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Factors affecting rural youth participation in the smallholder farming sector

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Abstract

Youth participation in agriculture across Africa remains notably low, failing to reflect significant investments made in the sector. Much of the discussion to date on factors affecting rural youth participation in agriculture has occurred in the absence of robust and compelling evidence. As a result, most policy decisions rely on misconceptions about youth intentions and involvement in agriculture, leading to ineffective strategies for increasing their participation. This study aims to examine the factors influencing rural youth participation in agriculture, particularly in the context of smallholder farming. A pre-tested, structured questionnaire collected data from 200 youths (aged 15 to 35 years) across three districts of Mashonaland East Province in Zimbabwe. Both inferential and descriptive statistics were employed to analyze the data. The findings indicate that the future of agriculture and food security in the study areas is uncertain, with more than 70% of the youth sur-

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Author Contributions

Both authors equally contributed to organizing the article, editorial work, and writing. Both authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

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veyed indicating they do not anticipate engaging in agriculture during the next five years. The factors associated with youth participation in agriculture were found to be multifaceted, encompassing demographic, economic, psychological, educational, and technological dimensions. To enhance youth involvement in agriculture, the study recommends a shift from the traditional siloed approach to an interdisciplinary strategy that includes comprehensive planning, investment, and decision-making.

Keywords
agriculture, food security, participation, policies, youth, unemployment, smallholder, Zimbabwe

Introduction

Africa has the youngest population in the world with more than 400 million people between the ages of 15 and 35 years (Fox & Gandhi, 2021). The population's absolute count makes it the largest generation the continent has ever had. The picture given in Africa is the same in Zimbabwe. According to the Zimbabwe National Statistics Agency (ZIMSTAT) and UNICEF (2019), Zimbabwe is a predominantly youthful country, with approximately 67.7% of its population consisting of young people, and a mean age of 18.5 years. This generation is contributing daily to the benefit of communities and nations in Africa (Cheteni, 2017; Magagula & Tsvakirai, 2019; Sumberg et al., 2021). According to Sumberg et al. (2021), African youth are embracing entrepreneurship and leveraging innovative solutions to address local challenges such as climate change, food insecurity, and poverty. Yami et al. (2019) posit that African youth are actively advocating for better governance, human rights, gender equality, and environmental sustainability. In development literature, a central and recurring theme is the importance of youths in achieving the Sustainable Development Goals of no poverty (SDG1), zero hunger (SDG2), and good health and well-being (SDG3) (Cheteni, 2017; Magagula & Tsvakirai, 2019). Sumberg et al. (2021) posit that youth possess knowledge, attitudes, capacities, and skills that, if properly harnessed, can lift communities and nations out of the persisting challenges of poverty, unemployment, and low agriculture productivity.

Recognizing the importance of youth in development, several African leaders and development organizations have implemented policies and programs to encourage youth participation in agriculture. The Comprehensive Africa Agriculture Development Programme (CAADP), The Youth Desk in the New Partnership for Africa's Development (NEPAD), and the National Youth Policy (NYP) in South Africa, Malawi, and Zimbabwe are just a few examples. The NYP of Zimbabwe details several options for implementation (Hlungwani et al., 2021). The first is the significance of training youth in agricultural production and utilizing modern methods and current information and communication technologies The second is the need to provide land rights to youth and youth organizations to encourage socio-economic development. The third concerns the facilitation of access to credit to encourage youth engagement in agricultural activities. Despite the government's ardent efforts, the return on the amount invested in youth policies and strategies in Zimbabwe is poor (Scoones et al., 2019). Most of the youth remain in the vicious cycle of unemployment, while millions are extremely vulnerable to food insecurity (Zimbabwe Vulnerability Assessment Committee [ZimVAC], 2018; Lukwa et al., 2020). Magagula & Tsvakirai (2019) are of the view that information gaps characterizing much of Africa's policy environment are one reason for the low success of several youth policies and initiatives in agriculture.

Several studies across Africa have examined the factors influencing rural youth participation in agriculture (Akinyemi & Mushunje, 2017; Cheteni, 2017; Udemezue, 2019; Chima et al., 2020; Chipfupa & Tagwi, 2021; Geza et al., 2021). The studies show that individual characteristics (e.g., age, gender, and marital status), household characteristics (e.g., dependency ratio and household size), resource endowments (e.g., physical, social, and human capital), and institutional and organizational support (extension, land tenure, and group membership) influence youth participation in agriculture. Although several studies documented the factors influencing rural youth participation in agriculture, gaps exist in the literature. First, the general focus of most studies has been on the

effect of traditional factors (e.g., age, gender, education) on youth participation in agriculture. Only Magagula & Tsvakirai (2019) and Chipfupa & Tagwi (2021) have integrated noncognitive factors into their analysis. Chipfupa & Tagwi (2021) argue that although traditional factors are important to youth engagement in agriculture, noncognitive factors themselves are equally so. They further posit that understanding the noncognitive factors provides a holistic and better explanation of the youth decision-making process.

Second, the influence of socioeconomic and demographic factors on youth participation in agriculture is inconclusive. For instance, Magagula & Tsvakirai (2019) found that married youth are less likely to participate in agriculture compared to their non-married peers while Yunusa & Giroh (2017) found that the likelihood of engaging in agriculture is higher among married youth. This is the case for several factors such as education, gender, age, access to land, and credit. This inconclusive data on the influence of socioeconomic and demographic factors demonstrates the need for more studies using different data sets and methods in different contexts. This will help in the generalization of the factors affecting rural youth participation in agriculture (Ngema et al., 2018). Within this context, this paper examines the factors influencing rural youth participation in smallholder farming in Mashonaland Province, Zimbabwe. The findings can, theoretically, be applied by other researchers as a benchmark for literature and research methods. Policy-wise, several government agencies and nongovernmental organizations in Africa can use the study as a guide to the design and implementation of appropriate policies and interventions focusing on improving rural youth participation in agriculture.

Theoretical Framework

In general, the term "youth" refers to the transitional period between childhood and adulthood. Hlungwani et al. (2021) describe this phase as a period of transition and exploration, marked by physical changes, cognitive development, identity formation, and increased independence. During this phase, individuals transition from dependence on their parents to becoming independent adults. Deotti and Estruch (2016) reveal that age is the easiest way to define this complex group of individuals. However, there is little consensus on the definition as different institutions and governments utilize various timeframes. For instance, the United Nations (UN) defines youth as a person between the ages of 15 and 24 years while the African Youth Charter characterizes youth as individuals between 15 and 35 years old. In Zimbabwe, youth are defined as persons between the ages of 15 and 35 years. This age range is specified in the Constitution of Zimbabwe and is in line with the African Youth Charter (Nyathi et al., 2022). For this study, the term youth refers to individuals between the ages of 15 and 35 years.

To broaden the understanding of the factors influencing youth career decisions, this study adopted the expectancy-value theory (EVT). Theorists in this framework argue that expectancy and value explain an individual's performance, persistence, and choice of activity (Wigfield, 1994; Eccles & Wigfield, 2002). Expectancies for success tap into one's belief regarding their ability to succeed at a given activity or task, while value, in general, refers to the personal importance or significance one attributes to a particular activity or task (Wigfield, 1994; Wigfield & Gladstone, 2019). The EVT suggests that motivation is highest when individuals perceive a high likelihood of success (expectancy) and assign high personal value to the task or goal (Wigfield & Cambria, 2010). Wigfield & Gladstone (2019) posit that incorporating both expectancy and value components in analysis aids in the understanding of youth decisions beyond their demographics, socioeconomic characteristics, and resource endowment. In the present study, high expectations and values would contribute to youth choosing to engage in agriculture. Youth who believe that succeeding in farming is important and that doing so would improve their feeling of being a successful farmer have high attainment values. Others who find engaging in agriculture enjoyable or fascinating will have intrinsic values, whereas those who find it useful will have utility values. Youth who believe that farming would need too much time and effort will have a low motivation level.

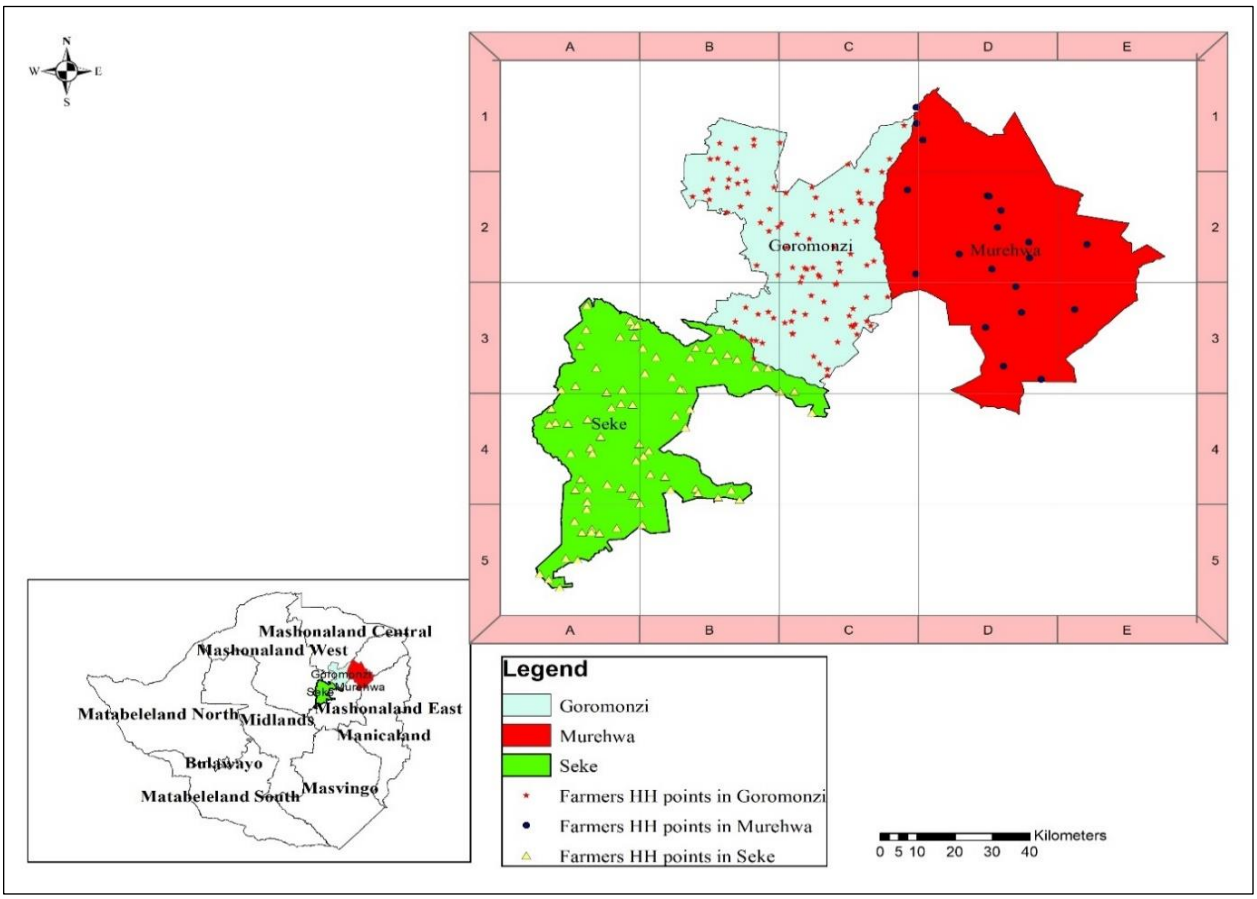
Method

Study Area and Population

The study was conducted in three districts of Mashonaland East Province in Zimbabwe, namely Goromonzi, Hwedza, and Seke (Figure 1). The province is in the northeast of the country and neighbors Midland's province in the south, Mashonaland West in the northwest, and Manicaland in the east. The province covers roughly 32,230 km² (12,440 square miles) of land and has a population of 1.35 million people (FEWS NET; 2017). Goromonzi has a total population of 224,897, while Hwedza has a population of 70,968, and Seke has a population of 100,756 (ZIMSTAT & UNICEF, 2019). The province was chosen because it embodied the study's interest points—high rates of poverty, food insecurity, unemployment, smallholder farming, and youth population. According to the Family Early Warning Systems Network (FEWS NET, 2017), 80% of the population in the province is unemployed and over 70% of the households live in poverty. The youth population accounts for 60% of the total population and the province has a literacy rate of 85% (ZIMSTAT & UNICEF, 2019).

The province consistently receives 500–1,000 mm (20–39 inches) of rain annually and has fertile soils, making agriculture vital to its economy (FEWS NET, 2017). According to Mutami (2015), maize is the staple crop and the main source of income for farming households in the province. Groundnuts, sunflowers, and a variety of vegetables are also cultivated by farmers (Mudimu et al., 2021). These crops not only add to farm revenues but also serve as an essential source of food. However, a survey in the province revealed that most farming households were producing below the subsistence level, leaving them vulnerable to food insecurity and extreme poverty (Tatsvarei et al.,

Figure 1. Location of Districts in Mashonaland East Province of Zimbabwe



2018). Mudimu et al. (2021) posit that harnessing the opportunities available in the province such as production potential, high youth numbers, and literacy levels can significantly increase agricultural output, thus improving the livelihoods of people in the province.

Sampling and Data Collection Approach

This study used a mixed methods approach to answer the research questions. The approach combined elements of qualitative and quantitative research in collecting and analyzing data. According to Leech et al. (2010), combining these two approaches increases the chances of creating stronger research outcomes. Regarding the sample size for the study, two approaches were used: the Krejecie and Morgan approach and the data suitability approach by Costello and Osborne (2019). During the 80s. Krejecie and Morgan developed a widely referenced table that provides guidelines for deciding sample sizes in research studies based on the desired level of precision, represented as a margin of error or confidence level, and the total population size (Omware et al., 2014). The sample size was derived from the formula below (Uakarn et al., 2021):

$$n = \frac{N}{1 + N(e)^2}$$

where n is the sample size, N is the population size, and e is the margin of error.

The second approach involves data suitability for the suggested empirical analysis as explained by Costello et al. (2019). For the regression models, the study adhered to the recommended ratio of observations to variables of at least 10:1 (Costello et al., 2019). Following the two approaches, the representative sample size for the three selected study areas was 200 rural youths.

To select the target youth population, a multistage sampling approach was used. This approach selected the study participants in various stages. In the first stage, a review of the literature was done followed by consultations with experts in the field. This preliminary research provided a good understanding of the available study area options and their suitability to the research objectives. In the second stage, three districts (Goromonzi, Hwedza and Seke) were intentionally selected. These districts have high youth populations, unemployment, and food insecurity levels (FEWS NET, 2017). In the third stage, the researcher, with the assistance of extension officers, created a list of 600 youths from the three districts who were then assigned a unique number from 1 to 600. An online random number generator selected 200 numbers between 1 and 600, representing youth to be included in the sample. This ensured equal chances of selection.

Data Collection

Researchers used a structured questionnaire to gather data for the study. Guided by the sustainable livelihood framework (Chambers & Conway, 1992), the questionnaire collected information on each participant's social, human, physical, financial, and natural capital (resource endowments). Demographic data was also collected from participants. Before the main study, the questionnaire was subject to a pilot study. The pre-testing of the questionnaire involved ten youths and resulted in several minor changes. Changes included shortening the length of questions, clarification of ambiguities, simplifying language, and removing jargon. These modifications ensured that the questionnaire was more comprehensible and engaging for the target audience. During the main survey, the questionnaire was administered through face-to-face interviews by trained interviewers with knowledge about rural food systems and who were conversant in the local Shona language. The interviewers translated the questions during face-to-face interviews to ensure accuracy in conveying the intended meaning of the questions.

The study also employed two focus group discussions (FGD) to gain an understanding of the roles of youth in agriculture (Appendix, Table A1). Some of the individuals who had participated in the main survey were purposively selected to take part in the focus group discussions. These individuals had more years of farming experience or leadership roles in the community. The discussions were guided by a set of open-ended questions.

Ethical Considerations

The University of KwaZulu-Natal ethics committee granted an ethical clearance to carry out the

study. The rights to anonymity, informed consent, and confidentiality were upheld to make the study ethical. All participants were aware of the study objectives as well as the intended use and storage of the data. The participants completed and signed a consent form which outlined that participants had the right to withdraw at any time, participation was voluntary, and their names were protected. To take part in the study, minors (under the age of 18) had to get permission from their parents. The minors provided a completed and signed parental consent form before participating in the study.

Data Analysis

Descriptive statistics in the form of frequencies, means, and percentages provided an analysis of the demographics and socio-economic characteristics of the respondents. The descriptive statistics provided insight into how socioeconomic and demographic factors affected youth involvement in agriculture. The chi-square test measured statistical significance among the variables. A probit regression model examined the factors influencing the decision to participate in agriculture among the youths.

Youth participation in agriculture in the study was defined as the engagement of an individual in the sector through entrepreneurial activities, value-chain activities, policy formulation, and advocacy in structures and systems linked to the food system (Geza et al., 2021). Thus, the sample was divided into two categories: agriculture participants and nonparticipants. It is important to note that the choice to engage in agriculture was participant-driven; as a result, a question was used to distinguish between agriculture participants and nonparticipants: "During the past 5 years, have you engaged in agriculture through entrepreneurial activities, participation in value-chain activities, policy formulation, and advocacy in structures and systems linked to the food system?"

Principal Component Analysis

In this study, 16 five-point Likert scale questions (1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*) were used to gather data on the youths' behavior. The questions asked how youths viewed themselves and how they rated themselves with the 16 five-point Likert scale questions. A reliability test (Cronbach's alpha = 0.82) showed the variables were acceptable measures of behavior. The principal component analysis (PCA) analyzed the 16 items to determine whether a group of latent components accurately described youth behavior or decision-making. According to Conradie and Piesse (2016), the basic principle behind PCA is to minimize the breadth of collected data which has several interrelated variables while maintaining existing distinctions in the data. Achieving this involves converting the data set into new noncorrelated variables called principal components (PCs) and ensuring that a few PCs preserve most of the distinctions existing among the original variables (Conradie & Piesse, 2016).

The decision to participate in agriculture

The choice to engage in agriculture was coded in binary form, where "1" indicated engaging in agriculture and "0" indicated not engaging in agriculture. The dichotomous nature of the dependent variable resulted in the use of a Probit model in the study. This is in line with several studies that have examined the factors affecting rural youth participation in agriculture using a Probit regression model (Afande et al., 2015; Auta et al., 2017; Fawole & Ozkan, 2019; Yunusa & Giroh, 2017). The general formula for a Probit model is (Afande et al., 2015):

$$\text{Yi} = \beta o + \sum_{n=1}^{b} \beta n X ni + \varepsilon i \qquad (1)$$

where Y_i is the dependent variable (1= engages in agriculture and 0 = does not engage in agriculture), β_0 is a constant, β_n are explanatory variables to be estimated, X*ni* is the vector of explanatory variables, and εi is the error term. The theoretical framework and literature guided the selection process of variables to be included in the model (Auta et al., 2017; Fawole & Ozkan, 2019; Yunusa & Giroh, 2017). These variables included age, marital status, level of education, household size, land ownership, number of dependants, household income, and employment status.

Calculation of the variance inflation factor (VIF) for the regression model tested for multicollinearity. In general, a variable is highly collinear if

the VIF exceeds 10 (Kim, 2019). Multicollinearity was not an issue in the regression model used in the study. Also, the Breusch-Pagan/Cook-Weisberg test determined heteroscedasticity in the data. This test checked if there was variation in the dependent variable throughout the data. Heteroscedasticity was not an issue in the data since the results were inconsequential in the regression model.

Results and Discussion

Demographics and Social-Economic Characteristics

Table 1 presents the demographic and socio-economic characteristics of the 200 respondents, with 62% identified as agricultural participants and 38% identified as nonparticipants. Most of the statistics presented in the table are in line with the latest Mashonaland East community report (ZIMSTAT & UNICEF, 2019), suggesting the study is representative of the province. All demographic variables other than age and marital status were statistically different between agriculture participants and nonparticipants in the study area. The results revealed an aging youth population, with 14% of respondents reported to be between 15 and 20 years, while 86% were between the ages of 21 and 35 years. The results agree with Kimaro et al. (2018) who found an aging youth population to be a general characteristic among farming communities in rural Africa. However, there was no statistically significant difference in age.

In line with Yunusa and Giroh (2017), literacy was a general characteristic among youth, with only three percent reporting having no formal education. Among participants, 4.5% had a primary level of education, 73.0% had a secondary level of education, and 19.5% had a tertiary level of education. This implied few individuals obtained postsecondary qualifications for a myriad of reasons which may have included low pass rates, lack of information, lack of financial resources, lack of career assistance, possibly a lack of permission and/or safe routes or access to schools, and early marriage for females (Chipfupa & Tagwi, 2021). As a result, even if employment opportunities were present, their employability was constrained by a lack of education. Table 1 shows youth with a secondary

Table 1. Demographic and Socio-Economic Characteristics of the Participants

	Percentage rating			
Variable	Agriculture participants (*n* = 125)	Nonparticipants (*n* = 75)	Total (*N* = 200)	*p*-values
Age				
15–20	46.4	53.6	14.0	0.359
21–28	32.6	67.4	44.5	
29–35	39.8	60.2	41.5	
Gender				
Male	52.8	33.3	45.5	0.007**
Female	47.2	66.7	54.5	
Level of education				
None	1.6	5.3	3.0	
Primary	5.6	2.7	4.5	<.001***
Secondary	87.2	49.3	73.0	
Tertiary	5.6	42.7	19.5	
Household head				
Yes	69.3	50.4	57.5	0.009**
No	30.9	49.6	42.5	
Marital status				
Married	64.8	35.2	45.5	
Single	65.2	34.8	46	0.533
Divorced	33.3	66.7	6.0	
Widowed	40.0	60.0	2.5	
Employment status				
Employed	5.6	30.3	15.0	0.001***
Unemployed	94.4	69.3	85.0	
Job searching				
Yes	30.4	45.3	60.5	0.001***
No	69.6	54.7	39.5	

***, **, and * means significant at .01, .05, and .10 levels, respectively.

level of education took part more in agriculture compared to youth with other levels of education, and the difference in the level of education between agriculture participants and nonparticipants was statistically significant ($p<.001$).

Overall, most study participants were household heads (57.5%). Table 1 shows youth heads of households were more likely to take part in agriculture (69.3%) compared to other youths (50.4%, $p = 0.009$). This may be because of the pressure on heads of households to provide for their families (Magagula & Tsvakirai, 2019). Table 1 also shows 45.5% of respondents were married, 46.0% were single, 6.0% were divorcees, and 2.5% were widows. Contrary to the findings of Akinyemi and Mushunje (2017) and Magagula and Tsvakirai (2019) in South Africa who found a statistical difference between marital status and youth participation in agriculture, there was no statistical difference in the study between the two. This implied youth engaged in agriculture regardless of marital status.

In terms of the gender distribution of participants, the results show male youth (52.8%) took part more in agriculture compared to their female counterparts (47.2%), and the difference was statistically significant ($p = 0.007$). The higher engagement of male youth in agriculture compared to female youth can be attributed to several factors, many of which are influenced by traditional gender roles and societal norms. For instance, in many societies in Africa, traditional gender roles dictate men are primarily responsible for agricultural production, while women are responsible for household chores and caregiving. Also, female youth face greater barriers to accessing resources such as land, credit, agricultural inputs, and markets due to discriminatory practices and unequal power dynamics within agricultural systems (Magagula & Tsvakirai, 2019). Limited access to these resources can hinder their ability to engage in agricultural activities.

Concerning employment status, the results show 5.6% of respondents who were formally employed were agricultural participants, while 94.0% of unemployed respondents engaged in agriculture. In general, 85.0% of the respondents in the study were unemployed while 15.0% were formally employed. The results agree with Magagula and Tsvakirai (2019) who found youth unemployment in rural Africa to be a common characteristic. This highlights the lack of economic opportunities in rural communities.

Principal Component Analysis (PCA)

Table 2 presents the results of the principal component analysis. The analysis yielded five dimensions with Eigenvalues of 7.24, 1.91, 1.41, 1.13 and 1.02 respectively, explaining about 70% of the variance in the data. The Cronbach's alpha was 0.82, which is higher than the acceptable value of 0.70 (Cronbach & Snow, 1981). In addition, the Kaiser-Meyer-Olkin (KMO) sample adequacy value was 0.88, higher than the 0.8 threshold that is regarded as fair (Eze et al., 2021). The presence of a high KMO value suggests that correlation patterns are compact, and factor analysis should provide credible components (Rossoni et al., 2016). Bartlett's test of sphericity was significant ($\chi^2 = 11{,}271$; $p<0.001$), implying that the 16 items consistently measured the same underlying behavioral variable. Table 2 presents the significant factor loadings (>0.05).

Table 2 shows principal component 1 (PC1) captured the highest number of indicators and accounted for 40.24% of the variation in the original indicators. The main indicators for PC1 were "I am interested in working in agriculture," "I like farming," "I am interested in a career in agriculture," and "I am interested in farming as a lifetime career." These dominant factors in PC1 represented intrinsic value. The indicators captured in PC2 were "Agriculture can meet my goals and dreams," "Compared to other livelihood strategies, agriculture is useful to me," "Participating in agriculture will bring positive change to my life," "Agriculture can meet my goals and dreams," and "Agriculture is useful to me." The PC2 main factors represented utility value and accounted for 10.63% of the variation in the original indicators.

Table 2 shows that the main indicators for PC3 were "Am willing to work on weekends" and "Am willing to work alone," which represented cost value and accounted for approximately 7.85% of the variance. PC4 captured two behavioral statements: "Compared to other livelihoods, agriculture is important to me" and "Agriculture is important

to me." PC4 captured attainment value and accounted for 6.27% of the variation in the original indicators. Table 2 shows that PC5 captured the lowest number of indicators and accounted for 5.69% of the variation in the original indicators. The dominant indicator for PC5 was "I expect to do well in agriculture," which represented expectancy.

Anticipated Longevity of Participation

Table 3 shows the longevity of participation of the youths in agriculture. The results show that 73.3% of the respondents in the study anticipated leaving agriculture within 5 years, while 19.9% anticipated engaging in the sector and 6.8% were not sure. The finding is consistent with literature showing that young Africans have become disenchanted with agriculture to the point that their engagement in the sector is declining every year (Akinyemi & Mushunje, 2017; Akpan et al., 2015; Cheteni, 2017; Chima et al., 2020; Chipfupa & Tagwi, 2021; Geza et al., 2021; Udemezue, 2019). In Tanzania and Uganda, for example, Maïga et al. (2015) show that the number of hours spent by youth in agriculture per week decreased by 9.2% between 2005 and 2012. Several

Table 3. Youth Participation in Agriculture (*n* = 200)

		Percentage rating		
Question		Agriculture Participants (*n* = 125)	Nonparticipants (*n* = 75)	Total (*N* = 200)
Participate in agriculture in the next 5 years?	No	86.7	60.0	73.3
	Yes	13.3	26.4	19.9
	Not sure	0.0	13.6	6.8

Table 2. Dimensions and Component Loadings for Variables Describing Behavior

	Principal Component				
Variable	PC 1 Intrinsic	PC 2 Utility	PC 3 Cost	PC 4 Attainment	PC 5 Expectancy
I am interested in a career in agriculture	0.83	0.15	–0.12	0.10	–0.04
I am confident in my ability to adopt new farm technologies	0.82	0.22	–0.07	0.16	0.17
I am interested in farming as a lifetime career	0.82	0.20	–0.18	0.18	–0.10
I like farming	0.82	0.24	–0.19	0.17	–0.12
I am interested in learning more about agriculture	0.77	0.14	0.07	0.01	0.40
I find working in agriculture interesting	0.76	0.23	–0.09	0.18	–0.15
I am confident that am a better farmer than my parents	0.75	0.04	–0.06	0.08	0.31
Agriculture can meet my goals and dreams	0.24	0.77	0.04	0.22	–0.04
Compared to other livelihood strategies, agriculture is useful to me	0.26	0.75	0.24	–0.04	–0.05
Participating in agriculture will bring positive change to my life	0.13	0.71	0.03	0.26	0.22
Agriculture is useful to me	0.08	0.61	–0.31	–0.24	0.04
Am willing to work on weekends	–0.09	0.04	0.83	0.05	–0.16
Am willing to work alone	–0.36	0.02	0.64	–0.12	0.18
Compared to other livelihoods, agriculture is important to me	0.21	0.05	–0.30	0.79	0.10
Agriculture is important to me	0.18	0.15	0.37	0.71	0.13
I expect to do well in agriculture.	0.18	0.06	–0.04	0.15	0.81
Eigenvalue	7.24	1.91	1.41	1.13	1.02
% of variance	40.24	10.63	7.85	6.27	5.69
Cumulative % of the variance	40.24	50.86	58.71	64.99	70.68

factors are contributing to the shift in youth interest from agricultural livelihoods to non-agricultural livelihoods. Some of these factors include constraints in access to resources such as land, finance, training, and climate change (Akpan et al., 2015; Mukembo et al., 2014; Yunusa & Giroh, 2017). Others have more to do with how youth think or perceive careers in agriculture (Magagula & Tsvakirai, 2019; Chipfupa & Tagwi, 2021).

Agricultural Activities among Participants

Focus group discussions revealed the activities engaged by the youths in agriculture (Appendix, Table A1). Weeding was found to be the main activity followed by harvesting, planting, animal or poultry rearing, and watering. The main characteristic of these activities is that they are labor-intensive. The results are in line with Mgbakor et al. (2014) who found that rural youth in Africa perform most of the onerous agricultural activities. This is because youths have higher levels of physical fitness, energy, and stamina. Kimaro et al. (2018) add that youth have a faster rate of recovery and resilience from physical exertion, allowing them to bounce back more efficiently after engaging in labor-intensive activities. The results from our focus group discussions showed that youths engaged less in activities such as retailing, agribusiness, transporting, marketing, and processing (less labour-intensive). It is important to note that while youth may have physical advantages for manual labor, it does not mean that older individuals are incapable of engaging in agricultural activities. The experience, knowledge, and skills acquired by older individuals over the years can be valuable in agricultural work. A diverse and inclusive workforce that includes individuals of different age groups can bring a range of strengths and perspectives to agricultural activities.

Value Factors Describing Youth Participation in Agriculture

Intrinsic value

Using the individual and household characteristics and principal components, the study examined the factors influencing the youth participants' decisions to engage in agriculture. Table 4 shows that the coefficient of intrinsic value (PC1), involving responses to seven of the 16 survey questions, was statistically significant and positively associated with youth decision to engage in agriculture ($p = 0.18$). Individuals showing high values for intrinsic components were 16.9% more likely to participate in the sector compared to their counterparts without intrinsic value. This implied that youth who found agriculture to be a career-level endeavor due to interest, enjoyment, and perceived capabilities, were more likely to participate in agriculture compared to their counterparts who believed otherwise. This finding is consistent with the expectancy-value theory which posits that an individual who intrinsically values an activity is more likely to choose to engage in it (Wigfield & Gladstone, 2019). Cheteni (2017) found that enjoyment from agriculture came from the community and social interactions. Agriculture often fosters a strong sense of community. Farmers may collaborate with neighbors, participate in farmers markets or agricultural fairs, and engage in shared experiences with other agricultural practitioners. These social interactions can create a sense of belonging, camaraderie, and enjoyment.

Utility value

Consistent with a priori expectations, the study found a positive and statistically significant association between utility value (PC2) and youth participation in agriculture ($p = 0.04$), composing four of the 16 survey statements. In other words, respondents who believed that participating in agriculture is beneficial and would allow them to achieve their personal and career goals had a 4.1% greater chance of participating in agriculture compared to those who felt that agriculture would not help them accomplish their personal and career goals. This finding agrees with the expectancy-value theory as the youth participants appraised the usefulness and practicality of engaging in agriculture and regarded it as beneficial (Wigfield & Gladstone, 2019).

Cost value

In line with the EVT, cost value (PC3) had a statistically significant and negative association ($p = 0.04$) with youth participation in agriculture.

This implies that the chances of participating in agriculture decreased by 3.8% as the cost increased. Cost focuses on the unfavorable aspects of completing a task or activity (Wigfield & Gladstone, 2019). In this context, the cost included the low-profit margins and the labor-intensive nature of most agricultural activities. The results suggest that the respondents viewed the option to participate in agriculture as a cost-benefit decision based on utility value and cost. The respondents likely weighed the labor-intensive nature and profit margins of alternative activities and what the benefits might be if they participated in agriculture. The benefits reflected how agriculture might help the respondents achieve their current and future goals and advance their career interests. As a result, the combined cost and utility value elements indicated a cost-benefit motivation.

Demographic Factors Correlating to Participation in Agriculture

Marital status

Table 4 shows an inverse relationship between marital status and youth participation in agriculture ($p = 0.06$). This implied that the chances of participating in agriculture were 5.9% lower among married youth. Thus, married youth were less likely to

Table 4. Factors Associated with Youth Participation in Agriculture

Variables	Coefficients		Marginal Effects	
	Value	Standard Error	Value	Standard error
Noncognitive skills				
Intrinsic value (PC1)	1.69***	0.32	0.18***	0.02
Utility value (PC2)	0.41**	0.20	0.04**	0.02
Cost value (PC3)	–0.38**	0.22	–0.04**	0.02
Attainment value (PC4)	–0.04	0.17	–0.04	0.02
Expectancy (PC5)	–0.42	0.27	–0.04	0.03
Individual characteristics				
Age	0.10*	0.05	0.01*	0.005
Gender	–0.07	0.41	–0.01	0.04
Level of education	–0.18	0.38	–0.02**	0.04
Marital status	–0.59*	0.35	–0.06*	0.36
Employment status	1.18*	0.55	0.13*	0.06
Household characteristics				
Size of household	0.21**	0.12	0.02*	0.01
Number of dependants	–0.06	0.12	–0.01	0.01
Household income	–0.12	0.21	–0.01	0.02
Land ownership	–1.08**	0.46	–0.11**	0.05
Life satisfaction	–0.20	0.17	–0.02	0.02
Food security	–0.03	0.03	–0.00	0.03
Social group member	0.04	0.57	0.00	0.06
Challenges				
Infrastructure condition	–0.26	0.25	–0.03	0.03
Lack of markets	0.04	0.295	0.00	0.03
Cons	1.22	3.79	0.00	0.03
Pseudo R^2 0.72				
Prob> chi2 0.00				
Predicted correctly 94 %				
Number of observations 200				

***, **, and * means significant at 1%, 5%, and 10% levels, respectively.

participate in agriculture compared to their non-married peers. The results are in line with previous studies which also found a significant and negative relationship between marital status and youth participation in agriculture (Akinyemi & Mushunje, 2017; Magagula & Tsvakirai, 2019). One probable reason is that marriage often brings added responsibilities and commitments, such as managing a household, raising a family, and attending to the needs of a spouse which might limit the number of resources (financial or time) available for extracurricular pursuits like farming (Magagula & Tsvakirai, 2019). Already these resources are limited in rural Africa. Contrary, Yunusa & Giroh (2017) found that the probability of participating in agriculture is higher among married youth compared to unmarried youth. A plausible explanation is that a household with a married couple is more likely to have a large household size and high socio-economic needs to meet, and hence may benefit from participating in agriculture (Adesina & Favour, 2016). The results show that although marital status is an important deciding factor for the decision to participate in agriculture, the direction of influence is indeterminate.

Household size

The study supports a widely held view that household size significantly influences youth participation in agriculture. In line with Yunusa & Giroh (2017), the study found a statistically significant and positive association between household size and youth participation in agriculture. Thus, a unit increase in household size resulted in a 2.1% increase in the likelihood of participating in agriculture. This might be because of labor availability. Yunusa & Giroh (2017) are of the view that larger households tend to have more labor available to engage in agricultural activities. Adesina & Favour (2016) agree and add that bigger households typically have higher consumption needs and expenses; engaging in agriculture can be a way for youth to contribute to household income and meet the economic requirements of the family. It may also provide a more stable and reliable source of income compared to seeking employment in other sectors, especially in rural areas where alternative job opportunities may be limited.

Youth age

The coefficient of age had a statistically significant and positive influence on youth participation in agriculture ($p = 0.01$). The results showed a one-year increase in age increased the chances of participating in agricultural activities by 10%. Thus, the older the youth, the greater the probability of participating in agriculture. This finding agrees Akpan et al. (2015) who found that age positively influenced youth decisions to engage in agriculture. This may be because of accumulated knowledge and skills. Older youth are more likely to hold the necessary expertise and skills required for agricultural activities, making them valuable contributors to agricultural operations. Akpan et al. (2015) added that as youth grow older, they may start considering agriculture as a viable livelihood option. They may have explored various career paths or experienced other job opportunities, and some may find that agriculture aligns with their interests, capabilities, or long-term goals.

Level of education

Table 4 shows that the level of education had a negative and statistically significant association with youth participation in agriculture. Thus, with the addition of a year of education, the chances of participating in agriculture decreased by 18.0%, holding other factors constant. The results are in line with Akpan et al. (2015), who found that rural youths in Nigeria were less likely to engage in agriculture as the level of education increased. This could be because of differentials in returns on education between rural areas and urban areas (Aslany et al., 2021). Akpan et al. (2015) are of the view that urban areas usually have high-paying, stable, and secure job opportunities which attract highly educated individuals, unlike local job opportunities available which offer low salaries and less secure job opportunities. These differentials motivate young people to leave agriculture in rural areas (Aslany et al., 2021). Additionally, higher education might equip youth with skills and knowledge that are more suited to non-agricultural professions.

Employment status

In line with Fawole & Ozkan (2019), employment status was statistically significant with a positive

sign. The results show that the chances of participating in agriculture increased by 11.8% among employed youth participants. In other words, the chances of participating in agriculture were high among employed youth compared to unemployed youth. Engaging in agriculture provides employed youth with an additional source of income (Masuka et al., 2016). Even if individuals have stable employment in non-agricultural sectors, agricultural activities can offer an opportunity to diversify income streams and increase overall earnings. This is relevant in Zimbabwe which experiences price and exchange rate instability, high informality, and low investment (Mutami, 2015). Additionally, Masuka et al. (2016) are of the view that income from salaried jobs acts as an important determinant in agricultural production. Those with stable employment may have better access to credit and financial resources needed to invest in agricultural inputs such as seeds, fertilizers, and equipment. This suggests that even though unemployed youth can benefit from engaging in agriculture, they cannot do so because they have limited or no access to the resources needed.

Land ownership

A counter-intuitive result is that the coefficient of land ownership was negatively correlated with youth participation in agriculture. One would expect to see youth who own land engaging more in agriculture compared to their counterparts who do not own land. The results showed that the likelihood of engaging in agriculture was 10.8% lower among youth participants who owned land. A plausible explanation is that many youths who own land administered by the traditional leadership or benefited from the Fast-Track Land Reform Programme of 2000 have found it difficult to operate due to a lack of capital, skills, knowledge, and machinery required for agricultural production and therefore leased out their land (Hlungwani et al., 2021). Youth may choose this approach to maintain land ownership and generate income without personally engaging in the labor-intensive aspects of agriculture. This land leasing can lead to reduced direct involvement of youth in agricultural activities. Also, most youth inherit land from their parents; the land may have suffered years of degradation and not be fit for agricultural production, resulting in youth opting out of agriculture livelihoods (Mutami, 2015). The results counter the National Youth Policy, which emphasizes that distributing land is essential to increasing young people's involvement in agriculture (Hlungwani et al., 2021).

Conclusion and Recommendations

As rural youth engagement in agriculture increasingly becomes a priority in African policy, it is crucial to understand the factors associated with such decisions for effective policymaking. This study assessed the determinants of rural youth participation in agriculture in Mashonaland East Province, Zimbabwe. Consistent with existing literature, the results revealed that most of the youth in the study, more than 70%, expressed intentions to disengage from the agricultural sector within the next five years, indicating a growing disenchantment with farming. Furthermore, the findings highlighted that the factors influencing youth participation in agriculture are multifaceted and intersect various disciplines, including development, health, economics, psychology, and education. Utility, intrinsic, and cost value, age, marital status, level of education, access to land, household size, and employment status were significant determinants of youth career decisions in agriculture. The study findings underscore the need for a paradigm shift in how youth engagement in agriculture is approached. Moving away from traditional, siloed strategies, there is a critical need for interdisciplinary planning, investment, and decision-making.

Notably, the study revealed a significant disconnect between current policy provisions and the actual needs of rural youth. While the National Youth Policy of Zimbabwe prioritizes land access as a key intervention to boost youth involvement in agriculture, our study found that land ownership was, paradoxically, associated with a decreased likelihood of youth participation. This finding underscores a critical gap in the evidence base that informs existing policies. To improve youth engagement in agriculture, policies must be revised or updated to better reflect the needs, concerns, values, and aspirations of rural youth. By adopting

a more holistic, youth-centred approach, policy-makers can create a more conducive environment for rural youth to actively and sustainably participate in agriculture, thereby fostering the growth and resilience of the sector.

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Appendix

Table A1. Activities of Youth in Smallholder Farming

Role	Rank
Weeding	1
Harvesting crops	2
Planting crops	3
Animal or poultry rearing	4
Watering crops or plants	5
Processing	6
Marketing	7
Transporting (seeds, fertilizer, products, etc.)	8
Agribusiness	9
Retailing	10