

Article

Beyond Unearned Income: The Contribution of Rural Youth to Earned Household Income in the Free State Province of South Africa

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Abstract

South Africa's urbanization is often driven by poverty, unemployment, and limited resource access. Unearned income, such as social grants and other sources, has contributed to poverty alleviation. However, concerns have also been raised that this unearned support may reduce individuals' motivation to pursue earned income opportunities. This study investigates whether a two-step modelling approach provides better insight than a single-framework model to assess the influence of youths' access to resources on household income generation. The results indicate that the two-step model is more effective, as different factors influence the decision to earn income and the amount earned. Youth unemployment and household receipt of remittances had similar effects on both the decision to earn income and the amount earned. In contrast, youth involvement in agriculture was positively associated with the decision to earn income but negatively associated with the amount of income. Youth-headed households face additional constraints due to limited access to and ownership of productive resources. The study concludes that a two-step approach provides more information and thus a more accurate understanding of rural income dynamics. Enhancing youth access to quality resources and evaluating the effectiveness of support programs are essential for fostering income generation and improving rural livelihoods.

Keywords: rural livelihoods; unearned income; youth economic participation; poverty alleviation; sustainable livelihoods framework



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1. Introduction

Developing countries, especially in Africa and Asia, have experienced an increase in urbanization. Different trends are observed regarding the occurrence of urbanization across the African continent, with some countries experiencing lower levels of urbanization than others [1]. South Africa is one of the countries experiencing an increase in rural–urban migration, contributing to slower rural development [2]. Individuals move from rural areas because they are unsatisfied with their living conditions and seek better opportunities, which they believe can be found in urban areas. According to Mthiyane, Wissink and Chiwawa [2], improved income, better education, and healthcare contribute to individuals moving to urban areas. Individuals, including youths, perceive that they are unable to have the same living standards or income-generating abilities in rural compared to urban areas; as stated by Daudu, et al. [3] (p. 2), “the youth are rapidly turning away from farming in search of lucrative and business-oriented occupations”. The transformation of rural agricultural-based economies into urban, industrial-based economies is linked to urbanization [4]. Urbanization can thus be explained through push and pull mechanisms. Prospects

of opportunities pull individuals towards urban areas, where limited opportunities in rural areas push the youth from rural areas toward urban areas.

Akrong and Kotu [5] emphasize that increased migration to urban areas raises labor demand and exacerbates mismatches between individuals' skills, particularly the youth, and the available job opportunities [6]. However, urbanization affects poverty levels in rural areas. For example, remittances from urban migrants provide financial support to rural households, injecting cash and exerting upward pressure on rural wages [7]. Remittances provide an important economic linkage between urban and rural development [1]. In some instances, a family or household might send capable family members away to where they can receive an income and send money home, which serves as a safety net for the household; however, the household members left behind might become less productive in their efforts to contribute towards the household's livelihood, knowing that they will receive remittances [8]. Urbanization can thus have potential positive impacts on rural areas with the flow of money back to rural households. Still, it can also negatively affect household members who may reduce their willingness to earn an income if they view the remittances as a guarantee. Furthermore, there might be instances where individuals are pulled towards urban areas with the expectation of better opportunities, despite lacking the necessary skills or capabilities. While there is no consensus on how urbanization patterns affect rural livelihoods [9], the rural sector remains important for food production. As Vandecasteele, Beyene and Swinnem [9] explain, urban markets rely on agricultural products from rural areas, making the linkages between rural producers and urban consumers vital. This interdependence underscores the need to address rural poverty and unemployment to retain skills and people in rural areas.

One of the strategies to alleviate poverty in South Africa is the social grant system. The country has one of the best-developed social security programs in sub-Saharan Africa, consisting of seven unconditional grants, which do not require recipients to perform any specific actions to receive the grant [10]. The social grants include Old Age Pension, Disability, Child Support, Foster Child, Care Dependency, War Veterans, and Grant-in-Aid grants [10]. Social grants are designed to provide a source of income to the vulnerable; however, there are instances where grants benefit household members who are not the intended beneficiaries [11]. Over time, the number of grant recipients has grown, with nearly one-third of the population receiving some form of social assistance [10,12]. While social grants aim to alleviate poverty and promote social and economic development [12], research findings are mixed on their effectiveness [10,11,13–17].

Some studies suggest that social grants contribute towards poverty alleviation (see, for example, [10,12,18]) as a cash transfer is received, leading to a reduction in short-term poverty [10]. However, unintended consequences have also been reported. For instance, social grants may discourage recipients from pursuing employment or other income-generating opportunities [11]. Seekings [19] reports that a 2018 Afrobarometer survey revealed that about 66% of respondents believed that the government should look after people while only a third ($\approx 33\%$) agreed that 'poor people should be looked after by their families or kin and not depend on government'. Consequently, many households rely heavily on unearned income to sustain their livelihoods.

Social grants are often the only source of household income [10]. Receiving a grant does not eliminate the need to find employment, especially as grant money is insufficient to cover a household's daily needs [10]. Winchester, King and Rishworth [10] provide fieldwork examples showing how households struggle to meet their needs, with limited employed household members who are of working age, and an ever-growing household (for example, unemployed youth with children in the same household). Thus, social

grants provide a form of ‘hope and survival’ but are not enough to lift households out of poverty [10].

The agricultural sector has historically been a livelihood asset in rural areas and provides primary economic activities. The National Planning Commission (NPC) of South Africa [20] argued that agriculture in Africa has untapped potential, with small-scale agriculture identified as a possible driver for rural economic development and food security [21]. Agriculture, especially primary agriculture, is labor-intensive and provides additional economic and employment linkages [20]. However, the South African sector remains underdeveloped and continues to decline due to increased reliance on social grants and other employment sectors [11,20]. Despite these challenges, the National Development Plan of South Africa envisions reversing this trend through strategic interventions to boost food production, rural incomes, and employment [20]. The sector is projected to provide an additional 1 million jobs by 2030, aligning with national and Sustainable Development Goals (SDGs).

Ensuring access to and efficient use of resources is important for revitalizing the agricultural sector. Participation in agriculture offers a pathway for employment, improved livelihoods, and reduced urban migration pressures [5]. There is a need to explore how social grants influence rural households’ willingness to pursue earned income [11]. Despite being recipients of social grants, household members should be encouraged to seek additional income sources. Research highlights that access to resources is key for involvement in agricultural and non-agricultural rural income-generating activities (some recent examples include [11,22–24]).

Youth participation in the rural agricultural sector is influenced by, amongst others, demographics, education, economic, psychological, and technological resources [22]. Differences in socio-demographics and socio-economic factors have long been considered important concerning economic performance. It is important to understand the motivation of smallholder farmers, or people in rural areas, to work and earn an income. This understanding can provide valuable input towards policies and increase the participation of individuals in rural areas [11]. The motivators for achieving viable livelihood outcomes, especially the youth who have an important role to play in the future, should be determined. Research on dependency on unearned income has not focused on the role of youth in households. For example, Chipfupa and Wale [11] considered smallholder farmers in rural areas and their motivators to work and earn a livelihood income. In their study, the authors used three concepts to understand smallholder farmers’ intentions towards earning a livelihood. They included the Extended Cognitive Model of Motivation, the Sustainable Livelihoods Framework (SLF), and Psychological Capital (PsyCap). Chipfupa [25] has since suggested a modified sustainable Livelihood Framework (MSLF) incorporating PsyCap as an additional capital. Psychological Capital measures are included to represent individuals’ levels of confidence, optimism, hope, and resilience [11]. These factors indicate youths’ behavioral attributes, which are just as important in determining the influence on the decision to take a specific action as the inclusion of livelihood asset endowment, according to Baloyi, et al. [26]. Given the reliance of rural areas on agriculture, it is fair to focus on the participation of households in the sector to earn an income. Several studies have investigated factors influencing youth participation in the agricultural sector; for example, [17,22,24,27–29]. However, the research generally does not consider the role of youths’ endowment with resources within their households and the consequent influence on households’ earning capabilities.

In light of these issues, the reliance of rural households on social grants should be considered, given the expectation that grant income is sufficient to support a household [10]. Therefore, household members must be encouraged to seek income-generating opportu-

nities to improve their livelihoods. This research identifies two related decisions: first, whether to engage in income-generating activities, and second, the extent of income earned from those activities. The study aims to better understand income generation in rural households, with a specific focus on the youth, by examining whether the same or different factors influence these decisions. The research addresses the following questions: is the household decision to earn income a single- or two-step process, which factors influence the decision to earn an income, and the amount earned? The study hypothesizes that household income generation follows a two-step process, where the determinants for earning an income differ from those influencing the income earned, with a particular focus on the role of youth resource endowments within the household. Specifically, youth better endowed with household resources are more likely to participate in income-generating activities and, conditional on participation, are expected to earn higher incomes. The study follows the procedures suggested by [30,31]. A single framework that focuses solely on whether a household earns income is estimated using a Tobit model. Alternatively, a two-step framework is employed where a probit model estimates the decision to engage in earned income activities first, while a truncated regression model is used to estimate the amount of income earned. The results from these frameworks will be compared using Cragg's model specification, which evaluates the appropriateness of each approach using log-likelihood ratio statistics [32]. To the authors' knowledge, limited prior research has investigated whether income generation in rural households follows a single- or two-step decision process, nor has it adequately explored how youth resource endowments within the household influence these decisions.

2. Materials and Methods

2.1. Study Area and Data

The respondents were youth from rural households in the regions of Thaba 'Nchu and Qwaqwa in the Free State province of South Africa. Random convenient sampling was used to collect primary data from youth respondents. As the study focused on youth, only individuals between the ages of 18 and 36 years were included and asked to complete a questionnaire after obtaining consent from each participant. Face-to-face meetings were arranged by government extension officers in each area. The extension officers arranged local meeting points where the research team could meet with the youths. For a more comprehensive discussion of the study areas, see Henning and Jordaan [33]. The questionnaire examined youths' access to capitals outlined in the Modified Sustainable Livelihood Framework (MSLF), including human, social, natural, physical, financial, and psychological capital [25,34] within their households. While completing the questionnaire, respondents were asked to include only individuals who stayed in the household for three or more days per week and ate together. A behavioral economics approach was used to determine youths' reported behavior concerning psychological capital through four scenarios and their possible behavior in each.

Respondents provided estimates of their household income and respective sources. The most prominent income sources identified included permanent employment, temporary employment, agricultural income, remittances, and social grants. Given that the study identified income-generating capabilities of households through their youth, the dependent variable was defined as the proportion of earned income in the total household income. Earned income included income from farming activities, salaries, temporary jobs, and similar sources, while unearned income referred to social grants and remittances. Remittances were also included as an independent variable to determine how income outside the immediate environment influenced earnings, as it could have positively affected rural livelihoods [35]. Social grants received by the households were mainly from the Child,

Old-Age Pension, Disability, and Foster Childcare grants. This meant that the dependent variable was a fraction bounded between zero (0) and one (1), where zero indicated that all household income came from unearned sources, and one indicated that all income was earned.

The independent variables represented youth demographic characteristics and asset access within the SLF, as shown in Table 1. The table describes the respondents in terms of their personal characteristics and access to assets within the SLF using an Analysis of Variance (ANOVA) performed in the Statistical Package for Social Sciences (SPSS), comparing the means between four income groups. The respondents were divided into four groups according to their earned income in relation to total household income, adopting the categorization used by Chipfupa and Wale [11]: no earned income ($y = 0$), low earned income ($0 < y < 50\%$), moderate earned income ($50\% \leq y < 100\%$), and full earned income ($y = 100\%$). Also shown in Table 1 is the hypothesis influence of the independent variables on earned income.

Table 1. Characteristics of youth in households and the earned income for the household.

Income Group	Y = 0%	0 < Y < 50%	50 ≤ Y < 100%	Y = 100%	Total	p-Value	Exp Sign
Observations	177	80	85	112	454		
Involved in agriculture (1 = yes)	0.339 (0.475)	0.763 (0.428)	0.659 (0.477)	0.679 (0.469)	0.557 (0.497)	0.000	+
Household head (1 = yes)	0.266 (0.443)	0.325 (0.471)	0.176 (0.383)	0.438 (0.498)	0.302 (0.460)	0.001	—
Household size	4.644 (1.917)	4.700 (2.258)	4.365 (1.999)	3.482 (2.097)	4.315 (2.092)	0.000	—
Gender (Male = 1)	0.356 (0.480)	0.675 (0.471)	0.624 (0.487)	0.768 (0.424)	0.564 (0.496)	0.000	+
Married (1 = yes)	0.073 (0.262)	0.175 (0.382)	0.106 (0.310)	0.143 (0.351)	0.115 (0.319)	0.079	—/+
Unemployed (1 = yes)	0.650 (0.478)	0.488 (0.503)	0.306 (0.464)	0.411 (0.494)	0.498 (0.501)	0.000	—
Student (1 = yes)	0.232 (0.423)	0.138 (0.347)	0.200 (0.402)	0.107 (0.311)	0.178 (0.383)	0.037	—/+
Education level (years)	11.000 (2.151)	11.163 (2.281)	11.624 (1.676)	11.571 (1.897)	11.286 (2.045)	0.041	+
Experience in agriculture (years)	1.249 (2.779)	3.475 (4.466)	3.965 (4.998)	3.621 (5.721)	2.735 (4.535)	0.000	+
Extension contact (1 = yes)	0.198 (0.399)	0.425 (0.497)	0.353 (0.481)	0.473 (0.502)	0.335 (0.472)	0.000	+
Short term training (1 = yes)	0.073 (0.262)	0.163 (0.371)	0.188 (0.393)	0.205 (0.406)	0.143 (0.351)	0.007	+
Beneficiary of programs (1 = yes)	0.034 (0.181)	0.100 (0.302)	0.094 (0.294)	0.063 (0.243)	0.064 (0.245)	0.127	+
Mechanical agricultural equipment (1 = yes)	0.124 (0.331)	0.163 (0.371)	0.212 (0.411)	0.295 (0.458)	0.189 (0.392)	0.003	+
Non-mechanical agricultural equipment (1 = yes)	0.119 (0.324)	0.175 (0.382)	0.235 (0.427)	0.241 (0.430)	0.181 (0.385)	0.028	+
Livestock (1 = yes)	0.141 (0.349)	0.438 (0.499)	0.459 (0.501)	0.509 (0.502)	0.344 (0.475)	0.000	+

Table 1. Cont.

Income Group	Y = 0%	0 < Y < 50%	50 ≤ Y < 100%	Y = 100%	Total	p-Value	Exp Sign
Land size (hectares)	1.081 (4.397)	1.410 (4.758)	2.463 (8.451)	8.400 (59.558)	3.203 (30.050)	0.206	+
Market access (1 = yes)	0.316 (0.466)	0.450 (0.501)	0.424 (0.497)	0.384 (0.489)	0.377 (0.485)	0.146	+
Credit (1 = yes)	0.062 (0.242)	0.025 (0.157)	0.071 (0.258)	0.071 (0.259)	0.059 (0.237)	0.535	+
Savings (1 = yes)	0.136 (0.343)	0.425 (0.497)	0.412 (0.495)	0.384 (0.489)	0.300 (0.459)	0.000	+
Remittance ratio	0.273 (0.411)	0.207 (0.313)	0.076 (0.128)	0.000 0.000	0.157 (0.314)	0.000	−/+

The standard deviation is shown in brackets; continuous variables were scaled. ANOVA, Chi-square, and Kruskal–Wallis tests show consistent patterns across income groups, except for land size, which was significant in the nonparametric test.

The data indicated that youth from households earning the majority (50–100%) of their income were predominantly male and engaged in agricultural activities, often with several years of experience in the sector. These individuals also tended to have greater access to land, extension services, and various forms of general and agricultural equipment. In contrast, households with little to no earned income (<50%) were more likely to rely on remittances as a primary source of support. It is generally believed that youth endowed with livelihood and behavioral assets contribute positively towards their possible economic participation [26]. Therefore, the underlying hypothesis was that youth with better access to household resources were more likely to participate in income-generating activities and, when participating, were expected to earn higher income in the rural sector, given that people in rural areas relied on access to resources to earn a living [36]. This will consequently reduce the reliance on unearned income, potentially reducing dependence on social grants. Previous research used different variables to determine participation in economic activities and income earning. The expected influence on earned income for each variable is shown in Table 1, based on indications from previous research and observations. The variables included in the study were agricultural sector involvement, education level in years, male youth [11], experience in agriculture, short-term training [26], beneficiary of support programs [11], access to mechanical and non-mechanical agricultural equipment, land size [11,37], savings [38], and credit. These variables were expected to increase households' decisions to engage in earned income opportunities and total earned income. The variables, youth as household head [39], larger households [10,11,22], and unemployment were expected to have a negative influence on the earned income of households because these variable were found to have a negative impact on economic activities in rural areas, or increased the adoption of unearned income. Youth marital status [40,41], student [42], and households receiving remittances [10,35] were anticipated to exert either a positive or a negative effect. An interaction between livestock and land was added, which illustrated the interaction between the need for land when farming with livestock.

2.2. Determining PsyCap Dimensions

Principle Component Analysis (PCA), a multivariate approach, has been used to determine PsyCap dimensions, including youth [11]. The PCA procedure reduces the dimensionality in the data or, in other words, condenses many variables into a smaller set of variables while maintaining the underlying dimensions [11,43,44]. The PCA procedure suggested by Nieuwoudt, Henning and Jordaan [43] was used to determine the

PsyCap components using a Varimax rotation. Respondents were presented with four scenarios, each with three statements where they indicated their anticipated behaviors. The four scenarios provided to the respondents were as follows: (RE) ‘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?’; (SE) ‘Suppose the government approaches you with a deal of a farm with inputs provided and you’re required to form and lead a youth cooperative who will be funded under this support’; (OP) ‘Let’s say you have been running your business for some time and you are familiar with the daily responsibilities of your business. Lately, however, you have been making no profit’; and (HO) ‘Young people/youth often face challenges with unemployment, lack access to capital, lack of access to information and poverty’.

Firstly, the communality of the statements was considered, and only those with values of 0.5 or higher were retained. Each time, the statement with the lowest value was removed, resulting in four statements being discarded. The second step involved evaluating the factor loadings in each component, where a loading of 0.5 was strong [45] and, following the ‘Kaiser-Guttman rule’, only factors with eigenvalues equal to or greater than one were retained [46]. The final solution consisted of four components with eigenvalues greater than one, explaining 74.17% of the variance, as shown in Table 2. Finally, the Kaiser-Meyer-Olkin test of sampling adequacy (KMO) was 0.558, and the Bartlett test of sphericity was significant at 1%.

Table 2. Rotated component matrix representing the different PsyCap dimensions.

Statements	Components			
	1	2	3	4
RE_Continue with the business and change the way you run your daily business activities?	0.900	−0.055	0.091	0.028
RE_Continue with the business and consult a business advisor/peer	0.893	−0.115	0.043	0.067
SE_Ask them to wait because you still want to think about it?	−0.085	0.866	−0.028	0.021
SE_Ask them to find someone else?	−0.079	0.854	−0.083	−0.050
OP_Continue with the business and see these failures and setbacks as temporary	0.107	0.069	0.842	0.113
OP_Quit the business and find something else to do	−0.024	0.192	−0.832	0.035
HO_The government or a relative can address the issues.	0.013	−0.051	0.013	0.817
HO_You still have the potential to work through the challenges and turn things around.	0.071	0.025	0.057	0.802
Eigen values	2.097	1.372	1.270	1.195
Cumulative percentage of Variance	20.48	39.74	57.52	74.17

The final solution provided four dimensions of PsyCap, namely (1) **resilient** youth who showed intent to continue even in challenging times, (2) **low self-efficacy**, which represented youth who had some doubt in their abilities. This second dimension was the opposite of what was expected of PsyCap, given that it represented a lack of self-efficacy and, therefore, treated accordingly in further analysis. The third (3) dimension represented **optimistic** youth, given that they saw setbacks as temporary and had positive views about what was possible. The fourth (4) dimension represented youth who were **hopeful** and actively sought solutions to address issues or challenges. These dimensions were then considered as part of the MSLF to determine the factors influencing the earned income ratio of households. Resilient, optimistic, and hopeful dimensions were expected to be positively related to adopting earned income opportunities and the earned income ratio. In contrast, low self-efficacy was expected to be negatively associated with the decision to

earn income and the ratio of earned income, given that it represented youth who lacked confidence in themselves and their capabilities.

2.3. Procedures

Given the research objective and the nature of the data, a specific analysis method is required. The analysis method must consider the zero censoring of data where there is no earned income as part of household income. A Tobit model is used within a single framework where the dependent variable is the earned income ratio, censored at a threshold [47]. However, a Tobit alone is not sufficient to determine whether the same variables influence both the decision to engage in earning an income and the level of earnings, which may differ [30,31,48]. For example, in this research, a Tobit model assumes that the factors influencing the decision to take on earned income opportunities are the same factors that will influence the amount of earned income and also that the influences are in the same direction [31]. As shown in the previous literature on individuals' views about grants and earned income, this may not always be the case. For this reason, it is important to determine whether different factors influence the decision to adopt income-earning opportunities and the amount of earned income.

As mentioned by Greene [32], the outcome of zero differs from a positive due to a different decision-making process and the intensity of participation. Cragg [49] explains the process in terms of an event that may or may not occur for each observation. When the event does not happen, the value would be zero; however, when the event does occur, the second question would be how much, resulting in a continuous variable for the second stage. Cragg [49] proposed a model that can determine the influence of the same variables on the decision to adopt and the amount earned.

The research follows the procedures outlined by Jordaan and Grové [31] using a Tobit regression model in assessing the influence of resource endowment on the household proportion of earned income. Alternatively, a 'double hurdle' approach is employed, where initially the influence of resource endowment on the decision to engage in earning income is estimated using a Probit model. The dependent variable is one (1) if there is any form of earned income and zero (0) if there is no earned income. This is followed by a truncated regression based on the condition that income is earned, determined by the proportion of earned income. The results from these frameworks are compared using Cragg's model specification, which evaluates the appropriateness of each approach using log-likelihood ratio statistics [32]. Each of the three models is estimated separately with the same independent variables, and the log-likelihood test statistic proposed by Greene [32] is used to make a determination [31]. The procedures were performed in the software R-studio (R version 4.4.1 2024-06-14-“Race for Your Life”) [50], using the packages AER [51] and truncreg [52].

3. Results and Discussion

Firstly, the study determined whether the decision to engage in earning income and the amount earned should have been considered a single or double decision. Secondly, the study examined whether the same factors influenced both aspects. The significance of the log-likelihood test of 325.996 ($p < 1\%$) suggests that the Tobit (single model) should be rejected in favor of the two-step approach, which illustrates that different variables influence the decision to engage in earning income (decision to earn) and the proportion of earned income (earned), as shown in Table 3. The results suggest that the single specification model might not correctly identify the factors influencing the decision to earn income and the proportion of earned income. The results show that youth resource endowment within the household contributes to the proportion of income earned. A lower earned income

ratio in the research explicitly illustrates that a greater portion of the household income is received from unearned sources.

Table 3. Regression results.

	Single Decision Tobit		Decision to Earn Probit		Earned Truncated	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
(Intercept)	0.002	0.352	−1.109 *	0.656	1.051 ***	0.167
Involved in agriculture	0.187 *	0.101	0.481 **	0.188	−0.084 *	0.046
Household head	−0.094	0.097	−0.334 *	0.185	−0.003	0.043
Gender (Male)	0.473 ***	0.092	0.853 ***	0.166	0.018	0.042
Household size	−1.194 ***	0.292	−0.872	0.591	−0.513 ***	0.127
Married	0.089	0.128	0.368	0.287	−0.105 *	0.056
Unemployed	−0.364 ***	0.102	−0.729 ***	0.21	−0.136 ***	0.043
Student	−0.436 ***	0.129	−0.881 ***	0.258	−0.082	0.057
Education level	0.435	0.31	0.842	0.608	0.143	0.147
Experience in agriculture	0.322	0.306	0.862	0.755	0.142	0.115
Extension contact	0.06	0.096	−0.002	0.178	−0.013	0.040
Short term training	0.062	0.125	0.306	0.242	−0.016	0.050
Beneficiary of programs	−0.386 **	0.17	−0.348	0.412	−0.141 **	0.070
Mechanical agricultural equipment	0.195 *	0.108	0.218	0.216	0.076 *	0.045
Non-mechanical equipment	0.026	0.11	−0.028	0.237	0.054	0.046
Livestock	0.225 **	0.096	0.489 **	0.193	0.043	0.041
Land size	−6.075	5.617	−20.914 ***	7.674	3.854	2.503
Market access	−0.037	0.085	0.092	0.162	−0.061	0.038
Credit access	−0.03	0.183	−0.207	0.268	0.017	0.081
Savings	0.335 ***	0.093	0.846 ***	0.183	0.028	0.039
Remittance ratio	−1.418 ***	0.176	−1.587 ***	0.239	−1.014 ***	0.124
Resilience	0.07	0.181	0.328	0.295	−0.092	0.081
Low self-efficacy	0.028	0.182	0.116	0.313	−0.034	0.081
Optimism	0.228	0.187	0.531 *	0.306	−0.023	0.085
Hope	−0.13	0.201	0.089	0.307	−0.135	0.092
Land*livestock	0.012	0.01	0.037 ***	0.013	−0.006	0.004
Log(scale)/Sigma	−0.325 ***	0.065			0.275 ***	0.013
Goodness of fit						
Log Likelihood	−365.1563		−188.4235		−13.73489	
LR test for TOBIT vs. truncated regression					325.9959	
					0.000 ***	

Note: ***, **, and * indicate statistical significance at 1%, 5% and 10%, respectively. Robust standard errors.

The results show that youth resource endowment in a household contributes to household earnings. A lower earned-income ratio shows that a greater proportion of income is from unearned sources. Agriculture is a sector through which unemployment and poverty can be reduced in Africa and South Africa, especially in rural areas. This pattern reflects broader rural development dynamics, where agriculture remains a primary source of livelihood but often requires complementary support to translate participation in the sector into sustainable livelihoods. Individuals must embrace opportunities as they arise in the sector by any available means. Mukwedeya and Mudhara [22] mentioned that even if youth are employed in other sectors, agriculture provides an additional source of income, which helps diversify income sources and increases the overall household income pool. The results support the findings of Mukwedeya and Mudhara [22], indicating that **involvement in the agricultural** sector significantly influences the household's decision to engage in income-earning opportunities compared to those not involved, with positive significance at 5%. This shows that households where youth are involved in the agri-

cultural sector are more likely to have earned income than households where youth are not engaged. Mukwedeya and Mudhara [22] argue that the agricultural sector provides a means of income diversification in addition to existing income sources, which consequently increases the household's overall income. Youth participating in the agricultural sector can thus contribute to households' existing income and enhance the livelihoods of household members.

However, the results from the truncated regression found that households where **youth were involved** in the agricultural sector earned less than those who were not involved (significant at 10%). This is an interesting result and may indicate that youth and households may not take full advantage of the rural agricultural sector and its various value chains to increase their earned income, also discussed by Khowa, Tsvuura, Slotow and Kraai [15]. To enhance youth participation in agriculture, it is important to ensure that the elderly population in the sector is replaced to sustain food production, reduce urbanization and address youth unemployment [5].

Youth have had less time than older individuals to accumulate assets, which can be used to enhance their livelihoods by taking advantage of income-generating opportunities [39]. The study found that households where a youth was **household head** were less likely to adopt income-earning opportunities (significant at 10%). This corresponds with previous reports in South Africa, which stated that youth-headed households struggle to cope without parental guidance or income [53], potentially resulting in lower earned income. It is thus expected that households where a youth is a household head, is less likely to adopt earned income opportunities compared to a household where the youth are not household heads.

It can be argued that larger households would encourage members to be involved in income-earning opportunities due to greater responsibilities of larger households. However, previous research has shown contrary findings [10,11]. As illustrated by Winchester, King and Rishworth [10], the number of household members is an important factor in terms of earning an income. Having more individuals in the household increases youth participation in the agricultural sector [22], and thus, the potential for a greater earned income. Chipfupa and Wale [11] found a negative effect of greater household size on the proportion of earned income. This research suggests that larger households are more likely to have less earned income (significant at 1%). This finding aligns with Chipfupa and Wale [11], who explain that more members in the household increase the possible availability of unearned income, which disincentivizes members from seeking earned income opportunities.

Gender is a well-documented characteristic in research, and it is believed that males have better access to resources in rural areas and agriculture, which translates to better opportunities and more likely to adopt earned income opportunities. The findings show that males are more likely to adopt earned income opportunity (significant at 1%). The findings agree with Chipfupa and Wale [11] and Baloyi, Wale and Chipfupa [26], who found that male youths were more likely to adopt earning opportunities. These gender dynamics reflect broader trends in developing regions and highlight the need for interventions to improve female access to income-generating opportunities. Development pathways suggested by Madende, et al. [54] can guide female engagement in agriculture. Chekol [23] further argues that farming can provide a space for females to be involved. They should be made aware of the opportunities and hindrances, such as sociocultural factors and infrastructural limitations. Bezu and Holden [37] notes that young females are less likely to inherit land, limiting access to this key productive asset, especially in primary agriculture. This highlights areas for further investigation, such as the impact on earned income when the household head is a young (youth) female, particularly of larger households. Address-

ing these constraints could attract female youth to the agricultural sector and enhance household earning capabilities; these indicators warrant further attention.

Being married can potentially influence livelihood decisions [37], as there are instances where the transfer of resources, such as land, occur when individuals get married. The authors further explain that married youth have family responsibilities and would likely settle in their village with what is available. Being married is expected to increase the willingness to put more effort into, for example, farming activities [40] while marital status has been found to be negatively correlated with off-farm business [37] and not necessarily important in explaining the likelihood of receiving social grants [12]. These findings show that being married contributes towards individuals being involved in rural settings through the agricultural sector, potentially leading to earned income. The study found that **married** youth are from households that earn less compared to unmarried youth (significant at 10%). This finding corresponds with previous research where marriage might negatively affect entrepreneurial abilities and limit venturing into additional economic activities [41].

In South Africa, a distinction is made between employed, educated, or trained individuals when reporting employment statistics [55]. It is therefore necessary to determine whether respondents are currently equipping themselves with skills for future employment. This means that although they are not currently employed, they might have an opportunity if they complete their education or training. Having a tertiary education increases the likelihood of finding employment [55]. The respondents' current employment statuses were considered using two variables: **unemployed** and currently a **student**. Households with unemployed youth were less likely to adopt earned income opportunities, and these households had lower earned income (both significant at 1%) compared to households with employed youth. The expectations were confirmed as the findings showed that unemployed youth in household negatively influenced the decision to engage in income-earning activities and the ratio of earned income. Households where the youth were **students** were also less likely to adopt income-earning opportunities (significant at 1%) than households where the youth were not students. Bezu and Holden [37] found that most respondents in their sample were students living with their parents while enhancing their human capital through education. This contributes to the expectations that graduates will eventually be able to improve the overall situation of the household [42]. However, this contribution would only occur if youth can earn an income. There is evidence that having a student in the household places a further financial burden on the household, as they may struggle to afford the costs of university while supporting their family [42], which might further motivate them to seek earned income opportunities. However, the results indicate a different scenario, which can possibly be explained by obtaining study funds through the National Student Financial Aid Scheme (NSFAS) in South Africa.

In some cases, South African students receive support from, for example, government loans or bursaries such as the NSFAS or private sector bursaries, making those with access to these the best students [42]. Walker [42] found that most students sent money home to their families, as having access to funds placed students under obligation to support their families. Although students in the household require further research, money from bursaries and loans being sent home could be the reason for the negative finding regarding the adoption of earned income opportunities.

It was expected that households where youth were beneficiaries of support programs were more likely to adopt earned income opportunities and earn more income. An interesting and unexpected result was that households where youth were **beneficiaries of support programs** were more likely to earn less (lower earned income ratio) compared to households where youth had not been beneficiaries, as indicated by the negative coefficient (significant at 5%) in the truncated regression. Given that support programs aim to en-

hance participation in the agricultural sector, which should consequently increase earning capacity. It contradicts Baiyegunhi and Fraser [56] who suggested that skills training and providing marketing and business development services increases agricultural productivity and household income, eventually reducing most households' dependency ratios.

Research by Chipfupa and Wale [11] found that household members who were part of irrigation schemes had greater earned income proportions. A possible reason could be the dependency on support, which aligns with observations made by Seekings [19]. The author states that individuals might expect assistance to meet all their needs. Individuals or households thus become reliant on the support received through the programs and assume it will meet their needs. Consequently, there is no need to seek earned income opportunities. This suggests that while support programs reach vulnerable groups, reliance on support can reduce self-reliance and the motivation to earn income, a pattern that has been observed in other rural development research. The negative relationship provides an interesting observation and warrants further investigation.

Given the importance of agriculture in rural areas, it is necessary to determine access to resources such as equipment, which can be used in the agricultural production process. A distinction was made between mechanical and non-mechanical equipment for the research, given that mechanical equipment was more expensive while non-mechanical equipment such as spades, forks and rakes, were typically available for household activities. The findings show that households where youth have access to **mechanical agricultural equipment** are more likely to earn more than those who do not have access (significant at 10%). Bezu and Holden [37] reported that the assets owned by a household of which a youth is part, are negatively correlated with choosing off-farm wage opportunities. Their findings suggest that youth from more financially secure households might have better views towards the agricultural sector than towards off-farm opportunities. Similarly, this research finds that access to mechanical assets, which assist in the agricultural production process, creates better-earned income opportunities and increases the proportion of households' earned income.

Being endowed with production assets is important for starting a business in the agricultural sector [57,58], especially land for primary agriculture. Generally, **access to land** positively influences participation or earnings [57–61]. However, the present findings indicate that as youths' access to land increases, households are significantly less likely to decide to earn an income (significant at 1%). This is contrary to the expectation, given that land is an asset that can be used in agricultural production. One possible explanation is that many of the youths have access to smaller plots, as illustrated in Table 3, and cultivate for home consumption rather than for the market. This means that agricultural production does not generate income since it is used for household food security rather than sales. This suggests that many households do not produce a surplus for the market but rather for home consumption. In their research, Ng'Atigwa, et al. [62] also reported a negative relationship between land size and horticultural production. They provide a possible explanation: as land size increases, production costs may become difficult to sustain. Consequently, households may choose to cultivate only enough to meet their needs, especially when other sources of income, including unearned sources, are available. This finding should be further investigated in future research, specifically given the decision to earn income.

Economic activities can be seen from two perspectives, as explained by StatsSA [55]: one option is to be involved in market production activities where the work is being done for others and the second is non-market activities where the work benefits the household, which might not relate to, for example, actual profits or income. Market participation is important to ensure a source of income, as excess products can be sold. This is also highlighted by Mkuna and Wale [40], who state that smallholder agriculture is often focused

on producing a surplus rather than being fully market-oriented. It is not only primary products that are important; households should also see value in additional agricultural artefacts or by-products, especially when farming with livestock [15]. This would ensure that these markets are potentially available, and households can take advantage of them to increase income.

Importantly, livestock should not only be sold for secondary products but also for meat, which provides multiple income-earning opportunities. **Access to or ownership of livestock** thus provides several income opportunities, which is confirmed by the indication that households where youths have access to livestock are more likely to adopt earned income compared to households without access (significant at 5%). Furthermore, the research found that households where youth had access to land and livestock (**Land*livestock**) were more likely to make the decision to earn an income (significant at 1%). The finding shows the importance of livestock in rural livelihoods, given that households where youth with land access were found to be less likely to decide on earning an income. Not only does **livestock** provide a source of income from primary agriculture, but it also provides opportunities to be involved further in the value chain. This is also discussed by Akrong and Kotu [5], who found that trading activities were more profitable than farming among the youth in their research. Khowa, Tsvuura, Slotow and Kraai [15] explain that respondents failed to recognize the potential value of cultural artefacts displayed in their homes or other cultural products produced from animal by-products. This shows that there are areas of value creation that households do not make use of. This indicates that there are alternative ways to be involved in the agricultural sector, including being engaged along different value chains or selling by-products from primary agricultural activities. Individuals do not necessarily have to be involved in primary agriculture or farming.

When considering financial resources, households where youth have access to or have **savings** are significantly more likely to engage in income-earning activities (significant at 1%). Savings are an important resource that can be used in times of shocks [63]. Money from savings provides a safety net that can be used to purchase inputs for agricultural production or other household essentials when earnings are insufficient. Literature confirms that remittances contribute to household income. The findings illustrate that households receiving **remittances** are less likely to adopt earned income opportunities compared to households with no remittances (significant at 1%). The truncated regression also showed that households receiving remittances had lower earned income than those who did not. It could be argued that households who have seen the impact of additional funds on their livelihoods, may expend less effort to increase earned income. This corresponds with Dadi, Mulugeta and Semie [35], who explain that urbanization affects rural households, where urban income can support rural households. Walker [42] also notes that students send money back to their homes, contributing to household income. However, this money is earmarked for the youth currently studying and may not necessarily constitute 'earned income'. It increases rural household expenditures, creates opportunities for investments in farming technologies, and raises demand for high-value products, all contributing to the local rural economy.

Small-scale farmers facing similar scenarios regarding access to resources, institutional arrangements and infrastructure make different decisions that influence their productivity and livelihoods [14]. To this end, PsyCap and entrepreneurial characteristics were included to understand differences in behavior towards decision-making [11,24,64]. The results show that households where youth are **optimistic** are more likely to adopt income-earning opportunities (significant at 10%). The finding agrees with Chipfupa and Wale [11], who found that PsyCap dimensions significantly motivate smallholder farmers to work harder and earn a living. However, the significant dimension identified in this research might

differ from other findings, such as those of Chipfupa and Wale [11], who did not explicitly include all four dimensions of PsyCap: Hope, Optimism, Confidence and Resilience. Despite the differences, there is evidence that PsyCap plays a role in households' earning capabilities. It requires further investigation and clarification, especially regarding youths' roles in the household and their views toward the rural agricultural sector. Positive PsyCap contributes to entrepreneurial spirit [16]. Given this, there is a need to promote entrepreneurship within the agricultural sector. An entrepreneurial culture needs to be embedded in rural youth, allowing them to recognize the value and income potential in agriculture. It is broader than primary agriculture and offers various opportunities along different agricultural value chains. Opportunities along the value chains may also require access to or ownership of additional resources compared to primary agriculture. They may be more attractive to younger generations who shy away from the negative perceptions of farming (primary agriculture).

The results indicate that youth participation in agriculture, access to resources, and household characteristics significantly influence income-earning behavior, but in complex and counterintuitive ways. Youth involvement in agriculture increases the likelihood of earning income; however, it is associated with lower income levels, suggesting under-utilization of agricultural value chains and market opportunities. Access to productive assets such as livestock and mechanical equipment improves both the decision to earn and income levels, while reliance on unearned income from remittances can reduce incentives for active income generation. Household structure, gender, age, education, and marital status further shape income outcomes, with youth-headed households, females, and students often facing constraints in converting opportunities into earnings. The findings showed that access to land alone does not guarantee that a household will decide to earn an income, and access should be complemented with assets such as livestock. Overall, these findings reflect broader patterns in rural and developing regions, where the combination of resource access, market integration, gender dynamics, and dependency on external support determines the effectiveness of rural income-generation strategies, highlighting the need for targeted policies that enhance youth engagement, asset utilization, and market-oriented agricultural participation.

4. Conclusions

The research examined whether a household's income-earning behavior was best modelled as a single process or rather two distinct stages (double hurdle). The focus was on youth and how their access to resources influenced household income dynamics. Understanding this distinction is important for determining whether different factors affect the decision to earn an income versus the amount earned. This is particularly relevant in rural development, where improving livelihoods remains a concern for governments, international bodies like the United Nations, and academic research. In South Africa, social grants provide vital support, but heavy reliance on unearned income may reduce incentives to pursue earned income.

The log-likelihood test confirms that a double hurdle model, separating the decision to earn income from the income level, provides more accurate findings compared to a single framework approach. Youths' access to household resources influences each stage differently, with only three variables significant in both: youth involvement in the agricultural sector, unemployment, and the household receiving remittances. Households with youth in agriculture are more likely to earn income, yet it is associated with lower income levels. Unemployment and reliance on remittances are both negatively associated with the decision to earn income and income levels. The two-stage model thus offers

a more precise understanding of household income-generation and informs practical recommendations for policy and research.

The double hurdle model indicates that youth-headed households may have lower income-earning potential compared to households led by older individuals, likely due to limited access to resources, as youth often face barriers in accumulating the same level of assets as older individuals. Targeted interventions are needed to improve youth access to productive resources, enabling greater participation in income-generating activities. These interventions could take the form of strategic government policies or programs implemented by development agencies. Future research could explore youth income-generating potential at the individual level, beyond household-level dynamics.

While support programs exist, active participation by youth is important to realize the intended benefit. The findings provide a counterintuitive view: households where youth have been beneficiaries of support programs may be low-income households, implying that the programs are reaching vulnerable households as intended. However, concerns remain about the impact and efficiency of these interventions, given that households with youth beneficiaries earn less income. Limited access, inadequate implementation or misalignment between offerings and needs may reduce program effectiveness. There is a need to evaluate the accessibility and operational efficiency of support programs to ensure they fulfil their intended roles. Although extension services and training were not statistically significant in the study, these should also be considered in future assessments of how institutional assistance can effectively include youth in income-generating opportunities.

Participation in the agricultural sector presents opportunities for earning an income. However, to realize its full potential, more than primary production must be considered. There is potential value in promoting vertical integration and value addition across different agricultural value chains, which may include the selling of by-products. The finding also highlights how earning an income depends on access to resources, especially agricultural resources. This is specifically illustrated by households with access to livestock, which were more likely to earn income, and those with mechanical agricultural equipment earned higher incomes. These results suggest that efforts to integrate youth into agriculture yield tangible benefits, as such access is linked to both decisions to earn an income and income level, thereby contributing to improved household livelihoods and reducing reliance on unearned income.

The research provides an interesting indication of land and the decision to earn an income, where the findings suggest that increasing youths' access to land does not necessarily translate into higher household income. This challenges the assumption that land ownership alone is sufficient for income generation in rural households. Future studies should investigate the conditions under which land access leads to market-oriented production, including plot size, access to credit, inputs, and markets, to understand better how land can effectively contribute to youth income and poverty reduction. Although this study focused on resource access at the household level, future research could include a more detailed assessment of youths' direct ownership and control of assets. In addition, the quality and condition of assets should also be considered. Poor-quality resources may hinder production effectiveness and discourage participation in economic activities. A comprehensive understanding of asset access and utility is essential for designing policies that enhance youth engagement in income-generating sectors.

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Abbreviations

The following abbreviations are used in this manuscript:

MSLF	Modified Sustainable Livelihood Framework
NPC	National Planning Commission
NSFAS	National Student Financial Aid Scheme
PCA	Principle Component Analysis
PsyCap	Psychological Capital
SLF	Sustainable livelihood Framework

References

1. Gutu Sakketa, T. Urbanisation and rural development in sub-Saharan Africa: A review of pathways and impacts. *Res. Glob.* **2023**, *6*, 100133. [\[CrossRef\]](#)
2. Mthiyane, D.B.; Wissink, H.; Chiwawa, N. The impact of rural–urban migration in South Africa: A case of KwaDukuza municipality. *J. Local. Gov. Res. Innov.* **2022**, *3*, 56. [\[CrossRef\]](#)
3. Daudu, A.K.; Abdoulaye, T.; Bamba, Z.; Shuaib, S.B.; Awotide, B.A. Does youth participation in the farming program impact farm productivity and household welfare? Evidence from Nigeria. *Heliyon* **2023**, *9*, e15313. [\[CrossRef\]](#)
4. Henderson, J.V.; Wang, H.G. Aspects of the rural-urban transformation of countries. *J. Econ. Geogr.* **2005**, *5*, 23–42. [\[CrossRef\]](#)
5. Akrong, R.; Kotu, B.H. Economic analysis of youth participation in agripreneurship in Benin. *Heliyon* **2022**, *8*, e08738. [\[CrossRef\]](#) [\[PubMed\]](#)
6. Morsy, H.; Mukasa, A.N. *Youth Jobs, Skill and Educational Mismatches in Africa*; African Development Bank: Abidjan, Côte d'Ivoire, 2019.
7. Dorosh, P.; Thurlow, J. Agriculture and small towns in Africa. *Agric. Econ.* **2013**, *44*, 449–459. [\[CrossRef\]](#)
8. Azam, J.-P.; Gubert, F. Migrants' Remittances and the Household in Africa: A Review of Evidence. *J. Afr. Econ.* **2006**, *15*, 426–462. [\[CrossRef\]](#)
9. Vandecasteele, J.; Beyene, S.T.; Swinnem, J. Big cities, small towns, and poor farmers: Evidence from Ethiopia. *World Dev.* **2018**, *106*, 393–406. [\[CrossRef\]](#)
10. Winchester, M.S.; King, B.; Rishworth, A. "It's not enough:" Local experiences of social grants, economic precarity, and health inequity in Mpumalanga, South Africa. *Wellbeing Space Soc.* **2021**, *2*, 100044. [\[CrossRef\]](#)
11. Chipfupa, U.; Wale, E. Linking earned income, psychological capital and social grant dependency: Empirical evidence from rural KwaZulu-Natal (South Africa) and implications for policy. *J. Econ. Struct.* **2020**, *9*, 22. [\[CrossRef\]](#)
12. Zwane, T.; Biyase, M.; Rooderick, S. Assessing the impact of social grants on household welfare using propensity score matching approach. *Int. J. Dev. Issues* **2025**, *24*, 1–15. [\[CrossRef\]](#)
13. D'Haese, M.; Vink, N.; Nkunzimana, T.; Van Damme, E.; Van Rooyen, J.; Remaut, A.M.; Staelens, L.; D'Haese, L. Improving food security in the rural areas of KwaZulu-Natal province, South Africa: Too little, too slow. *Dev. So Afr.* **2013**, *30*, 468–490. [\[CrossRef\]](#)
14. Phakathi, S.; Wale, E. Explaining variation in the economic value of irrigation water using psychological capital: A case study from Ndumo B and Makhathini, KwaZulu-Natal, South Africa. *Water SA* **2018**, *44*, 664–673. [\[CrossRef\]](#)
15. Khowa, A.A.; Tsvuura, Z.; Slotow, R.; Kraai, M. The utilisation of domestic goats in rural and peri-urban areas of KwaZulu-Natal, South Africa. *Trop. Anim. Health Prod.* **2023**, *55*, 204. [\[CrossRef\]](#) [\[PubMed\]](#)

16. Wale, E.Z.; Chipfupa, U. *Appropriate Entrepreneurial Development Paths for Homestead Food Gardening and Smallholder Irrigation Crop Farming in Kwazulu-Natal Province*; WRC Report No. 2278/1/18; Water Research Commission: Gezina, South Africa, 2018.
17. Henning, J.I.F.; Matthews, N.; August, M.; Madende, P. Youths' Perceptions and Aspiration towards Participating in the Agricultural Sector: A South African Case Study. *Soc. Sci.* **2022**, *11*, 215. [[CrossRef](#)]
18. Leibbrandt, M.; Woolard, I.; Finn, A.; Argent, J. *Trends in S. African Income Distribution and Poverty Since the Fall of Apartheid*; OECD Social, Employment and Migration Working Papers; OECD: Paris, France, 2010; Volume 101. [[CrossRef](#)]
19. Seekings, J. *Social Grants and Voting in S. Africa*; Centre For Social Science Research, University of Cape Town: Cape Town, South Africa, 2019.
20. Commission, N.P. *National Development Plan 2030 Our Future—Make It Work*; Springer: Berlin/Heidelberg, Germany, 2013.
21. Graeub, B.E.; Chappell, M.J.; Wittman, H.; Ledermann, S.; Kerr, R.B.; Gemmill-Herren, B. The State of Family Farms in the World. *World Dev.* **2016**, *87*, 1–15. [[CrossRef](#)]
22. Mukwedeya, B.; Mudhara, M. Factors affecting rural youth participation in the smallholder farming sector. *J. Agric. Food Syst. Commun. Dev.* **2024**, *13*, 259–275. [[CrossRef](#)]
23. Chekol, F. Determinants of engagement of rural women in non-farm economic activities in rural Ethiopia. *Cogent Soc. Sci.* **2024**, *10*, 2329802. [[CrossRef](#)]
24. Henning, J.I.F.; Jammer, B.D.; Jordaan, H. Youth participation in agriculture, accounting for entrepreneurial dimensions. *S. Afr. J. Entrep. Small Bus. Manag.* **2022**, *14*, 461. [[CrossRef](#)]
25. Chipfupa, U. *Entrepreneurial Development Pathways for Smallholder Irrigation Farming in KwaZulu-Natal: Typologies, Aspirations and Preferences*; University of KwaZulu-Natal: Pietermaritzburg, South Africa, 2017.
26. Baloyi, R.; Wale, E.; Chipfupa, U. The impact of behavioral attributes on rural youth's propensity to participate in non-primary agribusinesses: Evidence from KwaZulu-Natal, South Africa. *Local Dev. Soc.* **2024**, *5*, 394–409. [[CrossRef](#)]
27. Akpan, S.B.; Patrick, I.V.; James, S.U.; Agom, D.I. Determinants of Decision and Participation of Rural Youth in Agricultural Production: A Case Study of Youth in Southern Region of Nigeria. *Russ. J. Agric. Socio-Econ. Sci.* **2015**, *43*, 35–48. [[CrossRef](#)]
28. Chipfupa, U.; Tagwi, A. Youth's participation in agriculture: A fallacy or achievable possibility? Evidence from rural South Africa. *S. Afr. J. Econ. Manag. Sci.* **2021**, *24*, 1–12. [[CrossRef](#)]
29. Geza, W.; Ngidi, M.; Ojo, T.; Adetoro, A.A.; Slotow, R.; Mabhaudhi, T. Youth Participation in Agriculture: A Scoping Review. *Sustainability* **2021**, *13*, 9120. [[CrossRef](#)] [[PubMed](#)]
30. Katchova, A.L.; Miranda, M.J. Two-Step Econometric Estimation of Farm Characteristics Affecting Marketing Contract Decisions. *Am. J. Agric. Econ.* **2004**, *86*, 88–102.
31. Jordaan, H.; Grové, B. Factors affecting forward pricing behaviour: Implications of alternative regression model specifications. *S. Afr. J. Econ. Manag. Sci.* **2010**, *13*, 113–122. [[CrossRef](#)]
32. Greene, W.H. *Econometric Analysis*; Pearson Education, Ltd.: London, UK, 2012.
33. Henning, J.I.F.; Jordaan, H. *Entrepreneurial Development for Establishing Small Farming Businesses and Employment by Youth in Rain-Fed Crop Farming: Free State Province Case Study*; WRC Report no. 2789/2/23; Water Research Commission: Pretoria, South Africa, 2024.
34. Chambers, R.; Conway, G. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*; The Institute of Development Studies: Brighton, UK, 1992.
35. Dadi, W.; Mulugeta, M.; Semie, N. Impact of urbanization on the welfare of farm households: Evidence from Adama Rural District in Oromia regional state, Ethiopia. *Heliyon* **2024**, *10*, e23802. [[CrossRef](#)]
36. Lebbie, S.H.B. Goats under household conditions. *Small Rumin. Res.* **2004**, *51*, 131–136. [[CrossRef](#)]
37. Bezu, S.; Holden, S. Are Rural Youth in Ethiopia Abandoning Agriculture? *World Dev.* **2014**, *64*, 259–272. [[CrossRef](#)]
38. Antwi, M.; Chagwiza, C. Factors influencing savings among land reform beneficiaries in South Africa. *Int. J. Soc. Econ.* **2019**, *46*, 474–484. [[CrossRef](#)]
39. Kew, J. *Africa's Young Entrepreneurs: Unlocking Potential for a Brighter Future*; International Development Research Centre: Ottawa, ON, Canada, 2015.
40. Mkuna, E.; Wale, E. Explaining Farmers' Income via Market Orientation and Participation: Evidence from KwaZulu-Natal (South Africa). *Sustainability* **2022**, *14*, 14197. [[CrossRef](#)]
41. Magagula, B.; Tsvakirai, C.Z. Youth perceptions of agriculture: Influence of cognitive processes on participation in agripreneurship. *Dev. Pract.* **2020**, *30*, 234–243. [[CrossRef](#)]
42. Walker, M. The well-being of South African university students from low-income households. *Oxf. Dev. Stud.* **2020**, *48*, 56–69. [[CrossRef](#)]
43. Nieuwoudt, S.; Henning, J.I.F.; Jordaan, H. Entrepreneurial competencies and financial performance of farmers in South Africa. *S. Afr. J. Econ. Manag. Sci.* **2017**, *20*, 1–13. [[CrossRef](#)]
44. Bryant, F.B.; Yarnold, P.R.; Michelson, E.A. Statistical methodology: VIII. Using confirmatory factor analysis (CFA) in emergency medicine research. *Acad. Emerg. Med.* **1999**, *6*, 54–66. [[CrossRef](#)] [[PubMed](#)]

45. Costello, A.B.; Osborne, J. Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Pract. Assess. Res. Eval.* **2005**, *10*, 7. [\[CrossRef\]](#)
46. Williams, B.; Onsman, A.; Brown, T. Exploratory factor analysis: A five-step guide for novices. *Australas. J. Paramed.* **2010**, *8*, 1–13. [\[CrossRef\]](#)
47. Gujarati, D.N.; Porter, D.C. *Basic Econometrics*; McGraw-Hill Irwin: Columbus, OH, USA, 2009.
48. Lin, T.-F.; Schmidt, P. A Test of the Tobit Specification Against an Alternative Suggested by Cragg. *Rev. Econ. Stat.* **1984**, *66*, 174–177. [\[CrossRef\]](#)
49. Cragg, J.G. Some Statistical Models for Limited Dependent Variables with Application to Demand for Durable Goods. *Econometrica* **1971**, *39*, 829–844. [\[CrossRef\]](#)
50. R Core Team. *R: A Language and Environment for Statistical Computing*; R Foundation for Statistical Computing: Vienna, Austria, 2024.
51. Kleiber, C.; Zeileis, A. *Applied Econometrics with R*; Springer Science & Business Media: Berlin/Heidelberg, Germany, 2008.
52. Croissant, Y.; Zeileis, A. truncreg: Truncated Gaussian Regression Models. 2018; 2–5. [\[CrossRef\]](#)
53. StatsSA. *Youth in S. Africa 2024*; Report No. 03-00-21 (2024); Statistics South Africa: Cape Town, South Africa, 2024.
54. Madende, P.; Henning, J.I.F.; Jordaan, H. Tailor-Made Development Pathways: A Framework to Enhance Active Participation of Youth in Agriculture. *Soc. Sci.* **2023**, *12*, 630. [\[CrossRef\]](#)
55. StatsSA. *Quarterly Labour Force Survey. Quarter 2:2024*; Statistical Release P0211; Statistics South Africa: Cape Town, South Africa, 2024.
56. Baiyegunhi, L.J.S.; Fraser, G.C.G. Smallholder farmers' access to credit in the amathole district municipality, eastern Cape province, South Africa. *J. Agric. Rural Dev. Trop. Subtrop. (JARTS)* **2014**, *115*, 79–89.
57. Bello, L.O.; Baiyegunhi, L.J.S.; Mignouna, D.; Adeoti, R.; Dontsop-Nguezet, P.M.; Abdoulaye, T.; Manyong, V.; Bamba, Z.; Awotide, B.A. Impact of Youth-in-Agribusiness Program on Employment Creation in Nigeria. *Sustainability* **2021**, *13*, 7801. [\[CrossRef\]](#)
58. Boye, M.; Ghafoor, A.; Wudil, A.; Usman, M.; Prus, P.; Fehér, A.; Sass, R. Youth Engagement in Agribusiness: Perception, Constraints, and Skill Training Interventions in Africa: A Systematic Review. *Sustainability* **2024**, *16*, 1096. [\[CrossRef\]](#)
59. Mangole, C.D.; Nguetzet, P.M.D.; Feleke, S.; Manyong, V.; Christian, K.K.; Bamba, Z.; Abdoulaye, T. Is Youth's Engagement in Agribusiness an Opportunity or a Necessity? A Closer Look at the Situation in South Kivu, Eastern Democratic Republic of the Congo. *Agribusiness* **2025**. [\[CrossRef\]](#)
60. Giwu, O.; Mdoda, L.; Ntlanga, S.S.; Loki, O. Evaluating factors influencing youth participation in agricultural enterprises: Implications for food security and agribusiness. *S. Afr. J. Entrep. Small Bus. Manag.* **2024**, *16*, 903. [\[CrossRef\]](#)
61. Zhang, L.; Feng, S.; Heerink, N.; Qu, F.; Kuyvenhoven, A. How do land rental markets affect household income? Evidence from rural Jiangsu, P.R. China. *Land. Use Policy* **2018**, *74*, 151–165. [\[CrossRef\]](#)
62. Ng'Atigwa, A.A.; Hepelwa, A.; Yami, M.; Manyong, V. Assessment of Factors Influencing Youth Involvement in Horticulture Agribusiness in Tanzania: A Case Study of Njombe Region. *Agriculture* **2020**, *10*, 287. [\[CrossRef\]](#)
63. Ansah, I.G.K.; Gardebroek, C.; Ihle, R. Shock interactions, coping strategy choices and household food security. *Clim. Dev.* **2021**, *13*, 414–426. [\[CrossRef\]](#)
64. Songca, S.S.; Henning, J.I.F.; Madende, P. Livelihood Assets Influence on Rural Youth Participating in Support Initiatives to Enhance Agricultural Participation. *S. Afr. J. Agric. Ext. (SAJAE)* **2024**, *52*, 17–46. [\[CrossRef\]](#)

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