Jurnal Penyuluhan Vol. 22 (01) 2026 | 108-120
https://doi.org/10.25015/22202668977
E-ISSN: 2442-4110 | P-ISSN: 1858-2664

The Effects of Community Perceptions, Age, Education, and Land Availability on Youth Participation in Farmer Regeneration in Boyolali Regency

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Received: 13 October 2025 | Revised: 24 March 2026 | Accepted: 30 March 2026 | Online Publication: 28 May 2026

ABSTRACT

Community participation in farmer regeneration represents a critical challenge in Boyolali Regency, as low youth involvement threatens the sustainability of the agricultural sector and local food security. This study aims to analyze the effects of community perceptions, age, education, and land availability on participation in farmer regeneration. A quantitative associative approach was employed using multiple linear regression analysis on survey data from 100 purposively selected respondents across four districts in Boyolali Regency. Data were collected using a Likert-scale questionnaire and met validity and reliability requirements (Cronbach's Alpha = 0.775). The results indicate that community perceptions ($\beta = 0.180$; $p < 0.01$) and land availability ($\beta = 0.173$; $p < 0.05$) have a positive and significant effect on participation, while age and education are not statistically significant. The adjusted R^2 value of 0.238 suggests that the model explains 23.8% of the variation in participation. These findings imply that psychological and structural factors play a more decisive role than demographic characteristics in shaping participation in farmer regeneration. Accordingly, policy interventions should prioritize improving the social image of farming and expanding land access for young farmers to strengthen agricultural sustainability.

Keywords: *community participation, farmer regeneration, land availability, perception, youth*

INTRODUCTION

Agriculture is one of the key sectors in Indonesia, playing a crucial role in ensuring food availability for the population (Setiono et al., 2021). Food is a fundamental human need, and its fulfillment is guaranteed as a basic human right under the 1945 Constitution of the Republic of Indonesia. Accordingly, the state has an obligation to ensure food sovereignty and food security. Food security refers to a condition in which households have sufficient food availability in terms of quantity and quality, adequate physical, economic, and social access to food, and the ability to utilize food effectively to meet nutritional needs on a sustainable basis (Partini & Sari, 2022; Suharyanto, 2011; Law No. 18 of 2012). In line with this commitment, food security has been designated as a national development priority in Indonesia's 2022–2024 agricultural development agenda (Ministry of Agriculture Strategic Plan, 2020). The sustainability of this commitment, however, depends not only on production capacity but also on the availability of productive human resources, particularly through the regeneration of farmers.

The dynamics of food security in Indonesia are strongly influenced by its demographic conditions, which ultimately places pressure on the agricultural workforce and the need for farmer regeneration. Malthus's theory (1998) explains that the growth of food production is linear (arithmetic progression), meaning that increasing inputs such as land, human resources, and technology will result in a proportionally corresponding increase in output (Chambers & Toda, 2023). Meanwhile, population growth is exponential (geometric progression). This indicates that the larger the population size and growth rate, the higher the demand for food. In addition, rapid population growth and economic development also drive the demand for food commodities (Syahni, 2016). Therefore, meeting food needs must become a collective priority to ensure supply stability (Alandia et al, 2020).

Problems in the agricultural sector are faced by almost all regencies and cities in Indonesia, including Boyolali Regency. Boyolali Regency is one of the regions in Central Java Province known as a national food barn, which is currently experiencing a decline in the number of people participating in farming occupations, despite the increasing population each year (Dzarroh, 2016). The following table presents the number of farmers in Boyolali Regency based on the results of the 2018 Agricultural Intercensal Survey (SUTAS) and the 2013 and 2023 Agricultural Census (Indonesian: *Sensus Pertanian*; SP).

Table 1. Number of Farmers Based on Agricultural Census Results (2013, 2018, and 2023)

Year	Number
2013	201,765
2018	193,603
2023	157,824

Source: Statistics Indonesia (Badan Pusat Statistik) of Boyolali Regency

Based on the results of the 2023 Agricultural Census, problems have been identified related to the low percentage of community participation among millennial youth in terms of interest in farming as a career. The percentage of farmers aged 19–39 years, also known as the millennial generation, is recorded at only 6 percent, while the remaining 94 percent are farmers aged over 39 years. This trend indicates a structural decline in the agricultural workforce and highlights the urgency of farmer regeneration in Boyolali Regency. Based on data from Statistics Indonesia (BPS, 2023), it can be concluded that the majority of the agricultural workforce in Boyolali Regency is over 39 years old, which places the regency in a condition where millennial youth participation in farming occupations is low. The majority of the population, especially the millennial generation, holds the perception that farming is a labor-intensive occupation, and the results obtained do not align with their expectations (Ngadi et al., 2023). Farmers carry out their farming activities in contrast to the level of income and the farmers' terms of trade (NTP) they receive, which causes the public perception of farming as an occupation to be underestimated (Wahyudi & Agustian, 2025).

This study is also grounded in the perspective of development communication, which emphasizes the role of communication processes in encouraging social change and community participation. According to Servaes (2008), communication development is not merely the dissemination of information but involves participatory processes that empower communities to actively engage in development activities. In the agricultural context, effective communication plays an important role in shaping perceptions, influencing attitudes, and encouraging behavioral change among community members, particularly in increasing youth participation in the agricultural sector. Furthermore, communication development highlights the importance of integrating psychological, social, and structural aspects in

understanding community participation. Therefore, this perspective provides a broader theoretical framework to explain how perceptions, individual characteristics, and resource accessibility interact in influencing participation in farmer regeneration.

The low level of participation among millennial youth is expected to influence the regeneration of human resources in the agricultural sector (Fahmi et al., 2025). The millennial generation is more interested in working in non-agricultural sectors (Ngadi et al., 2023) and chooses to migrate from rural to urban areas in search of better job opportunities than those in the agricultural sector (Clendenning, 2023). The role of the millennial generation is necessary for the implementation of agricultural sector development strategies (Rosihan, 2023). The agricultural sector must be sustained to ensure food security for every citizen. If the agricultural sector fails to regenerate millennial farmers, it will impact food availability in the future (Nurarifin & Kurniawan, 2025).

Based on the background presented, this research was conducted using four variables: community perceptions (x_1), age (x_2), education (x_3), and land availability (x_4), to examine the influence of these variables on the level of community participation in farmer regeneration (y). The selection of community perception is grounded in the Theory of Planned Behavior, which explains participation as a result of intention shaped by attitudes and perceptions. Education represents human capital, while age reflects life-cycle stages, and land availability represents structural constraints affecting participation decisions. The reason for selecting these four variables is the result obtained from the review of previous studies. In general, the factors that influence the community are shaped by perceptions, which are then supported by considerations of age, education, and environmental factors, such as land availability. The results of the four variables will be compared and analyzed to assess their influence on participation in the agricultural sector, which is crucial for maintaining food security, one of the community's essential needs in Boyolali Regency.

Despite the importance of farmer regeneration in supporting agricultural sustainability, empirical conditions in Boyolali Regency indicate a significant gap between expected and actual conditions. Based on the 2023 Agricultural Census, only about 6 percent of farmers are aged 19–39 years, while the majority are dominated by older age groups. In addition, the number of farmers continues to decline over time, reflecting low youth participation in the agricultural sector. Previous studies have identified several factors influencing participation in agriculture, such as perception, education, and economic considerations. However, these findings are often inconsistent and context-dependent, and there is still limited empirical research that simultaneously examines psychological, demographic, and structural factors at the local level, particularly in Boyolali Regency. Therefore, a research gap exists between the urgent need for farmer regeneration based on field conditions and the lack of comprehensive empirical studies analyzing the determinants of youth participation. This study aims to fill this gap by analyzing the influence of community perceptions, age, education, and land availability on participation in farmer regeneration in Boyolali Regency

METHODS

The type of research used was quantitative, grounded in the positivist philosophy, which involves studying a specific population or sample using structured instruments and statistical data analysis (Sugiyono, 2018). The population used in this research consisted of individuals aged 19–44 years, totaling 401,268 people. The sample size was determined using Slovin's Formula (Altares et al., 2003), resulting in 100 respondents selected from four districts, namely Banyudono District, Sawit District, Simo District, and Teras District. The reason for selecting these locations was based on the availability of the largest rice field areas in Boyolali Regency. The collected data were analyzed using Multiple Linear Regression analysis, a method used to determine the extent of the relationship between an independent variable and a dependent variable (Pasaribu et al., 2015). The equation generated from the Multiple Linear Regression analysis is as follows.

$$y = b_0 + b_1x_1 + b_2x_2 + \cdots + b_nx_n \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Description :
y = dependent variable
x = indepent variable
b = konstanta
n = 0, 1, 2, ..., k

The research was conducted using a survey method targeting community members aged 19–44 years. The sampling technique used was purposive sampling, in which the selection of samples was carried out based on specific considerations adjusted to the expected criteria, in order to obtain the most appropriate number of samples for the research needs (Sugiyono, 2018). The data instrument used in the questionnaire was adapted from previous studies and assessed using a five-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree". Thus, the independent variables consisted of community perceptions, age, education, and land availability, while the dependent variable was the level of community participation in farmer regeneration. Prior to data analysis, validity and reliability tests were conducted to examine the consistency of respondents' answers. The validity test was performed using the Pearson Product Moment correlation method. The results showed that all questionnaire items had correlation coefficients greater than the r-table value (0.195), indicating that all items were valid. Reliability was tested using Cronbach's Alpha, which yielded a value of 0.775, exceeding the minimum threshold of 0.70, thus confirming that the research instrument was reliable (Chung, Cooper, & Lau, 2024).

RESULTS AND DISCUSSION

According to Malthus's theory (1998), food growth occurs arithmetically, while population growth follows a geometric pattern. This means that when the population size and growth rate increase, the demand for food will also continue to rise. This condition indicates the importance of examining the relationship between population dynamics and food security as a foundation for planning sustainable food availability. The population dynamics referred to include changes in growth trends, structure, and distribution, or in other words, changes in the number of individuals within a broader population community over time (Partiwi, 2016).

Boyolali Regency is one of the regions experiencing population growth with a predominance of productive and young age groups. These demographic dynamics affect migration patterns, labor structure, and the availability of agricultural land. Rural–urban migration has accelerated the conversion of agricultural land into residential and development areas, thereby reducing the capacity of the agricultural sector (Haviz et al., 2021). At the same time, the agricultural sector in Boyolali faces low involvement of younger generations, as reflected in the declining number of farmers aged 19–39 years. This condition indicates the existence of a farmer regeneration problem that may threaten the sustainability of food production in the future (Susilowati, 2016).

Youth participation in farmer regeneration is influenced not only by structural factors but also by psychological and social factors, one of which is public perception of the farming profession (Henning et al., 2022). Theoretically, the relationship between perception and participatory behavior can be explained by the *Theory of Planned Behavior*, which posits that individual behavior is preceded by intention, while intention is shaped by attitudes or perceptions toward a particular activity, subjective norms, and perceived behavioral control. In the agricultural context, perceptions of income level, social status, and career prospects as a farmer play an important role in shaping young people's intentions to engage or not engage in farming activities, which are subsequently reflected in their level of participation in the process of farmer regeneration.

In addition to perception, individual characteristics and resource conditions are also likely to influence participation decisions in the agricultural sector. Educational attainment, as an indicator of *human capital*, affects occupational choice through increased skills, employment opportunities, and income expectations; individuals tend to invest in education when the expected returns in terms of income and career prospects are perceived to be higher, which in turn influences the tendency to choose agricultural or non-agricultural sectors (Giotis, 2025). Age reflects stages in the life cycle that are associated with individuals' readiness to work in agriculture; increasing age is related to changes in physical capacity and the ability or willingness to perform labor-intensive farming activities, thereby potentially affecting involvement or participation in agricultural work (Zhang et al., 2025). Meanwhile, land availability and/or land ownership constitute structural factors that determine farm households' economic opportunities and the sustainability of farming operations, as land scale and tenure are closely related to business viability, income-generating capacity, and long-term investment at the farm level (Lowder et al., 2025). Therefore, examining the effects of public perception, age, education, and land availability on the level of community participation in farmer regeneration is essential to understanding the factors that hinder or encourage the sustainability of the agricultural sector in Boyolali Regency.

Results of Multiple Linear Regression Analysis

Before conducting multiple regression analysis, classical assumption tests were performed, including tests of normality, heteroskedasticity, and multicollinearity. Autocorrelation testing was not applied because the data used in this study are cross-sectional in nature (Indartini, 2024, pp. 9–24). Based on the results of the classical assumption tests, it can be concluded that the regression model satisfies all the required assumptions. The normality test using the Kolmogorov–Smirnov method indicates an Asymp. Sig. (2-tailed) value of 0.200, which is greater than α = 0.10, suggesting that the residuals are normally distributed. Furthermore, the multicollinearity test shows that all independent variables have tolerance values greater than 0.10 and VIF values less than 10, indicating the absence of multicollinearity among the explanatory variables. In addition, the heteroskedasticity test using the Glejser method reveals that the significance values for all variables exceed 0.10, implying that the regression model does not suffer from heteroskedasticity. Therefore, the regression model is considered appropriate and fulfills the classical assumptions required for further analysis.

The multiple linear regression equation can be observed based on the table of coefficient test results, which examines the relationship between the variables of community perceptions, age, education, land availability, and the level of community participation in farmer regeneration. The following are the results of data processing using SPSS.

Table 1. Results of Multiple Linear Regression Analysis

Model	B	Std.Error	t	Sig.
(Constant)	7.008	1.452	4.826	0.000
Community Perceptions	0.180	0.045	3.955	0.000
Age	-0.059	0.052	-1.134	0.260
Education	0.055	0.064	0.864	0.390
Land Availability	0.173	0.068	2.526	0.013

Source: Primary data processed by the researcher

Based on the data presented in Table 2, the multiple linear regression equation in Equation (1) is obtained as follows.

$$Y = 7.008 + 0.180X_1 - 0.059X_2 + 0.055X_3 + 0.173X_4 \ldots\ldots\ldots\ldots\ldots (2)$$

The results of the multiple linear regression equation above can be interpreted as follows.

The coefficient value of community perceptions (X_1) is 0.180, indicating a positive influence on community participation regarding farmer regeneration in Boyolali Regency. Based on this value, it can be inferred that as community perceptions of farmers increase, community participation in farmer regeneration in Boyolali Regency is expected to rise by 0.180 units.

The coefficient value of age (X_2) is -0.059, indicating that age has a negative relationship with community participation in farmer regeneration in Boyolali Regency. The older a person gets, the lower the level of community participation in farmer regeneration will be.

The coefficient value of education (X_3) is 0.055, indicating a positive relationship with community participation regarding farmer regeneration in Boyolali Regency. The higher a person's level of education, the greater their influence on the need to enhance farmer regeneration. Conversely, the lower a person's level of education, the more it will affect whether farmer regeneration is considered necessary.

The coefficient value of land availability (X_4) indicates that land availability has a positive relationship with community participation regarding farmer regeneration in Boyolali Regency. Based on the value of 0.173, it can be interpreted that the wider the land availability, the higher the level of community participation in farmer regeneration will be. Conversely, the narrower the land availability, the lower the level of community participation in farmer regeneration.

Hypothesis Testing

Significance Test (F-Test). The F-test is a statistical test that aims to determine whether the independent variables (X) have a simultaneous influence on the dependent variable (Y). The significance level used is alpha 10 percent. The hypotheses formulated are as follows.

H_0 = All independent variables do not have a significant influence on the dependent variable

H_a = At least one independent variable has a significant influence on the dependent variable

The basis for decision-making in the F-test (Weisberg, 2014) is as follows.

a. If the significance value (sig.) < 0.1, it means the hypothesis is accepted, indicating that the independent variables (X) simultaneously influence the dependent variable (Y)
b. If the significance value (sig.) > 0.1, it means the hypothesis is rejected, indicating that the independent variables (X) simultaneously do not influence the dependent variable (Y).

Table 2. Results of the F-Test

Prob (F-Statistic)	**0.000**

Source: Processed primary data, 2024

Based on the results of the ANOVA table above, a significance value of 0.00 was obtained. Therefore, it can be concluded that the variables of community perceptions, age, education, and land availability simultaneously influence the level of community participation in farmer regeneration.

Partial Significance Test (t-Test). The t-test is conducted to determine whether each independent variable (X) has a significant influence on the dependent variable (Y). The significance level used is alpha 10 percent. The hypotheses formulated are as follows.

a. Ho: There is no influence of community perceptions on the interest in farmer regeneration in Boyolali Regency.
   Ha: There is an influence of community perceptions on the interest in farmer regeneration in Boyolali Regency.
b. Ho: There is no influence of community age on the interest in farmer regeneration in Boyolali Regency.
   Ha: There is an influence of community age on interest in farmer regeneration in Boyolali Regency.
c. Ho: There is no influence of community education on the interest in farmer regeneration in Boyolali Regency.
   Ha: There is an influence of community education on the interest in farmer regeneration in Boyolali Regency.
d. Ho: There is no influence of land availability on the interest in farmer regeneration in Boyolali Regency
   Ha: There is an influence of land availability on the interest in farmer regeneration in Boyolali Regency.

The basis for decision-making in the F-test is that if the significance value (sig.) < 0.1, it means there is an influence of the independent variables (X) on the dependent variable (Y) (hypothesis accepted), and if the significance value (sig.) > 0.1, it means there is no influence of the independent variables (X) on the dependent variable (Y) (hypothesis rejected) (Muhid, 2019).

Table 3. Partial Test (t-Test)

Model	**Unstandardized Coefficients**	**Sig.**
	B	
(Constant)	7.008	0.000
Partial Test (t-Test)	0.180	0.000
Age	-0.059	0.260
Education	0.055	0.752
Land Availability	0.173	0.013

Source: Processed primary data

Based on the Table 4, the t-test was conducted using all independent variables (X) on the dependent variable (Y). The results obtained show the influence of the independent variables (X) on the dependent variable (Y). Based on the t-test results above, the following regression model can be derived. More specifically, the influence of each independent variable on the dependent variable is explained as follows.

a. The influence of community perceptions (X_1) on farmer regeneration participation (Y) shows a significance level < 0.100 with a β_1 value of 0.180, meaning that the community perceptions variable

has a significant influence and a positive relationship with the decision to participate in farmer regeneration (Y) partially.

b. The influence of age (X_2) on farmer regeneration participation (Y) shows a significance level > 0.100 with a β_2 value of -0.059, meaning that the age variable does not have a significant influence on the decision to participate in farmer regeneration (Y) partially.
c. The influence of education (X_3) on farmer regeneration participation (Y) shows a significance level > 0.1 with a β_3 value of 0.055, meaning that the education variable does not have a significant influence on the decision to participate in farmer regeneration (Y) partially.
d. The influence of land availability (X_4) on farmer regeneration participation (Y) shows a significance level < 0.1 with a β_4 value of 0.173, meaning that the land availability variable has a significant influence and a positive relationship with the decision to participate in farmer regeneration (Y) partially.

Based on standardized coefficients, land availability is the most dominant factor affecting participation. The insignificance of age and education suggests that structural and economic considerations outweigh demographic characteristics in shaping participation decisions.

Model Goodness of Fit. The adjusted R^2 value of 0.238 indicates that community perceptions, age, education, and land availability jointly explain 23.8 percent of the variation in participation in farmer regeneration. This suggests that participation decisions are complex social phenomena influenced by many other factors beyond the scope of this model, such as personal motivation, family support, access to capital, government policies, and labor market conditions. Therefore, the relatively moderate explanatory power of the model reflects the typical nature of social science research, in which individual behavior cannot be fully explained by a limited number of variables.

Analysis of the Influence of Community Perceptions on the Level of Community Participation Regarding Farmer Regeneration in Boyolali Regency

Based on the multiple analysis tests that have been conducted, the partial results show that the perception variable has a significance value < 0.1, so it can be concluded that it influences the level of community participation in farmer regeneration. The perception variable has a β value of 0.180, indicating a positive relationship with the level of community participation in farmer regeneration. This means that the better and higher a person's perception of farmers, the higher the level of community participation in farmer regeneration will be. Conversely, if the community's perception of farmers declines and becomes negative, the level of community participation in farmer regeneration will decrease. This is in line with the results of research conducted by Perkasa et al, (2023), which found that perceptions and the interest of youth (students of the Faculty of Agriculture) have a significant relationship with the farming profession. The statements presented include two factors that can influence community perceptions, namely income and social status.

Income. The results obtained in the study show that community perceptions of farmers' income are uncertain, with a negative perception that farmers can meet their family needs, and they agree that farmers' income is not promising. Farmers' income in Boyolali Regency is calculated based on the harvest period. Each year, farmers can harvest three to four times, and their income is calculated based on the yields obtained. The net income earned by farmers ranges from IDR 2,000,000 to IDR 5,000,000. When considering whether the income is sufficient to meet household needs, some communities in Boyolali Regency state that it is still insufficient because the earnings are calculated every three months. A farmer's income is still far from sufficient to meet daily needs and is sometimes inconsistent; therefore, on average, farmers take on side jobs to increase their income. Farmers' salaries differ from those of private employees or entrepreneurs who receive monthly salaries. In the agricultural sector, farmers earn income three times a year, depending on the harvest period. During the waiting period before harvest, farmers earn income from other jobs they engage in. Thus, farming in Boyolali Regency cannot yet be considered a primary occupation due to these income-related issues.

The conclusion obtained is that community perceptions, especially those of the younger generation in Boyolali Regency, regarding the influence of farmers' income on the decision to participate in farmer regeneration. The income earned by farmers is sometimes inconsistent. This aligns with Saparyati's (2008) opinion, which explains that agriculture is a sector with potential for development but has not yet been fully realized due to a lack of adequate human resources and a tendency for interest to decline because of income considerations. Furthermore, the agricultural sector does not yet provide sufficient

guarantees to support farmers' welfare. If perceptions regarding farmers' income are not immediately improved, the agricultural sector will experience an aging workforce and a decline in interest among the younger generation.

Social Status. Community perceptions in Boyolali Regency regarding the social status of farmers have an influence on the decision to continue working as farmers. According to Farkas Farkas (as cited in Weber, 2023), social status is a form of recognition or prestige given by society to individuals or groups based on lifestyle, education, and honor. Perceptions regarding the social status of farmers in society today are not much different from the prevailing perceptions, such as the belief that being a farmer does not guarantee a successful future. On average, farmers in Boyolali Regency who gain social position and status are those who own land. Farmers play a role as actors who cultivate food needs for the community and should have a high status and position in society, without being viewed solely from a material or financial perspective (Saleh & Ehlers, 2025). In reality, farmers are often perceived as belonging to a lower social class with no clear path to success, and only a small number of people appreciate them.

The social status of farmers in Boyolali Regency should be more appreciated and positioned as pioneers within the community. If no individuals are working as farmers in a region, it will lead to food scarcity and disrupt the community's livelihood. Community perceptions of the social status of farmers should shift their mindset by placing farmers in a respected and valued position in society for their hard work in maintaining food security in Boyolali Regency.

Based on the analysis of community perceptions regarding farmer regeneration, it is evident that the younger generation tends to perceive farming as a labor-intensive and high-risk occupation, which has not yet been able to elevate its social status in society, and the income earned is not promising and can be inconsistent. This is supported by Daghagh et al, (2019),menyatakan bahwa pekerjaan petani memiliki beban fisik, tekanan finansial, stress lingkungan dan variabilitas pendapatan sebagai faktor risiko kesehatan mental. Persepsi seperti ini harus diubah untuk menjadikan pekerjaan petani dapat berada pada posisi yang setara dengan pekerjaan lainnya. Apabila generasi muda memiliki persepsi yang baik terhadap pekerjaan petani, maka tingkat partisipasi masyarakat dapat meningkat juga.

Analysis of the Influence of Age on the Level of Farmer Regeneration Participation in Boyolali Regency

The partial regression results indicate that age does not have a significant effect on the level of participation in farmer regeneration in Boyolali Regency. This finding implies that young people do not consider age as a decisive factor when determining whether to engage in agricultural activities. This result contrasts with the study by Haryati et al. (2024), which reported that age influences young people's intentions to choose agriculture as an occupation. Although the community generally agrees that farmers should ideally be trained from an early age to facilitate the acquisition of agricultural knowledge and skills, age itself is not perceived as a primary determinant of farmer quality. Instead, farming competence is more commonly associated with accumulated experience rather than chronological age.

Furthermore, most farmers in Boyolali Regency are currently within the age range of 45–65 years, and participation levels do not vary substantially across age groups. When age is compared with work experience, the latter is given greater importance in agricultural practice. Age is also indirectly related to educational attainment, as individuals with longer years of schooling tend to develop less favorable perceptions of farming as a career option (Satriawan, 2023), which discourages their participation in the sector. Overall, these findings suggest that occupational decisions in agriculture are driven more strongly by income expectations and perceived economic returns than by age differences, and farming is regarded as an activity that can be undertaken regardless of productive or non-productive age categories.

Analysis of the Influence of Education on the Level of Farmer Regeneration Participation in Boyolali Regency

The results of the multiple quantitative analysis indicate that education does not have a significant effect on the level of community participation in farmer regeneration ($p = 0.752 > 0.10$). This finding contradicts the study by Satriawan (2023), which reported that formal education influences farmers' perceptions, although non-formal education does not. In Boyolali Regency, most individuals with higher educational attainment (senior high school/vocational school to university level) tend to choose non-agricultural occupations, particularly in the industrial sector, due to better income prospects and job

security. Moreover, many community members remain uncertain whether farming can be regarded as a suitable profession for educated individuals, as farming is often perceived as an occupation that does not require high formal qualifications.

Overall, the findings suggest that farmers in Boyolali Regency do not consider education as a decisive factor in their participation in agricultural activities or in farmer regeneration. Higher educational attainment does not necessarily translate into greater involvement in farming, as occupational choices are more strongly driven by income considerations. This is also reflected in the educational background of most respondents, who have completed only elementary, junior high, or senior high/vocational education. Nevertheless, education remains important for long-term regeneration, as it enhances cognitive skills, technological adaptability, and innovative capacity among young farmers (Yulianti, 2012). Therefore, aligning educational development with farmer regeneration programs is essential to improve the quality and productivity of future agricultural labor in Boyolali Regency.

Analysis of the Influence of Land Availability on the Level of Farmer Regeneration Participation in Boyolali Regency

Based on the quantitative analysis conducted, the results show that the land availability variable has a significance value of $0.013 < 0.1$, indicating that land availability has a significant influence on the level of community participation in farmer regeneration. The land availability variable has a β value of 0.173, indicating a positive relationship with the level of community participation in farmer regeneration. This means that the wider the land availability, the higher the level of farmer regeneration participation will be, whereas the narrower the land availability, the lower the level of community participation in farmer regeneration will be.

The availability of paddy agricultural land in Boyolali Regency fluctuates each year, experiencing both decreases and increases. The decrease in land availability in Boyolali can be attributed to infrastructure development and residential construction, while the increase in land availability can be attributed to the rise in the amount of vacant, dry, and fertile land that remains available for cultivation. The smaller the land availability, the more it will lead to a decline in farmers' commitment and a decrease in youth interest, as land is one of the key factors contributing to increased income in the agricultural sector.

The research results show that the issue of land availability has a significant influence on farmer regeneration in Boyolali Regency. The younger generation tends to think that the larger the land ownership, the higher the income that will be earned. This is in line with the study conducted by Saputra et al, (2022), which states that parental land ownership has a positive influence on the willingness of young people to become farmers. In the current situation, the widespread conversion of agricultural land into non-agricultural uses such as residential areas and infrastructure development has led to a decline in interest in becoming farmers and a shift toward the industrial sector. The decreasing availability of land makes it more difficult to increase food production in Boyolali Regency.

Theoritical Implications

The findings of this study also provide important theoretical implications. The significant effect of community perceptions on participation supports the Theory of Planned Behavior (Ajzen, 1991), which explains that individual behavior is influenced by attitudes and perceptions. This indicates that positive perceptions of farming can strengthen individuals' intentions and actual participation in agricultural activities. Furthermore, the significant influence of land availability highlights the importance of structural factors in shaping participation, which is in line with participation theory (Cohen & Uphoff, 1980), emphasizing that participation is not only determined by individual willingness but also by access to resources. Meanwhile, the insignificance of age and education suggests that demographic characteristics are not always the main determinants of participation. This finding extends previous studies by showing that participation in farmer regeneration is more strongly influenced by psychological and structural factors rather than demographic aspects alone.

Policy Implications

The findings of this study provide several important implications for policies aimed at strengthening farmer regeneration in Boyolali Regency. First, since community perception significantly influences participation, local governments and agricultural extension agencies should prioritize programs that improve the social image of farming, such as public campaigns, success stories of young farmers, and

school-based agricultural education. Second, the significant role of land availability indicates the importance of facilitating access to agricultural land for young farmers through land leasing schemes, land banks, or agrarian reform programs. Third, extension services should be redesigned to better target young people by incorporating digital platforms, entrepreneurial training, and modern agricultural technologies to increase the attractiveness and economic viability of farming. Overall, policies should not only focus on technical agricultural support but also address social perceptions and structural constraints that limit youth engagement in the agricultural sector.

CONCLUSION

This study examined the effects of community perceptions, age, education, and land availability on community participation in farmer regeneration in Boyolali Regency. The results of the multiple linear regression analysis indicate that community perceptions and land availability have a significant and positive influence on participation, while age and education do not show a statistically significant effect. These findings confirm that farmer regeneration is driven primarily by socio-economic and structural considerations rather than by demographic characteristics alone. In particular, positive perceptions regarding income prospects, job security, and the social image of farming, as well as access to productive land, play a decisive role in encouraging young people to engage in agricultural activities.

From a policy perspective, these results suggest that efforts to strengthen farmer regeneration should prioritize improving the public image of farming and reducing structural barriers to entry into the agricultural sector. Programs aimed at promoting successful young farmers, enhancing the economic attractiveness of farming, and expanding access to agricultural land through land-leasing schemes or agrarian reform are likely to be more effective than strategies that focus solely on demographic targeting. At the same time, although education was not found to significantly affect participation in this study, it remains important for improving farmers' adaptive capacity and technological readiness in the long term.

This study also offers a novel contribution by demonstrating that participation in farmer regeneration is more strongly influenced by psychological and structural factors, namely community perceptions and land availability, rather than demographic factors such as age and education. This finding challenges the common assumption that demographic characteristics are the primary determinants of participation. Furthermore, this study provides localized empirical evidence from Boyolali Regency, highlighting the importance of improving the social image of farming and expanding access to land as key strategies to encourage youth involvement in agriculture. Thus, this research contributes to the development of participation studies in the agricultural sector by integrating behavioral and structural perspectives.

LIMITATIONS OF THE STUDY

This study has several limitations that should be considered when interpreting the results. First, the data were collected using a cross-sectional design, which limits the ability to capture changes in perceptions and participation over time. Second, the sample size was relatively limited and focused on specific areas within Boyolali Regency, which may restrict the generalizability of the findings to other regions. Third, this study examined only four explanatory variables, community perception, age, education, and land availability, while other potentially important factors such as income expectations, family influence, access to credit, government support, and technological adoption were not included in the model. Future research is therefore encouraged to incorporate a broader range of variables and employ longitudinal approaches to obtain a more comprehensive understanding of farmer regeneration dynamics.

ACKNOWLEDGEMENT

This research was funded by the RKAT PTNBH Universitas Sebelas Maret for the 2024 Fiscal Year through the Research Grant Scheme for Research Groups (PENELITIAN HGR-UNS) B, under the Research Assignment Agreement Number: 194.2/UNS27.22/PT.01.03/2024.

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