

The Influence of The Role And Performance of Farmers' Groups on The Productivity of Corn Farming In Karangasem Village, Wonorejo District Pasuruan Regency

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Abstract

Low farmer participation in farmer groups poses a challenge to increasing farm productivity at the village level. This study aims to examine the influence of the role and performance of farmer groups on corn farming productivity in Karangasem Village, Wonorejo District, Pasuruan Regency. The role of farmer groups is assessed using five indicators: their function as learning classes, collaboration platforms, production and economic units, information channels, and institutional strengthening. Farmer group performance is measured through member participation, administration, activity planning, external cooperation, and achievement of group goals. This study used a quantitative approach with a survey method of 82 respondents who were active members of four farmer groups. Data analysis was conducted using multiple linear regression with classical assumption testing. The results show that, both partially and simultaneously, the role and performance of farmer groups have a positive and significant effect on corn farming productivity. The coefficient of determination (R^2) value of 0.624 indicates that 62.4% of the variation in productivity can be explained by these two variables. This finding emphasizes the importance of strengthening farmer group institutions in supporting production increases. The study recommends ongoing interventions through technical assistance, farmer capacity building, and further studies with other variables such as access to capital, technology, and agro-climatic factors.

Keywords: Productivity; Farmer Groups; Role; Performance; Corn.

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INTRODUCTION

Agricultural productivity, particularly in corn, plays a strategic role in supporting national food security, increasing farmer incomes, and driving rural economic growth (Sriati, S., & Santri, 2023). Although Indonesia is one of the main corn-producing countries in Southeast Asia, productivity at the smallholder level remains relatively low due to various constraints such as limited technology, weak farm management, and low participation in farmer institutions (Aldillah, 2017) and (Aulia, W., Hadayani, H., & Sultan, 2024).

Farmer groups as a form of informal institution at the village level play an important role in supporting farmer capacity development (Chaerani, 2019) and (Gustika et al., 2020). Based on the Regulation of the Minister of Agriculture Number 82/Permentan/OT.140/8/2013, farmer groups are expected to carry out five main functions, namely as a learning class, a means of cooperation, a production and economic unit, an agricultural information channel, and a means of strengthening farmer institutions (Nursam, 2017) and (Ahmad et al., 2025). In addition, the effectiveness of farmer groups is also determined by organizational performance as reflected in the level of member participation, administrative management, planning and implementation of activities, external cooperation, and achievement of group goals (Marsa et al., 2023).

Several previous studies have shown that the role and performance of farmer groups significantly impacts agricultural productivity. (Maulana et al., 2023) , (Feronika et al., 2025), (Chaerani, 2019) , (Maramba, 2018) , and (Elisa, 2015) found that extension and fertilizer distribution activities through farmer groups contributed to increased corn yields in Malang. (Malini, 2017) also noted that farmer group performance is positively correlated with rice productivity in South Sumatra. However, based on (Putra, & Wahyuni, 2024) and (Hudoyo, A., & Nurmayasari, 2020) , most of the research is still sectoral and has not integrated the institutional role and managerial aspects comprehensively. In Karangasem Village, Wonorejo District, Pasuruan Regency, the low level of farmer participation in farmer groups is still found, even though the existence of these groups is quite active. This encourages the need for research to evaluate the effectiveness of farmer groups in more depth.

Theoretically, this research is grounded in institutional theory, which posits that formal and informal institutions shape organizational behaviors and performance outcomes (North, 1990). In rural agricultural systems, farmer groups represent informal institutions that can facilitate resource sharing, innovation diffusion, and collective action (Ostrom, 1990). Additionally, social capital theory highlights the role of trust, norms, and networks within communities as enablers of cooperative behavior and knowledge exchange, particularly within farmer-based organizations (Putnam, 1993; Pretty, 2003). These theoretical perspectives support the notion that institutions like farmer groups can influence farmers' access to information, services, and collective power

Empirical studies support these theoretical perspectives. Maulana et al. (2023), Feronika et al. (2025), and Chaerani (2019) demonstrated that extension activities and subsidized input distribution coordinated by farmer groups led to increased corn yields in Malang. Similarly, Malini (2017) found a positive correlation between farmer group performance and rice productivity in South Sumatra. Further, Marsa et al. (2023) showed that groups with clear planning and active participation recorded significantly higher production efficiency than less organized groups. However, critics such as Putra & Wahyuni (2024) and Hudoyo & Nurmayasari (2020) argue that these studies are fragmented, focusing on either technical or institutional aspects without a comprehensive approach that integrates both.

In Karangasem Village, Wonorejo District, Pasuruan Regency, despite the active status of several farmer groups, corn productivity has not reached optimal levels. Preliminary observations and discussions with local agricultural extension officers reveal a pattern of low farmer participation, limited coordination, and underutilization of available institutional mechanisms. This paradox—active groups with low productivity—raises critical questions about the actual role and performance of these farmer organizations.

In response to this issue, the present study aims to analyze the influence of both the roles and the organizational performance of farmer groups on corn productivity in Karangasem Village. By using a quantitative approach and primary data collected from active group members, this research seeks to provide a more integrated and evidence-based evaluation of how institutional and managerial variables contribute to farm-level outcomes

This study aims to analyze the influence of the role and performance of farmer groups on corn farming productivity. The study used a quantitative approach through a survey of 82 active members of farmer groups belonging to the Rukun Sejahtera Farmers' Group (Gapoktan Rukun Sejahtera). The group's role and performance variables were measured using relevant indicators (Rangga et al., 2024) and then analyzed using multiple linear regression with classical assumption testing. The results are expected to provide an

empirical overview of the institutional contribution of farmer groups to increasing agricultural productivity and serve as a basis for formulating more effective and sustainable farmer empowerment strategies.

METHOD

This study used a quantitative approach with a survey method to analyze the influence of the role and performance of farmer groups on corn farming productivity (Putra, J., & Wahyuni, 2024). The research location was determined in Karangasem Village, Wonorejo District, Pasuruan Regency, which was selected purposively because it has a population of active corn farmers who are members of farmer groups under the auspices of Gapoktan Rukun Sejahtera. The study was conducted from March to April 2025.

The population in this study were all farmer members of farmer groups who were active in four farmer groups, namely the Makmur, Sejahtera, Tulus Rejo, and Subur Farmer Groups. The sample was taken purposively (Elisa, 2015) and (Khairunnisa et al., 2021) with the following criteria: farmers who cultivate corn, are registered as members of farmer groups, have at least one year of experience in the group, and actively participate in group activities. The number of samples was determined using the Slovin formula (Salam et al., 2022) with a 10% error rate, resulting in 82 respondents.

Primary data was obtained through the distribution of a structured questionnaire based on the variable indicators of farmer group roles, farmer group performance, and corn farming productivity (Bano, 2023). Interviews were also conducted to gather additional information. Secondary data were obtained from documents from relevant agencies, such as the Department of Agriculture, and farmer group reports.

The independent variables consist of: (1) The role of farmer groups, which is measured through five indicators, namely their function as learning classes, cooperation vehicles, production and economic units, information channels, and institutional strengthening; and (2) The performance of farmer groups, which is measured by member participation, administration, activity planning, external cooperation, and goal achievement. The dependent variable is the productivity of corn farming, with indicators of harvest yield per hectare, harvest frequency per year, input-output efficiency, and net income.

Data analysis was performed using multiple linear regression to measure the simultaneous and partial effects between the independent and dependent variables. Classical assumption tests were performed first to ensure model feasibility, including tests for normality, multicollinearity, and heteroscedasticity. The t-test was used to test partial effects, the F-test for simultaneous effects, and the coefficient of determination (R^2) to measure the contribution of the independent variables to the dependent variable.

RESULTS AND DISCUSSION

This study used multiple linear regression to analyze the influence of the role and performance of farmer groups on corn farming productivity. The results of the analysis are presented in the following tables:

Table 1. Results of the t-Test (Partial)

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2,610	1,555		1,679	.097
	X1	.224	.061	.424	3,657	.000
	X2	.220	.063	.408	3,521	.001

a. Dependent Variable: Y

Source: Primary data processed 2025

The test results above can be described as follows:

1. Constant (Intercept):

- The intercept value is 2.610, which indicates the predicted value of the dependent variable Y when the independent variables X1 and X2 are equal to zero.
- However, the p-value (Sig.) = 0.097 > 0.05, meaning this intercept is not statistically significant at the 5% level.

2. X1:

- The unstandardized coefficient is 0.224, suggesting that for every one-unit increase in X1, the dependent variable Y increases by 0.224 units, assuming X2 is constant.
- The t-value is 3.657 with a p-value = 0.000, which is less than 0.05, indicating that X1 has a significant positive effect on Y.
- The standardized coefficient (Beta) is 0.424, showing that X1 has a moderate-to-strong influence on the dependent variable compared to X2.

3. X2:

- The unstandardized coefficient is 0.220, meaning a one-unit increase in X2 increases Y by 0.220 units, holding X1 constant.
- The t-value is 3.521 with a p-value = 0.001, also significant at the 5% level, indicating that X2 has a significant positive effect on Y.
- The standardized Beta of 0.408 implies that X2 also has a strong influence on Y, slightly lower than that of X1

Both independent variables (X1 and X2) significantly affect the dependent variable Y at the 5% level, with X1 having a slightly stronger standardized impact than X2. The constant is not statistically significant. Therefore, the regression model demonstrates that both X1 and X2 are important predictors of Y.

Table 2. F-Test Results (Simultaneous)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	434.707	2	217.354	65.434	.000 ^b
	Residual	262.415	79	3.322		
	Total	697.122	81			

a. Dependent Variable: Y

Source: Primary data processed 2025

The results of the simultaneous F test can be explained as follows:

1. The calculated F value is 65.434 with a significance value of 0.000.
2. Because the significance value is less than 0.05 ($p < 0.05$), it can be concluded that the regression model is simultaneously significant.

This means that together the Role of Farmer Groups (X1) and the Performance of Farmer Groups (X2) have a significant influence on Corn Farming Productivity (Y).

The test results above can be described as follows:

- a. The F-value is 65.434, and the significance level (Sig.) is 0.000, which is less than 0.05.
- b. This result indicates that the regression model, which includes both X1 and X2, is statistically significant.
- c. In other words, X1 and X2 together significantly affect the dependent variable Y.
- d. The p-value = 0.000 strongly supports the rejection of the null hypothesis, which posits that all regression coefficients are equal to zero.

The F-test confirms that the independent variables X1 and X2 simultaneously have a significant influence on the dependent variable Y. This justifies the use of the regression model and indicates that the model provides a good fit to the data overall

Table 2. F-Test Results (Simultaneous)

Model Summary				
Model	R	R Square	Adjusted Square	Standard Error of the Estimate
1	.790 ^a	.624	.614	1,823

a. Predictors: (Constant), X2, X1

Source: Primary data processed 2025

Based on the results of the coefficient of determination test, it was found that,

1. The R value of 0.790 indicates a strong correlation between variables X1 and X2 with Y.
2. The R Square value of 0.624 indicates that 62.4% of the variation in Corn Farming Productivity can be explained by the Role and Performance of Farmer Groups simultaneously.
3. The remaining 37.6% is explained by other factors not included in this model.
4. The Adjusted R Square of 0.614 corrects the R^2 value to avoid bias due to the number of predictor variables and sample size. This value remains high and indicates that the model has good explanatory power.
5. The Standard Error of the Estimate value of 1.823 indicates the average prediction error for Y in the same units as the dependent variable. The smaller this value, the better the model's prediction performance.

This regression model has good predictive power, explaining more than 60% of the variation in farm productivity. This indicates that the role and performance of farmer groups are relevant and substantial factors influencing corn farmer productivity at the study site.

After analyzing the results of the t-test and F-test which showed that the variables of the role of farmer groups (X_1) and the performance of farmer groups (X_2) had a significant influence on the productivity of corn farming (Y), and were supported by a fairly high coefficient of determination (R^2) value, this section will explain the interpretation of the regression model formed.

Based on the results of multiple linear regression analysis, the following regression equation was obtained:

$$Y = 2,610 + 0,224X_1 + 0,220X_2$$

Where :

Y = Corn Farming Productivity

X_1 = Role of Farmer Groups

X_2 = Farmer Group Performance

2.610 = Constant (the value of Y when all variables are zero)

Based on the multiple linear regression equation above, a regression line equation is obtained which provides the information that:

1. $\beta_1 = 0.224$ the regression coefficient value of the farmer group role variable (X_1) is 0.224, which means that if the farmer group role variable (X_1) increases by one, the corn farming productivity variable (Y) will increase by 0.224.
2. $\beta_2 = 0.220$ the regression coefficient value of the farmer group performance variable (X_2) is 0.220, which means that if the farmer group performance variable (X_2) increases by one, the corn farming productivity variable (Y) will increase by 0.220.

CONCLUSION

The role and performance of farmer groups have been shown to have a positive and significant influence on corn farming productivity. The role of farmer groups, which function as learning centers, collaborative platforms, and production units, has increased farmers' capacity to manage their farming operations. The performance of farmer groups, reflected in member participation, activity planning, and the success of achieving group goals, has contributed to increased farming yields. Simultaneously, the role and performance of farmer groups significantly influenced corn farming productivity, with a coefficient of determination of 62.4%. This indicates that these two factors contribute significantly to variations in corn farmer productivity, with the remainder influenced by factors outside the research model.

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