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Youths' Perceptions and Aspiration towards Participating in the Agricultural Sector: A South African Case Study

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Abstract: Agriculture is considered as a leading source of employment while ensuring food security to the world and especially rural communities. However, the youth do not appear to be interested in the agricultural sector due to various reasons such as their perceptions and aspirations towards the sector. This research intends to explore whether perceptions, aspirations and access to resources affect youth participation in agriculture and related economic activities, under rain-fed production in two regions of the Free State province of South Africa. Principal component analysis was used to determine perception dimensions, while a probit model was used to investigate the effect of capital (human, social, physical, financial and natural), the perception dimensions and the respondents' agricultural aspirations on agricultural participation. The results showed that the aspirations of youth do not affect their decision to participate in the agricultural sector. However, exposure to agriculture and support systems can increase youth participation in the industry. Results also show that grants, which are an easy source of income, and the uneducated and comfort perception dimension hinders youth participation in agriculture.



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1. Introduction

The agricultural sector is considered a leading source of employment in developing markets (White 2012) and plays a pivotal role in economic growth and poverty alleviation in most countries (Muhammad-Lawal et al. 2009). The sector is not only vital for the development of nations (Naamwintome and Bagson 2013), but also offers a source of livelihood to 60–80% of people worldwide and provides a major boost to national revenue and economic development (Brown and Hansen 2008). The agricultural sector contributes 35% in employment worldwide and 86.8% in the African continent (International Labour Organisation 2010).

Agriculture is seen as a solution to many of the socioeconomic challenges facing South Africa, particularly in the rural areas where farming is practised (Ntshangase 2016). The importance of agriculture cannot be emphasised enough in a country such as South Africa, which is faced with rising levels of unemployment, poverty and inequality. Statistics South Africa (Stats SA 2020) shows that the unemployment rate in South Africa currently stands at 30.1%, with youth unemployment at 59.0%, in the first quarter of 2020. The rising unemployment rate has a negative impact on rural livelihoods, and agriculture can play a pivotal role in alleviating this unemployment (Ntshangase 2016). The South African National Planning Commission (NPC) has set the goals for enhancing rural development and improving employment (creating more than a million jobs) through the agricultural sector by 2030 (NPC 2013).

The South African government aims to encourage agricultural participation to address the challenges of economic growth, poverty reduction, unemployment and inequality (Zamxaka 2015). The efforts came through various support programmes and policy initiatives with specific focus on women and youth. Youth specific programmes that have been

developed and initiated include Youth in Agriculture and Rural Development (YARD), Agriculture Youth Development Initiative for South Africa of 1998, the Rural Development and Land Reform Youth Empowerment Strategy of 2008 (FANRPAN 2012) and more recently, the National Policy for Beneficiary Selection and Land Allocation of 2020. The introduction of these initiatives (by government and organised agriculture) is aimed at promoting youth involvement in farming and agriculture-related activities as the sustainability and expansion of the sector does not only rely on their active participation, but also on their creative capacity, physical strength and effective comprehension capabilities (Kimaro et al. 2015; Cheteni 2016; Giuliani et al. 2017). Youth involvement in agriculture has the potential to lessen the challenges of food security and youth unemployment (Bagson and Kuuder 2013). To this end, the need to attract youth to agriculture in rural agricultural societies remains vital (Man 2012).

Despite the initiatives taken by government and organised agriculture, the participation of youth in agriculture remains a challenge (Man 2012). Various reasons and constraints have been identified as the cause of the lack of youth participation in agriculture, including non-competitive salaries, the physical nature of the work and lack of information on the diverse jobs within the industry (Kidido et al. 2017); while White (2012) and Tafere and Woldehanna (2012) observed that youth prefer and aspire to occupations outside agriculture since non-farming occupations are perceived to be more economically rewarding, stable, and not “back-breaking”.

Research has been undertaken in the field of agriculture with consideration of youth and levels of youth participation in the sector. The literature on youth involvement in agriculture tend to focus largely on sociodemographic and economic factors that constrain youth involvement in agriculture (Nnadi and Akwizu 2008; Adekunle et al. 2009; Ahaibwe et al. 2013; Naamwintome and Bagson 2013; Kimaro et al. 2015; Akpan et al. 2015; Anania and Kimaro 2016). Some factors considered in the literature include, but are not limited to, poor livelihood assets endowment such as land, credit, market access, extension support, limited access to production inputs and lack of government support. Literature suggests that the youth remain a highly diverse group of individuals (Giuliani et al. 2017), with different backgrounds, ideas, ambitions and aspirations (Leavy and Smith 2010; Giuliani et al. 2017). Anyidoho et al. (2012) and Tripathi et al. (2018) argued that youths’ aspirations have direct effects on the choices they make regarding participation in agriculture. More recently, Magagula and Tsvakirai (2020) found that economic perceptions have an influence on the intentions of youth to participate in agripreneurship. Although economic perceptions form part of how perceptions are formed, literature shows that there are also other factors that have an impact on perceptions towards the agricultural sector. Limited attention has been paid to factors such as aspirations and perceptions and are therefore poorly understood as factors that influence youth participation in agriculture (Leavy and Smith 2010; Giuliani et al. 2017; Njeru 2017).

Youth aspirations are mostly limited to academic aspirations and their influence on young people’s career choices (Schaefer and Meece 2009). Nonetheless, some of these studies reflect a strong relationship between young people’s aspirations and perceptions, access to livelihood assets, and the choices they make in relation to agricultural participation (Nataraju 2015; Kimaro et al. 2015; Douglas et al. 2017; Giuliani et al. 2017; Bahta et al. 2018). For example, the studies of Nataraju (2015), Kimaro et al. (2015); Kising’u (2016) and Njeru (2017) show that access to livelihood assets not only influences young people’s aspirations and perceptions, which in turn influences their interest to participate in agriculture, but also directly influences youth participation in agriculture. Most of these studies did not specifically consider understanding the perceptions and aspirations of youth towards being involved in agriculture as a means of a livelihood and employment. Wale and Chipfupa (2018) did venture into the aspirations of farmers; however, the research focused on possible expansion of operations in the future rather than involvement in the sector. This means that the research did not consider individuals who are not involved in the sector. The lack of evidence on these important aspects limits the scope for a discussion on the livelihood

improvement of young people through their perceptions towards the agricultural sector and ultimately agricultural participation. The purpose of this study was thus to explore the influence of youth's access to resource, perceptions and aspirations towards participation in agriculture. We hypothesize that youths' agricultural aspirations and perceptions, and access to livelihood assets would increase participation in agriculture and other related economic activities in rain-fed production regions of the Free State province of South Africa.

The paper uses a probit regression model to investigate the extent to which youth perceptions, aspirations and access to livelihood assets affect their participation in the agricultural sector. This approach has the advantage that the model ensures that the probability of participating in agriculture is between 0 (not participating) and 1 (participating) and non-linear distributions can be modelled. After the conditional probability for agricultural participation was estimated, the marginal effects of the conditional probabilities were calculated. Investigation of the perception variables indicated that some correlation exists between the variables. Therefore, to overcome multicollinearity in the probit regression, a principal component analysis was used to create uncorrelated perception dimensions that could be included in the regression.

2. Youth Participation in Agriculture

Literature suggests that agriculture has the capacity to create employment for young people in Africa (Afande et al. 2015). It is therefore very important for the youth to take an active role in agricultural activities to ensure their own economic independence, food security and the future of agriculture. The agricultural sector is well-known to offer opportunities to the youth and remains the highest source of employment in Sub-Saharan Africa (SSA) (Eissler and Brennan 2015). Agriculture could indeed be the tool to alleviate or reduce the levels of rising youth unemployment (Anyidoho et al. 2012). Even though it is this demographic sector who are expected to take a leading role in the revitalisation of agriculture because of their creative ability (FAC 2010; Ahaibwe et al. 2013) and the opportunities available in the sector, the participation of young people remains minimal (Mibey 2015).

The exact number of young people engaged in agriculture is unknown. Despite measures that have been taken by the government and organised agriculture to stimulate the interest of young people in farming and related activities (Ntshangase 2016), the disinterest of the youth in agriculture is growing (Kimaro et al. 2015). The youths' minimal or poor involvement in the sector is reflected by the increasingly ageing farmer population, where more than 66% of farmers are over 50 years old, and 48% of these farmers are over the age of 61 (Ntshangase 2016).

Literature highlights numerous challenges that hinder youth from participating in agriculture. The challenges include but are not limited to the economic "push factors", such as unemployment, the shortage of credit and rural poverty (Akpan 2010). White (2012) states that, to understand the reasons behind low participation of the youth in agriculture, special attention must be given to problems, including the decline of farming activities, the government's disregard of subsistence agriculture and rural infrastructure, and the challenges relating to land access. Other challenges include the inadequate institutional framework for channelling, mobilizing and developing distinctive aspirations, abilities and experiences of the rural youth towards agricultural activities (Kasolo 2013).

Access to resources is considered vital if one is to participate in farming activities (Noorani 2015; Juma 2017). The study refers to the sustainable livelihood framework (SLF), which highlights five livelihood assets or capitals (human, social, natural, physical and financial) whose access influences the ability of an individual to achieve a positive livelihood (DFID 1999). Human capital includes factors such as education, skills and experiences (Luthans et al. 2004). These factors may influence youths' decisions to participate in agriculture and related activities. For example, Nnadi and Akwizu (2008) found that education positively influenced participation of youth in agriculture. Contrastingly, Kritzing (2002) and Mains (2012) argued that education among youth raises aspirations and results in

them choosing alternative livelihoods to agriculture as farm life will be considered less attractive and of low status. Social capital such as social networks is considered to provide a crucial platform to enhance access to resources such as land, credit and markets and promote participation in agricultural activities. Through networking, youths can access information on markets, production techniques and technology adoption, while skills may be developed through learning from each other (Mumuni and Oladele 2016). Similarly, access to extension services is also considered key to promoting participation in agricultural and entrepreneurial activities along the food value chain among youth through addressing the skill, knowledge and experience gaps that constrain their active participation (Swarts and Aliber 2013; Khapayi and Celliers 2015). According to Bennell (2007), access to land and natural resources are considered key to the development of rural and agricultural societies and poverty eradication. Land tenure security is considered as a pull factor to participate in agricultural activities, especially in a nation such as South Africa with complex land tenure reforms (Douglas et al. 2017; Hosaena and Helder 2018). Access to financial capital, such as credit is also considered important in promoting both farm and non-farm entrepreneurial activities (Sinyolo et al. 2016). Access to agricultural production credit from formal institutions is, however, constrained among youth, due to factors such as complicated application procedures and collateral requirements. Due to the high unemployment among youth, social grants play an important role as an income source. The importance of social grants (child support) even becomes more pronounced among young females in rural areas though they might not be directly used for agricultural activities, but rather to satisfy personal financial needs due to limited sources of income (Phakathi and Wale 2018).

The youth seem to view farming and agriculture in a negative light (D'Silva et al. 2010). According to Ntshangase (2016), young people's perceptions and attitudes improve in the process of socialisation that occurs in their households, at school and within their network of friends. The primary socialisation agent of the youth is the household, which is the place where young people's opinions and insights about small-scale agriculture are influenced (Jones 2009). Muwi (2012) states that these peer groups are the space where young people would understand themselves better, without the socioeconomic status attributed to them by parents. Schools also play a role in the socialisation process, as schools educate the youth, who thereby gain the kind of knowledge that neither their parents nor peers can offer them (Jones 2009). The education process takes place as the youth interact with their teachers, and anything that the youth learn at school may have an impact on how they ultimately view agriculture.

Previous research (i.e., Kritzing 2002; Mibey 2015; Njeru 2017) on youth in agriculture affirms the negative perceptions that young people have towards agriculture and farm life in general. Furthermore, it can be confirmed that young people's non-participation in the agricultural sector is perpetuated not only by low financial income, or the apparent challenges of the unavailability of factors of production, or poor access to resources (such as land, physical capital and other inputs), but also by their attitudes and perceptions. Kusis et al. (2014) found that Lithuanian and Latvian youth based their perceptions of agriculture from reinforced stereotypes of "old" ways of farming, including back-breaking hours in the field, low skill requirement and low wages. Leavy and Smith (2010) revealed that the youth of Tanzania perceived agriculture as a dull job with poor amenities. Similarly, Tadele and Gella (2014) add that young people look down on agriculture as they grow due to their perceived attitude that it is difficult, dull and demeaning. In South Africa, teenage girls were found to be critical of the 'low status' ascribed to farm children, compared with those living in towns. Other issues raised are aspects such as alcohol abuse, gossip, jealousy, lack of privacy, boredom, social isolation of farm workers and restricted leisure opportunities (Kritzing 2002).

Contrary to the findings of the negative perceptions held by the youth and their disinterest in participating in agriculture-related activities, Chikezie et al. (2012) found that some of the youth have positive perceptions about agriculture and actively participated in

most farming activities. Their findings confirmed those of [Adesope \(1996\)](#) and [Roy \(2003\)](#), whose studies identified active engagement of the youth, with positive attitudes towards agriculture regarding farming and related activities. [Chikezie et al. \(2012\)](#) further stated that strong, innovative young people who show enthusiasm and great energy must be supported in their involvement for the purpose of improving food security, nation building, and encouraging agricultural development.

According to [MacBrayne \(1987\)](#), aspiration refers to a person's wish to acquire a specific position or objective, such as a particular employment position or education level. [Bernard and Taffesse \(2012\)](#) referred to aspiration as an indication of intention or ambition and a desire to achieve a particular goal. Aspirations jointly include the choices and principles upheld, as well as the challenges known to persons regarding the future ([Bernard and Taffesse 2012](#)). Importantly, aspirations differ between individual persons, groups and households ([Brown 2000](#)), and play an important role in decision making and in how individuals view and perceive their life outcomes ([Schaefer and Meece 2009](#)).

[Sumberg et al. \(2012\)](#) indicated that education is one factor playing a key role in influencing youth aspirations. [Anyidoho et al. \(2012\)](#) found that the educational attainment and involvement of the youth in farming in Nigeria was rooted in their aspirations. Most studies around the aspirations of the rural youth make an important contrast in the inequalities between rural and urban educational opportunities. [Naukkarinen \(2017\)](#) states that rural youth of Costa Rica are perceived to be disadvantaged in their access to educational and employment opportunities, which has a great impact on their aspirations.

According to [Middleton and Grigg \(1959\)](#), youth in rural areas are likely to have lower aspirations in relation to education and occupation, as opposed to those in urban areas, since the urban-based youth are more exposed to opportunities. However, [Gutman and Akerman \(2008\)](#) and [Byun et al. \(2012\)](#) argued that, regardless of their geographical location, young people whose parents and teachers have greater expectations for them are more likely to have higher educational aspirations. For instance, young people whose parents want them to attend college are more likely to aspire to attend college. [Byun et al. \(2012\)](#) thus emphasised the importance of social capital over socioeconomic status, and point out, according to their findings, that parents' levels of education were very important in influencing the aspirations of young people in education.

According to research in Lenawee County, Michigan, children growing up in agriculture-inclined household could not easily aspire and succeed in careers out of farming and agriculture ([Haller 1958](#)). In other countries, such as Ethiopia, with major food security challenges, it is becoming difficult to find youth that aspire to take up farming as a livelihood strategy. According to [Tafere and Woldehanna \(2012\)](#) aspirations are a great challenge since children are brought up to aspire to employment in fields unrelated to agriculture, thus leaving the future of agriculture at risk.

Life choices and outcomes are partly affected by aspirations, and ultimately, these aspirations inform the choices youth make regarding agriculture ([Anyidoho et al. 2012](#)). The choice to engage in agriculture and the utilisation of resources may also be a result of both external and internal motivations ([Juma 2017](#)). External motivations could involve family, friends, mass media or extension officers, while internal motivations, on the other hand, include perceptions, interests and willingness to participate in agriculture-related activities.

[Sergo \(2014\)](#) is of the view that, with the influence of a globalised world, developing communications and media exposure, young people have developed an understanding of rural–urban disparities and hence aspire to livelihoods unrelated to agriculture. According to [Tafere and Woldehanna \(2012\)](#), young people change their farming aspirations to non-farming aspirations as they grow older. This is because as the youth grow older, they tend to choose occupations related to their parents ([Tafere and Woldehanna 2012](#)). Finally, [Sergo \(2014\)](#) cited landlessness and the unavailability of the necessary resources needed for farming as major factors for the youth not to aspire to participate in agriculture, especially those who do not finish school.

There are potentially numerous factors that may be linked to aspirations (Bernard and Taffesse 2014). For instance, Ray (2006) states that aspirations are entrenched in an individual's 'aspiration window', that is, an individual's intellectual world and social circle on which they rely to measure what is practical for themselves. The individual's aspirations are influenced by the size and structure of their network of contacts. Nonetheless, aspirations are likewise moulded by the person's unique life experience (Bernard and Taffesse 2014).

Bernard and Taffesse (2014) further argue that aspirations, like all attitudinal qualities, are not directly observable and are difficult to perceive. In addressing the problem and measuring aspirations, Bernard and Taffesse (2014) propose two possible alternatives. The first alternative comprises of a combination of assumptions regarding the determinants of aspirations or the individual's pattern of decisions and related results, together with information on real decisions. For instance, it is anticipated that an individual who has a narrow 'aspiration window' will have a low level of aspirations (Bernard and Taffesse 2014). The second alternative approach that may be employed to produce data of exceptional quality, but only if the implementation is performed carefully, is to pose questions directly to individuals about their aspirations (Bernard and Taffesse 2014).

Beaman et al. (2012) directly asked questions about aspirations; however, the study asked parents questions in relation to their aspirations for their children. Edgington (1976) used a similar approach to directly measure youth educational and occupational aspirations. Students were surveyed using a questionnaire that provided "fixed-choice stimulus questions" to elicit responses from the youth. Nichols et al. (2010) used the Educational Aspiration Scale (EAS), a self-rating questionnaire, to assess the highest education level youth aspire to obtain, with the highest-level score in this regard indicating a higher formal educational aspiration, while the lower would mean the lower aspiration level. There are different ways in which aspiration can be determined and measured, with most studies preferring a direct measuring of aspirations with the use of structure instruments. Through the review of literature, it has now been established that access to resources that are contained in the sustainable livelihood framework do have an impact on the livelihoods and ultimately the participation of individuals in the agricultural sector. Not only is the access to resources an important aspect to consider when participation of individuals in the sector is determined, it has also been mentioned that their aspirations and perception towards the agricultural sector also influence their willingness to and ultimately their participation in the sector. This is also applicable when the youth is considered as literate, which has also indicated that their observations of elders in the sector influence their perceptions towards participation in the agricultural sector. For these reasons the research would consider resources included in human, social, financial, natural and physical assets in combination with youths' perceptions and aspirations to determine the influence thereof on their participation in the agricultural sector.

3. Research Methods

3.1. Study Areas, Sampling and Empirical Models

The study is intended to assess the participation of youth in agriculture, considering the shared vision that the agricultural sector is a viable basis for livelihood support and the idea that the participation of young people is important. The research was conducted in the Free State province of South Africa. The districts selected within the Free State province were Thaba 'Nchu and QwaQwa. QwaQwa and Thaba 'Nchu is home to many young people who share in the idea that agriculture could be the solution to the prevalent problems of desperate poverty and youth unemployment. The two areas were selected since both areas are known for dryland agricultural production and both have high levels of youth unemployment. These districts were selected for the study since youth unemployment is a major challenge within these districts.

QwaQwa is a former Bantustan ("homeland") located in the central eastern part of South Africa. It is part of the Maluti-A-Phofung Local Municipality, which forms part of

the Thabo Mofutsanyane District Municipality. QwaQwa covers a land area of 655 km² in the eastern part of the Free State province. The town is well known for its wonderful mountain scenery. Mountain slopes are covered with a thick layer of grass best suited for grazing, and the soil in the valleys has been described as 'rich, loamy and best suited for agriculture' (Koatla 2012).

Thaba 'Nchu is a rural town situated within the Mangaung Metropolitan Municipality, in the Motheo District of the Free State Province, South Africa. The town is located 63 km east of Bloemfontein and 17 km east of Botshabelo. Thaba 'Nchu covers a land area of 36.39 km² and comprises the town itself and 42 small villages scattered around the town. The predominant economic sector in these villages is that of subsistence agriculture.

3.2. Sampling Procedure

The study made use of stratified, random sampling to draw a sample of youths in the study area (QwaQwa and Thaba 'Nchu areas) who are currently engaged or not engaged in agricultural and related activities. A sample size of 199 respondents between the ages of 18 and 36 were included in the study to determine the existing differences in terms of sustainable livelihood resources, aspirations, perceptions and participation in the agricultural sector. The respondents took part in the research of their own free will and could withdraw anytime during the interview or data collection process. The study used a pre-tested structured questionnaire to collect primary data on youth involvement in agriculture. The questionnaires were available in English. However, to ensure clarity and ease of comprehension for the respondents during the interviewing process, the questions were translated and presented to the respondents in Sesotho or Setswana, depending on the preferred language. For consistency in interpretation and clarity, each enumerator who administered the questionnaire helped each respondent in responding to the questions.

Data were collected in block sessions from August 2019 to February 2020. The collection process was interrupted by the COVID-19 pandemic when lockdown restrictions were implemented in South Africa. One final round of data collection was performed in September 2021 when COVID-19 restrictions were relaxed and allowed the researcher(s) to complete data collection.

3.3. Empirical Models

Principal component analysis (PCA) was used to generate dimensions based on youths' perceptions of agriculture. The PCA can reduce several variables into smaller, more manageable dimensions without loss of essential information (Phakathi 2016). The dimensions were used as explanatory variables in the regression model.

The dependent variable used in the regression was a binary variable as the assumption is that respondents would either participate in agriculture (1) or not (0). Linear probability models (LPM) can be used to explain a binary dependent variable; however, the approach has raised several concerns (Maddala 1983). Firstly, the model allows for the estimation of probabilities below 0 or above 1. Secondly, the approach does not allow for the modelling of non-linear distributions of the error term and the error term does not comply with the homoskedasticity assumption of OLS. An alternative to LPM is to use regressions such as the logit or probit model. Similar studies on participation in agriculture (i.e., Cheteni 2016; Yakubu et al. 2019) have applied a logit model; however, the logit and probit model results are similar. Therefore, the choice between logit and probit model is often left to the researcher.

The probit model fits a maximum likelihood model using a binary dependent variable. The model assumes that the probability of a positive outcome is determined by the standard normal cumulative distribution function (CDF) (Gujarati 2002). Given the assumption of normality, the probability that the observable youth participation in agriculture, I_i^* , is less than a threshold level, I_i , can be calculated from the standard CDF and is expressed as:

$$P_i = P(Y = 1|X) = P(I_i^* \leq I_i) = P(Z_i \leq \beta_0 + \beta_i X_i) = F(\beta_0 + \beta_i X_i) \quad (1)$$

where $P(Y = 1|X)$ is the probability that youth participate in agriculture given the value(s) of the explanatory variable(s), X . Z_i is the standard normal variable, i.e., $Z \sim N(0, \sigma^2)$ and F is the standard normal CDF. The estimation of the utility index ($\beta_0 + \beta_i X_i$) and the β s is complicated; however, the use of maximum likelihood estimators allows the researcher to estimate these variables.

The study used the probit model to determine whether the independent variables in terms of the livelihood assets, youth aspirations and the dimensions derived for perception had an influence on the likelihood of participation in the agricultural sector (1 = Participating, 0 = Not participating). The variables on capital (human, social, financial, physical and natural) and aspirations are discussed in Section 3.4 while the perception variables are discussed in Section 3.5.

To determine the magnitude of the change in the dependent variable due to a change in the independent variables, we must calculate the marginal effects. Cameron and Trivedi (2010, p. 343) described the marginal effects as a measure of the change in the conditional mean of the Y variable due to a 1-unit change in the X variable. The marginal effects (ME) were derived from the individual X variables at the sample mean:

$$ME = \frac{\partial F(\beta_0 + \beta_i X_i)}{\partial X_i} \quad (2)$$

For the binary variables, the ME was not calculated as a change from the mean but rather as a change due to X_i changing from 0 to 1.

3.4. Youth Aspirations and Livelihood Assets (Human, Social, Financial, Physical and Natural Capital)

With the use of structured questionnaires, data on respondents social, financial, human, physical and natural capital were obtained, along with the respondents' agricultural aspirations. Descriptive data for the measured variables are shown in Table 1.

Table 1. Description of data.

Variable		Mean	Std. Dev.	Min	Max	
Part	1 = Yes	0.5226131	0.5007481	0	1	
Human capital						
HHsize	Individuals	4.547739	2.185	1	13	+ / −
Terted	1 = Yes	0.0351759	0.1846888	0	1	−
Expe	Years	2.447437	4.013551	0	27	+
Social capital						
Extension	1 = Yes	0.2864322	0.453234	0	1	+
Agriinni	1 = Yes	0.1557789	0.3635602	0	1	+
Physical capital						
Marketacc	1 = Yes	0.4472362	0.4984622	0	1	+
Financial capital						
Hhincome	ZAR	16767.99	22997.8	0	161,280	+
Grant	ZAR	6415.729	8684.455	0	43,560	+ / −
Grantinpu	1 = Yes	0.1959799	0.3979543	0	1	+
Credit	1 = Yes	0.0301508	0.1714333	0	1	+
Natural capital						
Land	Ha	1.933654	5.978025	0	39	+
Agricultural aspiration						
Agricasp	1 = Yes	0.8341709	0.3728652	0	1	+

According to Muchara (2011), female agricultural participation is common in household farming and related activities. However, the data show that 52% of the respondents were males, while 88% were single and the average household size consisted of four people. The farming experience of the youth respondents ranged from no experience, an average of 2 years, up to a maximum of 27 years of experience with a standard deviation

of 4.063. Farming experience generally relates with gaining improved agricultural skills (Muhammad-Lawal et al. 2009), which is important for sound decision making and effective production. It is expected of an individual with long-term experience in agriculture to have a positive perception and aspire towards continuous participation in agriculture and related activities. Household size is also an important factor that is expected to have an influence on whether the youth will participate in agriculture. A larger household size could imply a greater capacity to work and better efficiency. However, Hadebe (2016) mentions larger households do not always mean increased productivity and participation because larger households tend to have a high demand for own consumption and are less productive.

Although most of the respondents indicated having no experience in agriculture and related economics activities, the fact that some respondents stated that they had experience may be a reasonable indicator that there is some degree of interest and willingness to participate in agriculture and related activities by the youth in the study area. Education and training related to the agricultural sector are important aspects in human capital development, and it is, therefore, necessary to pay attention to these factors. In terms of education, most of the youth (60%) have finished matric, with only 3.5% of the respondents continuing to complete either a degree or diploma (Terted). The purpose of this was to establish the levels of education of the respondents in the two areas and ascertain whether tertiary education has an influence on participation in the sector. It has been shown/mentioned that better educated individuals would rather opt for careers outside of the agricultural sector (Agwu et al. 2014; Kising'u 2016).

The study also intended to ascertain whether youth who have participated in any agricultural support initiatives (support programmes or training) are more likely to participate in the sector compared to those who have not. This information was thought fruitful as these initiatives would lead not only to improved entrepreneurial capacity but also influence the willingness to act (Chipfupa and Wale 2018). Government or private sector support (which might come through training, financing, mechanisation and provision of production inputs) may play an important role in ensuring the continuous participation of youth in agriculture and could change the perception of the youth regarding agriculture.

Access to extension services and government support services could provide some of the essential elements for retaining the youth in agriculture and attracting those who are not involved. Contact with extension officers could assist with the sharing of important information for the youth who are participating in agriculture, which would improve the youths' knowledge and skills. Bahta et al. (2018) and Juma (2017) emphasise the importance of extension support services for achieving improved agricultural participation. It is expected that young people with access to support initiatives such as support programmes, training and extension will participate in agriculture and related activities.

Social grants are an important source of income for the rural communities. The study seeks to determine youth and their household access to social grants (Grant), and the use of grant money for purchases of agricultural inputs, and to finance other agricultural operations (Grantinpu). The average household income from grants is ZAR 6 416 and around 20% of the household also made use of their social grant money to purchase agricultural inputs. The expectation is that the youth who have access to social grants and use these for agricultural activities are more likely to participate in agriculture and related activities. This could, however, also have a negative effect on participation as mentioned by Wale and Chipfupa (2018), as social grants are income that is "unearned". This income is thus easy to access and does not require any agricultural related work to be generated. This could ultimately lead to lower levels of participation in the agricultural sector where income must be earned. Credit access also helps the poor in improving their livelihoods through consumption, thus relieving them from short-term financial income vulnerability (Okurut et al. 2004). This variable specifically takes into consideration access in the last year (twelve months) preceding the completion of the questionnaire with only 3% of the youth indicating that they had access to credit in this timeframe. Access to credit is an important factor for youth participation (Kimaro et al. 2015; Afande et al. 2015; Juma 2017). Access to

finances, whether it is money they have (income earned, savings or social grants), access through financial institutions in the form of credit or a loan, are expected to have a positive influence on participation of youth in agriculture.

Market access is a very important factor in as far as youth participation in agriculture is concerned, the reason being that without a market outlet, the youth would have no market to sell their products to earn income. Accessibility to the market is a key success factor, most particularly in smallholder farming, because it motivates farmers to maximise production and contribute to household income and, ultimately, to food security (Machethe 2004). Similar to previous indications related to smallholder and emerging farmers, most of the respondents indicated that they do not have access to a market (marketacc, 55%). The youth indicated that challenges such as poor road infrastructure, lack of transportation, and distance limit market access. Lack of access to markets provides a barrier to participation as the participant do not have any outlet to sell their products, and, therefore, must travel to other areas, villages or towns to sell their products. As mentioned earlier, transport is also not always available, which could potentially lead to a loss of products and income, as no markets are available. Market access is an essential factor influencing participation in remunerative agricultural activities (Khapayi and Celliers 2015). Market access is thus expected to have a positive influence on agricultural participation of youth.

Land ownership or access to land constitutes an important factor in this research, as ownership of land and access thereto are important for direct agricultural production. Also, land can be used as collateral for securing financial capital from financial institutions (Darkey et al. 2014). Both these factors could increase the likelihood of youth participation in agriculture. For instance, youth who have access to or own land are more likely to participate in agriculture and related activities than those without land. Various studies (i.e., Amanor 2008; White 2012; Afande et al. 2015; Divyakirti 2002) have found lack of access to land as a significant constraint to youth involvement in agriculture. Access to land is, therefore, seen as an essential resource to encourage youth participation (Proctor and Lucchese 2012) and it is expected that youth with access to land, either through renting or ownership, are more likely to participate in agriculture and related activities.

3.5. Measuring Perceptions

During data collection, the youths were asked to rank statements based on the extent that they agree (5) or did not agree (1) with the statement. The purpose of the Likert type question was to measure the youths' perception of agriculture. However, due to correlation between the statements a PCA was used to reduce the dimensionality of the perception data. Perception dimensions were created using the 12 statements shown in Table 2. The purpose of the dimensions was to determine the youths' perceptions towards agriculture. PCA was used to create the dimensions with the use of a factor analysis assuming varimax rotation and Kaiser Normalisation. The statements with communalities of 0.5 or less were excluded (Nieuwoudt et al. 2017). The statements removed, due to low communalities, were *"I find that primary rain-fed agriculture is attractive to me as a young person"* and *"Primary rain-fed agriculture is unattractive, dirty and backbreaking"*. After the removal of these statements, the rotated component matrix provided four components with eigenvalues greater than one.

Table 2. Statements used to determine perception dimensions of youth.

Primary rain-fed agriculture can offer better livelihood support and is the best way to alleviate poverty
Primary rain-fed agriculture is unattractive, dirty and backbreaking
Primary rain-fed agriculture is an option for under-achieving students and adults
Primary rain-fed agriculture is reserved for old uneducated people
I find that primary rain-fed agriculture is attractive to me as a young person
Primary rain-fed agriculture would be the last choice if other non-farm options are available
I have seen elders improving their life through primary rain-fed smallholder agriculture
I prefer irrigated smallholder agriculture to rain-fed smallholder farming
Value adding agricultural activities are physically demanding
I prefer an office job than an outside/field job
I can be wealthy/rich through engagement in agricultural value chain economic activities
The youth can engage in agricultural value chain activities related businesses

(1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree).

4. Results

The results section only presents the findings and a discussion of the goodness of fit of the analysis conducted.

4.1. Perception Dimensions

The perception dimensions, which consist of four components, and the component loadings are shown in Table 3. The indicators used to determine the suitability of the PCs included the Kaiser-Mayer-Olkin measure of sample adequacy (KMO) and Bartlett's test of sphericity. The results showed a KMO of 0.623, which is greater than the required 0.5, while the Bartlett's test of sphericity was found to be significant at 1%. These indicators show that there is a sufficient correlation between the measured items, and the PCA was an appropriate procedure (Chipfupa and Tagwi 2021). As mentioned before the results do not include items with communalities less than 0.5. The PCA results shown in Table 3 are based on the varimax rotation and only factors with eigenvalues greater than 1 were included. The cumulative percentage of variation explained by the four components included in the final result is 64%.

Table 3. Rotated component matrix.

	Components			
	PC1	PC2	PC3	PC4
I can be wealthy/rich through engagement in agricultural value chain economic activities	0.838	−0.069	0.046	0.164
The youth can engage in agricultural value chain activities related businesses	0.832	−0.082	0.173	0.190
Primary rain-fed agriculture can offer better livelihood support and is the best way to alleviate poverty	0.683	0.169	−0.290	−0.164
Primary rain-fed agriculture would be the last choice if other non-farm options are available	−0.143	0.686	0.161	0.036
Value adding agricultural activities are physically demanding	0.190	0.677	−0.017	0.216
I prefer an office job than an outside/field job	0.120	0.059	0.789	0.139

Table 3. *Cont.*

	Components			
	PC1	PC2	PC3	PC4
Primary rain-fed agriculture is reserved for old uneducated people	−0.140	0.434	0.661	−0.178
I prefer irrigated smallholder agriculture to rain-fed smallholder farming	0.062	0.196	0.201	0.690
Primary rain-fed agriculture is an option for under-achieving students and adults	−0.014	0.548	0.173	−0.603
I have seen elders improving their life through primary rain-fed smallholder agriculture	0.364	0.230	−0.416	0.543
Eigenvalue	2.088	1.552	1.446	1.324
Cumulative %	20.884	36.410	50.863	64.099

Notes: KMO value = 0.623, Bartlett's test of sphericity significant at 1%, factors greater than 0.5 included for explanation reasons. Source: Research Survey.

The first dimension (PC1) showed high loadings in the statements, “I can be wealthy/ rich through engagement in agricultural value chain economic activities”, “The youth can engage in agricultural value chain activities related businesses” and “Primary rain-fed agriculture can offer better livelihood support and is the best way to alleviate poverty”. The second dimension (PC2) consists of the statements, “Primary rain-fed agriculture would be the last choice if other non-farm options are available”, “Value adding agricultural activities are physically demanding” and “Primary rain-fed agriculture is an option for under-achieving students and adults”. The third dimension (PC3) consists of the statements, “I prefer an office job than an outside/field job” and “Primary rain-fed agriculture is reserved for old uneducated people”. While the final dimension (PC4) showed high loadings in the statements “I prefer irrigated smallholder agriculture to rain-fed smallholder farming”, “Primary rain-fed agriculture is an option for under-achieving students and adults” and “I have seen elders improving their life through primary rain-fed smallholder agriculture”.

4.2. Probit Results for Youth Participation in Agriculture

The probit model was used to investigate the effect of livelihood assets (human, social, physical, financial and natural capital), the perception dimensions and the respondents' agricultural aspirations on the likelihood of agricultural participation. The estimated parameters for the variables and their significance levels are shown in Table 4. The results show that seven of the sixteen variables considered have a significant influence on the probability of agricultural participation by the youth.

Table 4. Estimated parameters for the probit regression.

	Coefficient	Std Error	z	p-Value
Constant	−1.952	0.496	−3.93	0.000 ***
Human Capital				
Household size	0.549	0.608	0.90	0.366
Tertiary Education	−1.337	0.635	−2.11	0.035 **
Experience	0.148	0.051	2.92	0.004 ***
Social Capital				
Extension	0.945	0.27	3.29	0.001 ***
Agricultural support	1.188	0.467	2.54	0.011 **

Table 4. Cont.

	Coefficient	Std Error	z	p-Value
Physical Capital				
Market access	2.076	0.300	6.91	0.000 ***
Financial Capital				
Household income	2.76×10^{-6}	5.38×10^{-6}	0.51	0.608
Grant	-3.15×10^{-5}	1.88×10^{-5}	-1.68	0.094 *
Grant for inputs	0.660	0.417	1.58	0.114
Credit access	0.826	0.649	1.27	0.203
Natural Capital				
Land	0.024	0.026	0.92	0.358
Perception Dimensions				
PC 1	0.110	0.141	0.78	0.434
PC 2	0.146	0.138	1.06	0.289
PC 3	-0.255	0.136	-1.88	0.061 *
PC 4	0.152	0.137	1.11	0.265
Aspiration				
Agricultural aspirations	0.247	0.354	0.70	0.485
LR Chi ² (16)	148.66			0.000
Pseudo R ²	0.5397			
Loglikelihood	-63.401			
Correctly classified	85.43%			

Note: *** significant at 1%, ** significant at 5%, * significant at 10%. The estimation converged after five (5) iterations.

The significant LR Chi² test statistic ($p < 0.01$) indicates that at least one of the independent variables influence the dependent variable. Standard OLS regressions report on an R² value to indicate goodness of fit. However, the probit model typically reports a McFadden's pseudo R², which cannot be interpreted as the R² in the OLS, because of the wide variety of the statistics used. A better measure of goodness of fit, therefore, is to use the percentage of cases correctly classified. The overall percentage of cases correctly classified is acceptable and relatively high at 85% with a sensitivity and specificity score of 85% and 86%, respectively. The sensitivity indicates to what extent youth who participate in agriculture are correctly classified, while specificity indicates the extent to which youth not participating in agriculture are correctly classified. The majority (more than 80%) of the respondents are correctly classified as participating or not participating in agriculture. The model is therefore successful in predicting participation and is a good fit for the data.

The only perception dimension that significantly influences youth participation in agriculture and related economics activities is dimension 3 (Uneducated and Comfort). The negative influence ($p < 0.1$) of the variable indicates that youths who perceive agriculture as a sector for the uneducated and who would rather work in an office are not likely to participate in agriculture. This result confirms that found by [Kritzinger \(2002\)](#) and [Kusis et al. \(2014\)](#) that youths prefer to work in other sectors due to the discomfort (back-breaking work) and perceived low status of agricultural work. The results for the probit regression are presented in accordance with the SLF by presenting the results based on the livelihood assets they relate to. Two of the three human capital variables, tertiary education ($p < 0.05$) and experience ($p < 0.01$) both show a significant relationship to the probability of youth participation in agriculture. Both social capital variables, extension ($p < 0.01$) and agricultural support ($p < 0.05$) have a positive influence on the probability of youth participation in agriculture. The result for market access (physical capital) indicate that market access ($p < 0.01$) increases the probability of youth participation in agriculture. Of the four financial assets considered in the study, only social grants were significant at $p < 0.1$. While the perception dimension that significantly influences youth participation in agriculture and related economics activities is PC3. PC3 captures the statements indicating that youth do not see agriculture as a source of employment, thereby representing the youths' negative perception to agriculture.

4.3. Marginal Effects of Youth Participation in Agriculture

The marginal effects show the change in the probability of $Y = 1$ as a per-unit change in (dy/dx) variables, X . The marginal effects were only calculated for the significant variables. The estimated probit coefficient, marginal effect (dy/dx) and the mean value, \bar{X} , at which the X variables will be held are shown in Table 5.

Table 5. Marginal effect of the significant variables.

	Coefficient	dy/dx	\bar{X}
Human Capital			
Tertiary Education *	−1.337	−0.467	0.352
Experience	0.148	0.057	2.45
Social Capital			
Extension *	0.945	0.331	0.286
Agricultural support *	1.188	0.369	0.156
Physical Capital			
Market access *	2.076	0.670	0.447
Financial Capital			
Grant	-3.15×10^{-5}	-1.22×10^{-5}	6415.73
Perception			
PC 3	−0.255	−0.098	0.156

Note: * is the dy/dx for discrete changes of the binary variable from 0 to 1.

The results for the binary variables, shown in Table 5, show the effect of not having access to the factor (e.g., market access) to having access to the factor, in other words, a change in $X_i = 0$ to $X_i = 1$. The results indicate that the effect of tertiary education (−0.467), extension (0.331), agricultural support (0.369) and market access (0.67) on youth participation can be relatively large. Market access, for example, with the highest marginal effect of 0.67 indicate that youth who have access to markets ($X_i = 1$) are 67% more likely to participate in agriculture than youth who do not have access to markets. The results are similar for agricultural support, which show a higher likelihood of 36.9% and extension with a higher likelihood of 33%. Only tertiary education would result in a reduction in the likelihood of participation. For youth who have obtained tertiary education, the probability to participate in agriculture are 46.7% lower than for youth who did not obtain tertiary education.

The continuous variables in Table 5 show the effect of a one-unit increase in a variable while the other variables remain at the mean level. The results for the marginal effects showed that the effect of a 1-unit change in experience results in a 5.7% increase in the probability that youth will participate in agriculture. While a change in the PC3 would result in a 9.8% decrease in the probability that youth will participate in agriculture. The results for grants (<0.01) show that a 1-unit increase in the size of the grant would result in a less than 1% lower probability of participating in agriculture.

5. Discussion

So far, the paper has summarised the data obtained from the youth and has presented the results for the PCA and the probit model. The aim was to explore the influence of youth's access to livelihood assets, perceptions and aspirations towards participation in agriculture. The first section of the discussion will focus on perceptions (as indicated by the perception dimensions) and the second section will discuss the factors affecting youth participation in agriculture. The discussion of the probit results will focus only on the significant variables.

5.1. Youths' Perception of Agriculture

The first dimension (PC1) relates to the economic opportunities for young people through participating in the agricultural sector. The statements relate to perceptions to-

wards agricultural businesses, to employment and to the youth's perceptions towards agriculture. The statements measured how the youth perceive agriculture, and whether the perception they hold would serve as motivation for participation in agriculture. Accordingly, the dimension was named '*Positive economic perception towards agriculture*'.

The second dimension (PC2) relates to negative perceptions of the youth respondents towards participation in the agricultural sector. The dimension speaks to the physical demanding side of the agricultural sector, especially primary rain-fed farming and that it would only be an option or last resort for youth when all other options have been depleted as a career option. The dimension relates to aspects that have also been referred to in literature, which includes low technology use resulting in back-breaking hours in the field, low skill requirement and low wages (Kusis et al. 2014). The dimension was named '*Hard, physical work*'.

Dimension 3 (PC3) represents youth who would rather work in an office and view primary agricultural production as work for older uneducated individuals. Consequently, the dimension represents a perception that the agricultural sector is for individuals who do not want to work in an office and are older and uneducated; therefore, the dimension was named '*Uneducated and Comfort*'. This dimension relates to findings mentioned by Kritzinger (2002), Leavy and Smith (2010) and Kusis et al. (2014) that perceptions and observation regarding the agricultural sector influence youths' willingness, attraction and/or interest to be involved in the agricultural sector. Youths would rather consider other options or opportunities in other sectors that sometimes include working in comfort such as air-conditioned offices and nice clothes (Khue et al. 2016). While agriculture is seen as being hard work, results in low wages (Kusis et al. 2014), low access to resources (Leavy and Smith 2010) and then also the 'low status' which is connected to farming (Kritzinger 2002).

Some farmers may also make use of or prefer irrigated agriculture in their farming business when conditions allow. Wale and Chipfupa (2018) mention that the income generated by farmers from agriculture could be increased when farmers have access to irrigated land, which allows for irrigation schemes to be established. Smallholder irrigation schemes provide opportunities through which livelihoods could be developed and enhanced (Wale and Chipfupa 2018). The last dimension (PC4) relates to the enhancing of lives through irrigated agriculture rather than rain-fed agriculture and was consequently named '*Positive towards irrigated agriculture*'.

The youth perceptions of agriculture, although captured in four dimensions, consist of two basic points of view. Two dimensions (PC1 and PC4) capture a positive perception of agriculture and highlight the opportunities the sector holds for employment and income generation for the youth. The other two dimensions (PC2 and PC3) capture the negative perception that youth have towards the agricultural sector. Both PC2 and PC3 are strongly related to the youth, viewing agriculture as being hard work and, by extension, of low-status and a last resort for employment.

5.2. Factors Affecting Youth Participation in Agriculture

The negative effect of tertiary education on agricultural participation is consistent with the results for Agwu et al. (2014). The results indicate that youths who have received tertiary education are 46.7% less likely to participate in agriculture. The result is not surprising given the work of Middleton and Grigg (1959), who argued that youths from rural areas have lower educational and occupational aspirations. While Sumberg et al. (2012) argued that education influences youths' aspirations. However, the variable for agricultural aspirations was not found to be a significant factor for agricultural participation. Another possible argument is that education influences the youths' perception of agriculture.

Given that D'Silva et al. (2010) found that youth perceive agriculture in a negative light, it is expected that those who have obtained a good education, such as tertiary education, would not turn to agriculture as a source of employment. Of the perception dimensions only PC3 (Uneducated and Comfort) was found to significantly affect the likelihood of

participating in agriculture. A 1-unit change in the dimension would result in a 9.8% change in the likelihood of participating in agriculture. The results therefore confirm those of [Kritzinger \(2002\)](#), [D'Silva et al. \(2010\)](#) and [Kusis et al. \(2014\)](#), in that youth who see agriculture as demanding work (back-breaking) and who perceive the work to be of low status, are less likely to participate in agriculture.

[Juma \(2017\)](#) argued that youth's choice to engage in agriculture is due to both internal (aspirations, perceptions and interests) and external motivations. External motivations consist of exposure from family, friends, media and extension officers. Experience, which is often associated with having parents or family involved in agriculture, showed a positive relationship with youth participation. The result is consistent with the findings of [Kasolo \(2013\)](#) who stated that farming experience is important for increased youth participation in the sector. Previous experiences are related to improved agricultural skills ([Muhammad-Lawal et al. 2009](#)) and promote a positive attitude towards the sector that could lead to active engagement ([Adesope 1996](#); [Roy 2003](#); [Kasolo 2013](#)).

Both extension and agricultural support also have a positive influence on youth participation in agriculture. Extension is often seen in literature as one of the most important requirements for improved agricultural participation ([Bahta et al. 2018](#); [Juma 2017](#)). While the provision of agricultural training for farmers creates an incentive for the youth to participate in agriculture ([Chipfupa and Wale 2018](#)). What is interesting is that the results indicate that the increase in the likelihood of agricultural participation is greatest for agricultural support (37% increase) and extension services (33% increase), while an increase in experience, would result in a 6% increase in the likelihood of youth participation in agriculture, which is relatively small.

Access to markets is important for smallholder farming because it motivates farmers to maximise production and contribute to household income and, ultimately, to food security ([Machethe 2004](#); [Khapayi and Celliers 2015](#)). Literature also argues that lack of access to markets could push youth away from the agricultural sector ([Mulema et al. 2021](#)). The result for market access (physical capital) indicates that market access increases the probability of youth participation in agriculture by 67%. The results are consistent with that of [Khapayi and Celliers \(2015\)](#), who found that market access is important and encourages participation in remunerative agricultural activities.

Receiving social grants is the only financial capital variable that significantly influences youth participation in agriculture. A 1-unit increase in the size of the social grant would result in a less than 1% reduction in the probability of participating in agriculture. Within a South African context, social grants form an important source of income for most households (including youth). However, social grants are 'unearned' income that is easy to access. The result therefore shows that respondents who receive grants are less likely to perform agricultural related work where money must be earned. This is similar to the observations by [Wale and Chipfupa \(2018\)](#), who argued that recipients of unearned income (grants) are less willing to enter an industry that is characterised as hard, back-breaking work with possible low returns ([Kritzinger 2002](#); [Kusis et al. 2014](#)).

The study hypothesized that access to livelihood assets, youth aspirations and their perceptions would influence the decision to participate in agriculture. Of all the livelihood assets considered, only natural capital, measured as access to land, was not significant to explain the likelihood of youth participation. This result is surprising as land is often regarded as an important factor in youth participation. Another surprising result is that the variable to measure agricultural aspirations was not significant. This is, however, a variable that should be investigated in other study areas, as this could be a very localized finding.

The results of the study show that the youths' access to livelihood assets and perception of the sector influence their decision to participate in the agricultural sector. The results support the argument of [Yami Mastewal et al. \(2019\)](#) and [Mulema et al. \(2021\)](#) that support programmes require integrated programmes that considers the youths' aspirations, interests, expectations and resource challenges.

6. Conclusions and Policy Implications

The purpose of the study was to explore the influence of livelihood assets, aspirations and perceptions of young people towards participating in agriculture and related economic activities. The results have identified some key aspects that could play an important role in determining factors that could ultimately attract youth towards actively participating in the agricultural sector. However, it should first be mentioned that the results showed that the aspirations of youth to participate in the agricultural sector were found to be insignificant; however, this is a topic that should be further investigated in other areas. Although several variables were found to be significant, these variables can ultimately be explained by two aspects, namely exposure and social grants.

Exposure to agricultural activities has been found to be a very important aspect in the participation of youth within the sector where experience, agricultural support and extension were found to be positively significant. These variables all contribute and point towards the importance of exposure to their interests or just different aspects of agriculture within primary and even the broader agricultural sector and agricultural value chains. Exposure must be seen broadly as it includes a variety of aspects including but not limited to support programmes, extension services, market access and the opportunity to gain experience in the agricultural sector. The importance of an efficient public and private support system focusing on youth in agriculture can therefore not be over-emphasized. Governmental agricultural agencies need to consider their efforts to attract youth to farming and agriculture related businesses. Part of the exposure efforts should also increase support, as mentioned before, by making production machinery, agricultural inputs and resources not only readily available, but also affordable (Mbeine 2012). It is also through exposure that the image of agriculture should be changed, in that agriculture is not reserved for older and/or uneducated individuals but rather for all. The message should also be clear that agriculture can improve the livelihood of families and contributions can be made towards food security and poverty reduction. The youth clearly have a role to play in the agricultural sector, as the youth can participate in various levels of agriculture and generate livelihoods through agriculture-related activities. However, it is important that the youths' enthusiasm be met with opportunities to ensure that the efforts and resources provided by the government and other institutions are applied successfully. Moreover, support programmes should consider aspirations, interests and expectations of the recipients while addressing the means in which resource challenges can be overcome.

Grants have been mentioned in previous research as a potential hindering factor in the participation in agriculture because grants are an easy income source compared a hard-earned agricultural income. The results showed that grants as a household income source have a negative effect on youth participation in the agricultural sector, albeit a small one. Grants (support) systems should encourage participation in economic activities such as the agricultural sector. Active participation in the economy would decrease youth unemployment and reduce reliance on unearned money. Access to grants and support systems should thus require active involvement in economic activities. Further research is required on the influence on grants as a source of household income. Research could include aspects such as the size of the grant on agricultural participation, if grants are used for agricultural purposes and which grants are used for agricultural purposes.

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