investment?	
c. Choose none of the investment options and save your money in a normal savings account.	
Any reason (s) for your responses?	

**1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely*

G7. Seizing an opportunity,

Suppose you have a job and realize a business opportunity in your community that will generate you the same remuneration you get from your job.

To what extent are you most likely to:	Response*
a. Quit the job and pursue the business opportunity.	
b. Continue with your job and ignore the opportunity	
c. Any other, please specify	
Any reason (s) for your responses?	

*1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely

G8. Problem-solving attitude

As a person who has been affected by unemployment, what have you done to resolve the problem?

To solve the problem, to what extent have you taken the following steps:	Response*
a. Do nothing while waiting for opportunities to come up.	
b. I have been making application.	
c. Decided to pursue my studies.	
d. Initiated an income generating adventure (farming, business).	
e. Any other (please specify)	

*1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely

G9. Proactive

Suppose you have a baking business and on a normal day, you usually bake 20 cakes. On a particular day, you receive 30 cake orders that are all due the same day.

To what extent would you:	Response*
a. work longer hours than usual including in the evening.	
b. cancel the additional 10 and bake the usual 20	
c. contract neighbor businesses to make up quantity.	
Any reason (s) for your responses?	

*1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely

G10. Innovation and creativity.

Suppose you own a business and want to increase your profits by attracting more customers.

To what extent are you likely to:	Response*
a. Increase the quantity of the produce that you sell to maximise revenue	
b. Stick to the same quantity but rebrand the packing of the products and make them more attractive.	
Any reason (s) for your responses?	

*1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely

G15. Embrace change

Suppose you are running a business and realize new equipment or technology that will save you time and make more profit in the future.

To what extent are you likely to:	Response*
a. To adopt the new technology and forgone the short-term profits?	
b. Not buy the equipment and forgo the long-term profits?	
Any reason (s) for your responses?	

*1=Very unlikely 2=Unlikely 3=Neutral 4=Likely 5=Very likely

SECTION H: SOCIAL CAPITAL

Please answer the following questions regarding membership to different social networks or groupings.

Membership to local organizations.	H1: Response
Are you a member of an agricultural cooperative? 1=Yes 0=No	
Are you a member of any business cooperative? 1=Yes 0=No	
Are you part of any other group in the community? 1=Yes 0=No	
Are you a member of a credit and/or savings association (Stokvel)? 1=Yes 0=No	
Are you a member of a youth club? 1=Yes 0=No	
Are you a member of any social media (Facebook, WhatsApp, etc)? 1=Yes 0=No	
i. If Yes to f) how many hours do you spend on internet per day?	
ii. If Yes to f) how much money do you spend on airtime/data per month?	
If you have indicated to be a member of any social club, are there any issues that have aroused within the club? Please indicate. <hr/> <hr/> <hr/>	
If you are not a member of any social club? Please indicate why not <hr/> <hr/> <hr/>	

Please complete the following table regarding your sources of information.

Types of information Source	H2: Used as an information source? 1=Yes 0=No	H3: Rank according to importance (Code)	H4: Are there costs involved? 1=Yes 0=No
Extension officers			
Non-governmental organizations (NGOs)			
Social media (Facebook, WhatsApp, etc.)			
Media (newspapers, radio, TV)			
Phone SMS and text			
Internet			
Training workshops			
Community meetings			
Others (Please specify)			

Code H3: 1 = Not important 2 = Rarely important 3 = Neutral 4 = Important 5 = Most important.

Please indicate the extent to which you agree with the following statements regarding use of ICTs (computers, cellphones, Internet, landline).

ICT use	H5: Response (Code)
I search for information (on farming) with a mobile phone	
I share photos, status and postings (for my farming business) using my mobile phone	
I send and receive emails (for farm inputs and orders) through my mobile phone	
I send and receive information on sms through (for farm inputs and orders) my mobile phone	
I use my mobile phone to access information about markets	
I use my phone to access information on inputs/new technology	
I use my mobile phone to access financial services/credit institutions	
I communicate with my customers, suppliers through my mobile phone	
I use my mobile phone to increase knowledge on farming/agriculture related economic activities	
I use my mobile phone to inform my decisions	

Code H5: 1=strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree

Please indicate the extent to which you agree with the following statements on youth attitudes towards ICT

ICTs perceptions	H6. Response (Code)
a. With mobile phones anything is possible (Farming can be easier with inclusion of technology)	
b. Mobile phones will provide solutions to many of our problems	
c. Technology can attract youth the agriculture sector	
f. Smart phones/new technology makes people waste too much time	
g. Smart phones/new technology makes people more isolated	
h. Smart phones/new technology makes life more complicated	

Code H6: *1=strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree*

Thank you very much for your time

Any comments

Appendix 2: Turnitin Report

Masters Thesis

ORIGINALITY REPORT

10% SIMILARITY INDEX	9% INTERNET SOURCES	4% PUBLICATIONS	0% STUDENT PAPERS
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PRIMARY SOURCES

researchspace.ukzn.ac.za 1 Internet Source	2%
hdl.handle.net 2 Internet Source	1%
www.yeoda.net 3 Internet Source	<1%
uir.unisa.ac.za 4 Internet Source	<1%
repository.up.ac.za 5 Internet Source	<1%
www.tandfonline.com 6 Internet Source	<1%

Appendix 3: Ethical clearance letter



22 October 2019

Ms Raesetse Johanna Baloyi (212534491)
School Of Agri Earth & Env Sc
Pietermaritzburg Campus

Dear Ms Baloyi,

Protocol reference number: HSSREC/00000470/2019

Project title: Value chains in rain-fed agriculture and entrepreneurial development for rural youth in South Africa.

Full Approval — Expedited Application

This letter serves to notify you that your application received on 11 September 2019 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted FULL APPROVAL

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid for one year from 22 October 2019.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

Yours sincerely,

Dr Rosemary Sibanda (Chair)

Humanities & Social Sciences Research Ethics Committee Dr Rosemary Sibanda (Chair)

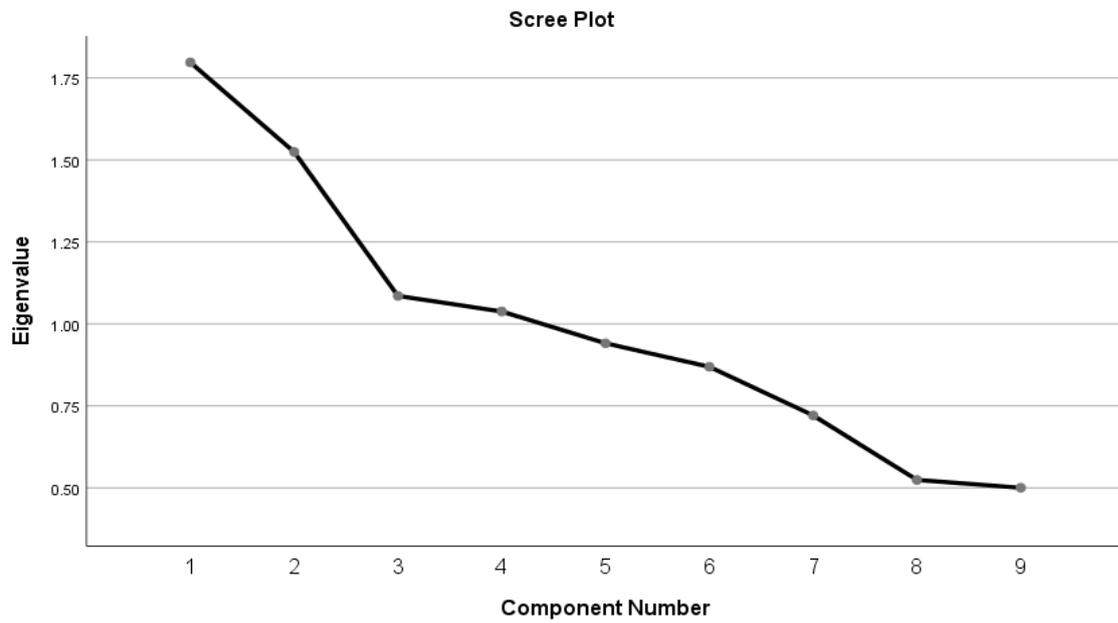
UKZN Research Ethics Office Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

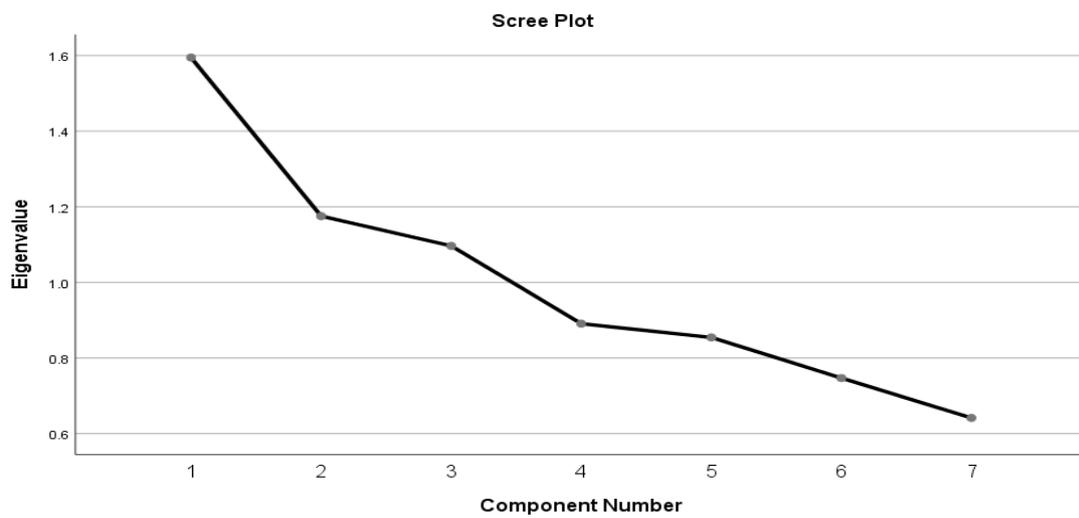
Website: <http://research.ukzn.ac.za/Research-Ethics/>

Founding Campuses: Edgewood Howard Cobee Medkal School Pietermaritzburg Westville

Appendix 4: Scree plots for PCA

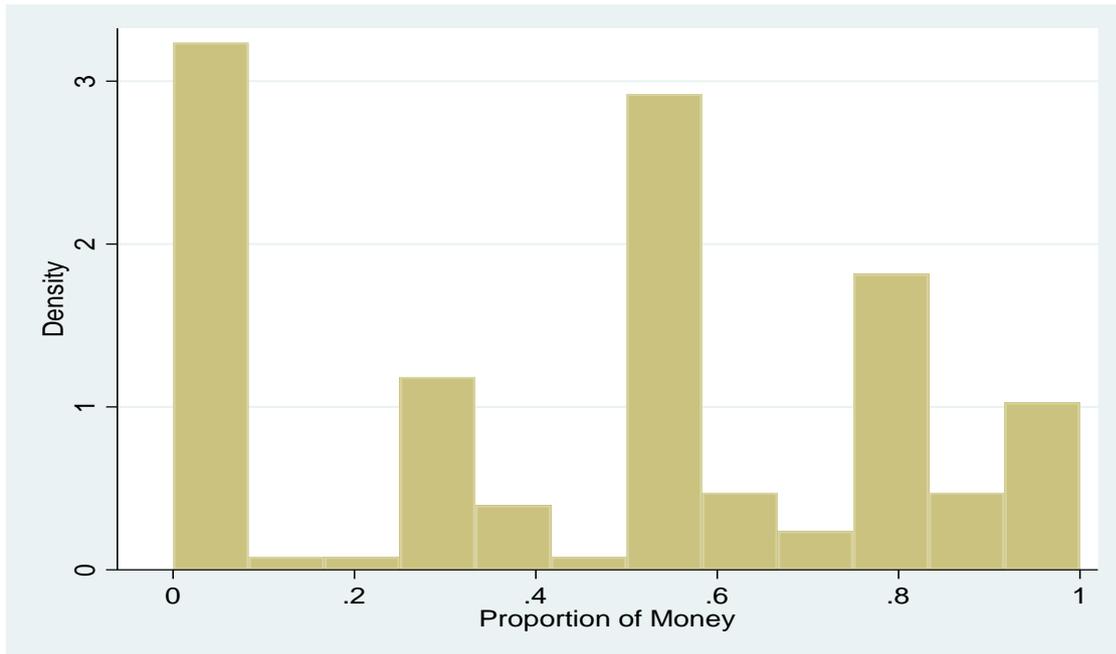


Appendix 4 (a): Scree plot for the managerial capabilities principal component.

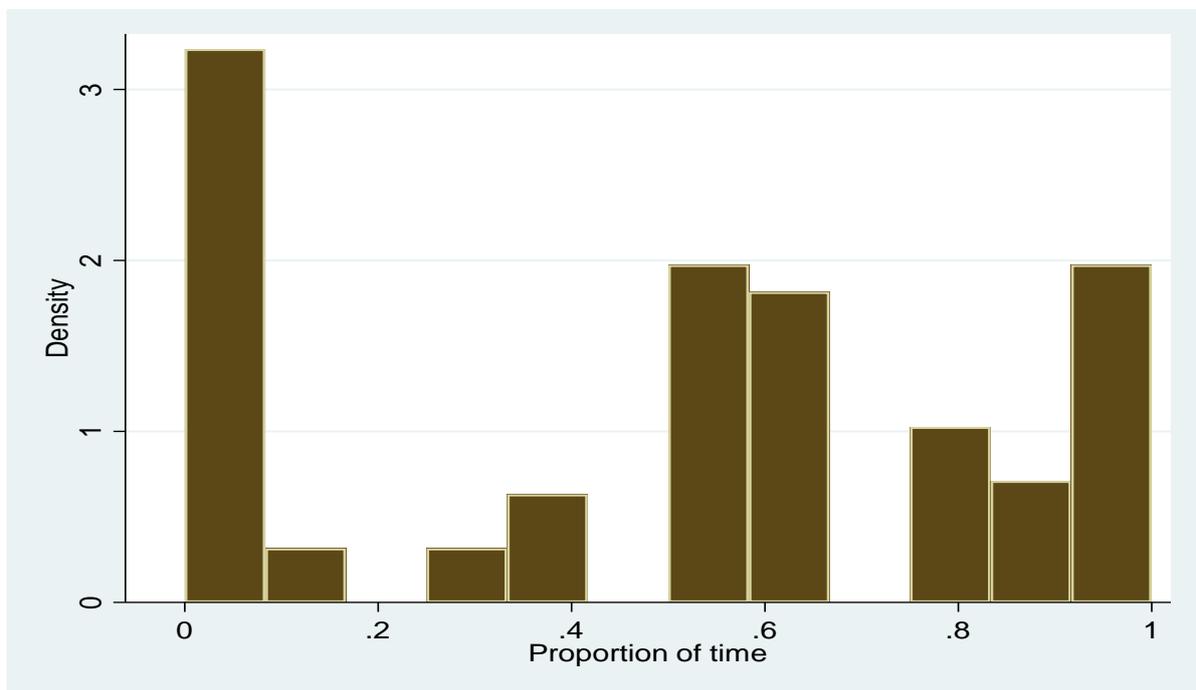


Appendix 4 (b): Scree plot for the entrepreneurial spirit principal component.

Appendix 5: Histograms for FML Dependent variables.



Appendix 5 (a): Density plot for proportion of money.



Appendix 5 (b): Density plot for proportion of time.