

Research Article

Farmers' Motivation in Implementing Jajar Legowo Planting System in Tegalsari, Kepanjen, Malang

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ABSTRACT

This study aims at determining the factors affecting the farmers' motivation in implementing Jajar Legowo planting system. This study was conducted in Tegalsari, Kepanjen, Malang, from April to June, 2020. The population in this study was the members of farmer groups "Baru Muncul 1" and "Baru Muncul 2" totaling 152 people. Sampling technique employed was proportionate random sampling. The number of samples was determined by adopting Slovin formula at a degree of error of 10% as many as 60 respondents. Moreover, the data in this study were collected by employing a questionnaire. The method used for data analysis was multiple linear regression test with IBM SPSS 22 software. The results showed that internal factors (age, land area, education, length of farming) and external factors (availability of capital, intensity of extension, and availability of labor) affected farmers' motivation in implementing *Jajar Legowo* planting system by 65.6%, while the remaining 34.4% is affected by other variables which were unexamined in this study. The factors significantly affecting farmers' motivation in implementing *Jajar Legowo* planting system are internal factors (age, land area, education, length of stay), the availability of capital, the intensity of counseling, and the availability of labor.

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INTRODUCTION

The Indonesian government through its Ministry of Agriculture carries out serious efforts to achieve rice self-sufficiency in 2019. It is stated in the Strategic Plan of Indonesian Ministry of Agriculture of 2015-2019, stating one of the policies of the Indonesian Ministry of Agriculture is to increase rice self-sufficiency and increase the production of corn, soybeans, sugar, meat, chili and shallots. The Indonesia Ministry of Agriculture in 2016 targets an increase in rice production of at least 76.2 million tons of Harvested Dry Grain. The Indonesian Ministry of Agriculture increases not only the planted area but also the productivity of food centers. The implementation of the program is to set a target for rice planting area.

The government's primary concern in ensuring national food security is rice. Rice is the staple food for the Indonesian citizen. Rice is a priority, and it supports agricultural programs. Therefore, it becomes government's particular concern in providing sufficient quantities.

One of the regions becoming the basis of rice production is Malang. Rice production in Malang from January to September, 2020, was 232,490 tons of Milled Dry Grain. Based on the potential production from October to December, 2019, it is estimated that the total rice production in 2020 is 284,583 tons of Milled Dry Grain. Efforts to achieve the target of the government's program in increasing national rice production through the Development and Research Agency have issued recommendations for the implementation of *Jajar Legowo* planting system.

The principle of *Jajar Legowo* planting system is to increase the plant population by adjusting the spacing. Hence, the planting will have an edge row that is half the distance between rows. In addition, plants on the edge are expected to provide higher production and better grain quality. The implementation of *Jajar Legowo* planting system type 2:1 can form saplings of 28.48 stems, while the other types of *Jajar Legowo* planting system only range from 18.66 to 25.11 stems (Sari, 2014). The number of productive saplings in the *Jajar Legowo* planting system type 2:1 is directly proportional to production and productivity. Hence, the implementation of *Jajar Legowo* planting system can be used as an effort to increase the production and income of rice farmers. The implementation of *Jajar Legowo* planting system by farmers is affected by internal and external factors. One of the internal factors affecting the implementation of the *Jajar Legowo* planting system is farmers' motivation.

The result of research conducted by Faizin et al., (2015) concluded that the completely dominant factor affecting the farmers' motivation in increasing rice production is internal characteristics. Referring to the previous research, research question arises, "is the implementation of *Jajar Legowo* planting system in Tegalsari, Kepanjen, Malang, also affected by internal and external factors?" To answer this question, it is necessary to conduct a study to analyze what internal and external factors have a significant effect on the farmers' motivation in implementing *Jajar Legowo* planting system. It is expected that by identifying the dominant factors affecting motivation, it will become input for policy makers to intervene and formulate policies, especially in the context of dynamics and awareness of farmers to implement technology of *Jajar Legowo* planting system.

RESEARCH METHOD

The research population in this study is 152 people consisting of farmers group "*Baru Muncul 1*" with 99 members and farmers group "*Baru Muncul 2*" with 53 members. Sampling was carried out by utilizing the proportionate random sampling, one of probability sampling technique. The number of samples is determined according to the Solvin formula as follows:

$$n = N/(1+N(e)^2)$$

$$n = 152/(1+152(0,1)^2)$$

$$n = 152/2.52$$

$$n = 60$$

Where:

n = Sample size

N = Population size

e = The desired critical value (limit of accuracy) (percent of an limit for inaccuracy in sampling) is 10%.

Based on the results of the aforementioned calculations, the number of samples obtained is 60 people, with the distribution per farmer group as presented in the following table:

Table 1. Distribution of Research Sample

NO	Name of Farmers Group	Number of Farmers	Calculating Sample	Number of Samples
1.	Baru Muncul 1	99	99 x 60 / 152	39
2.	Baru Muncul 2	53	53 x 60 / 152	21

Source: Primary Data, 2020

The data collected in this study include primary and secondary data. The technique carried out to collect primary data was a survey by distributing a questionnaire as its instrument. It was a closed questionnaire that can directly be given to the respondent. Meanwhile, secondary data were collected by employing document study techniques studying document issued by relevant parties relevant to this study.

The variables and indicators used in this study are as follows:

Table 2. Variable, Sub-Variable and Research Indicator

Variable	Sub-Variable	Indicator
Motivation (Y)	The Need for Existence	1. Motivation to meet family needs
		2. Motivation to meet the primary needs other than food (clothing and housing)
		3. Motivation to maintain family needs
		4. Motivation to accommodate economic needs
	Linkage Needs	5. Motivation to interact with others
		6. Motivation to have fun
		7. Motivation to get help
		8. Motivation to strengthen with the community
	Growth Needs	9. Motivation to keep up with the development of technology of Jajar Legowo planting system
		10. Motivation to improve the welfare of life
		11. Motivation to be skilled
		12. Motivation to acquire social status
		13. Motivation to sense respected
Internal Factor (X1)	Age	The age of the respondent, calculated from the time the respondent was born until this questionnaire was distributed. It was calculated in years.
	Length of Education	The formal education attended by the respondent is calculated in years.
	Length of farming	Length of farming is measured in years
	Land Area	Farmer's land area in Ha
External Factor (X2)	Availability of Capital	Ease of getting capital obtained from assistance capital and personal capital
	Availability of Labor	Availability of labor in processing to harvesting
	intensity of extension	intensity of extension in assisting farmers

Data analysis carried out in this study was multiple linear regressions. The prerequisites that must be met in multiple regression analysis are the classical assumption test consisting of normality test, heteroscedasticity test, multicollinearity test and autocorrelation test. The multiple linear regression equations are:

$$Y' = \alpha + \beta_1 X_{1.1} + \beta_1 X_{1.2} + \beta_1 X_{1.3} + \beta_1 X_{1.4} + \beta_2 X_{2.1} + \beta_2 X_{2.2} + \beta_2 X_{2.3}$$

Information:

- Y' = Farmer's Motivation
- α = Constanta
- β = Coefficient of Regression
- X1 = Internal Factor
- X1.1 = Age

- X1.2 = Length of Education
- X1.3= Length of farming
- X1.4 = Land Area
- X2 = External Factor
- X2.1 = Availability of Capital
- X2.2 = Availability of Labor
- X2.3 = intensity of extension

The hypothesis in this study is the effect of each independent variable, both from internal factors (education, length of farming, land area) and external factors (availability of capital, availability of labor, intensity of extension) on farmers' motivation in implementing *Jajar Legowo* planting system. The basis for making the decision is:

- H_0 is accepted if the value of t count $<$ t table
- H_0 is rejected if the value of t count $>$ t table

RESULT AND DISCUSSION

Classical Assumption Test

a. Normality Test

Normality test was conducted to test the distribution of variables. Each independent variable is normally distributed or not; the normality test is indicated by the error value normally distributed. Normality testing of the data can be done by referring to the results of the Normal Probability Plot. It refers to the opinion of Ghozali, (2011) stating that normality detection is carried out by looking at the Normal Probability Plot. The results of the normality test based on the results of the Normal probability Plot show that the equation of this regression model has normal distribution of data, and there are no data deviations. The results of the normality test of this study are shown in the following figure:

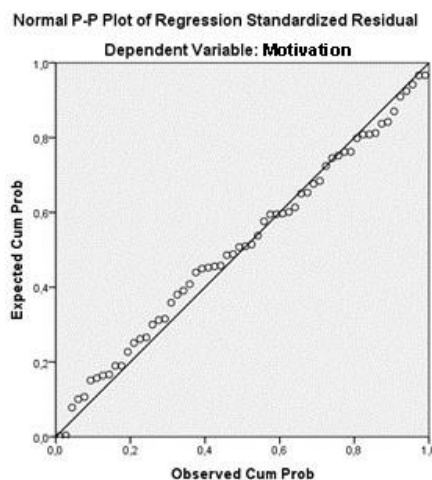


Figure 1. Result of Normality Test

Figure 1. shows the data obtained have been normally distributed evenly along the diagonal line. It means that the data in this study have met the criteria for normality.

b. Multicollinearity Test

Multicollinearity test is to see whether or not there is a high correlation between independent variables in a multiple linear regression model. The condition of multicollinearity occurs when there is a correlation between two independent variables (Wen et al., 2015) The regression model that is feasible to use is that there is no correlation between the independent variables. Testing for the presence or absence of multicollinearity symptoms is carried out by taking into account the value of the correlation matrix generated during data processing and the value of VIF (Variance Inflation Factor) and its Tolerance. The basis used in the decision

making of this multicollinearity test is based on VIF and standard tolerance. A regression model is declared to have no multicollinearity if it has a VIF value around the number 1 and does not exceed the number 10 and has a tolerance close to 1. The value of tolerance and Variance Inflation Factor (VIF) can be obtained from the following data:

Table 3. Result of Multicollinearity Test

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	15.223	4.771		3.191	.002		
Age	-.063	.049	-.114	-1.279	.207	.827	1.209
Land Area	-.328	1.171	-.024	-.280	.780	.931	1.074
Education	-.358	.583	-.055	-.615	.541	.839	1.192
Length of Farming	-.018	.056	-.030	-.330	.743	.792	1.263
Availability of Capital	1.024	.220	.445	4.743	.000	.721	1.388
Intensity of Extension	.753	.159	.443	4.643	.000	.758	1.319
Availability of Labor	.089	.122	.067	.729	.469	.787	1.271

Source: IBM SPSS 22, 2020

Table 3. It indicates that the value of VIF is less than 10 ($VIF < 10$) and the value of tolerance is close to 1. It means that this study is free from the criteria of multicollinearity.

c. Heteroscedasticity Test

Heteroscedasticity test aims at testing whether in the regression model there is an inequality of variance from the residual of one observation to another observation. The method that can be used to detect heteroscedasticity is the Glejser test and look at the scatter plot graph between the predicted value of the dependent variable (ZPRED) and the residual value (ZRESID). T

esting using SPSS obtained the following results:

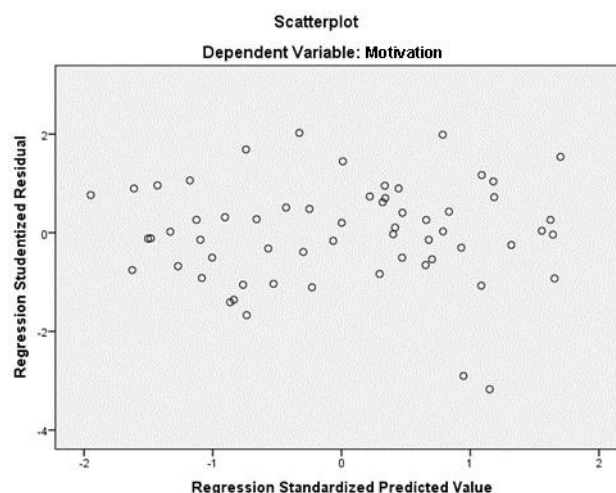


Figure 2. Result of Multicollinearity Test

Figure 2. shows that the pattern of dots spreads around the zero point on the Y axis. Hence, it can be concluded that the regression model in this study is free from heteroscedasticity criteria.

Multiple Linear Regression Analysis

Estimation of multiple linear regression model

Simple linear regression analysis begins by estimating the regression model. The following is an estimate of the simple linear regression model in this study.

The coefficient of determination is used to determine the contribution of the effect given by the independent variable or independent variable (X) to the dependent variable or dependent variable (Y). The coefficient of determination can be seen in the table model summary column R square. The value of the coefficient of determination in this study can be seen in table 3.

Table 4. Coefficient of Determination

Model Summary ^b					
Model	R	R-squared	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.810 ^a	.656	.610	3.44181	2.018

Source: IBM SPSS 22, 2020

Based on Table 4, it is recognized that the coefficient of determination or R Square is 0.656. It means that the independent variable or internal factor variables (X1) and external factors (X2) have an effect on the variable of farmer's motivation (Y) of 65.6%. Meanwhile, the remaining 34.4% is affected by other variables outside of the independent variables studied in this study.

The simultaneous effect and the partial effect of the independent variable (X) on the dependent variable (Y) can be seen in Tables 5 and 6 below:

Table 5. F-test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	1176.250	7	168.036	14.185	.000 ^b
1	Residual	615.996	52	11.846		
	Total	1792.245	59			

Source: IBM SPSS 22, 2020

Table 5 shows that the F-test results have a sig value of $0.000 < 0.05$, meaning that the independent variables including (Age, Land Area, Education, Length of Farming, Availability of Capital, Intensity of Extension, and Availability of Labor), simultaneously have a significant effect on the dependent variable (Y), which is the farmer's motivation in implementing Jajar Legowo planting system.

Table 6. t-test

Model	Coefficients			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	15.223	4.771		3.191	.002
Age (X1.1)	-.063	.049	-.114	-1.279	.007
Land Area (X1.2)	.328	1.171	.824	1.280	.001
1 Education (X1.3)	.358	.583	.755	2.615	.001
Length of Farming (X1.4)	.018	.056	.030	1.330	.003
Availability of Capital (X2.1)	1.024	.220	.445	4.743	.000
Intensity of Extension (X2.2)	.753	.159	.443	4.643	.000
Availability of Labor (X2.3)	.089	.122	.067	1.729	.000

Source: IBM SPSS 22, 2020

Based on Table 6, it is identified that the value of Constant (a) is 15.223, so the regression equation can be written as follows:

$$Y' = 15,223 - ,063 X1.1 + (,328) X1.2 + (,358) X1.3 + (,018) X1.4 + (1.024) X2.1 + (0,753) X2.2 + (0,89) X2.3$$

The equation can be interpreted, as follows:

1. The constant of 15.223 means that the consistent value of the variable of farmer's motivation in implementing *Jajar Legowo* planting system is 15.223.
2. The regression coefficient of X1.1 is (-0.063), meaning that for every additional 1 unit of value in the variable of age, the value of farmer's motivation in implementing *Jajar Legowo* planting system will decrease by 0.063.
3. The regression coefficient of X1.2 is (0.328), meaning that for every additional 1 unit of value in the variable of land area, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.328.
4. The regression coefficient of X1.3 is (0.358), meaning that for every additional 1 unit of value in the variable of education, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.358.
5. The regression coefficient X1.4 is (0.018), meaning that for every additional 1 unit of value in the variable of length of farming, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.018.
6. The regression coefficient of X2.1 is (1.024), meaning that for every additional 1 unit of value in the variable of capital availability, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 1.024.
7. The regression coefficient of X2.2 is (0.753), meaning that for every additional 1 unit of value in the variable of intensity of extension, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.753.
8. The regression coefficient of X2.3 is (0.089), meaning that for every additional 1 unit of value in the variable of availability of labor, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.089.

Meanwhile, variable X (Age, Land Area, Education, Length of Farming, Availability of Capital, Intensity of Extension, and Availability of Labor) partially affecting variable Y (farmer's motivation in implementing *Jajar Legowo* planting system) can be seen in the results of the t-test as presented in Fig. Table 3. The significance of the effect of variable X on variable Y can be explained as follows:

1. The variable of age (X1.1) has a significance value of 0.007 or less than 0.05. It means that the variable of age has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H1 is accepted.
2. The variable of land area (X1.2) has a significance value of 0.001 or less than 0.05. It means that the variable of land area has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.
3. The variable of education (X1.3) has a significance value of 0.001 or less than 0.05. It means that the variable of education has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.
4. The variable of length of farming (X1.4) obtained a significance value of 0.003 or less than 0.05. It means that the length of farming has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.

5. The variable of availability of capital (X2.1) has a significance value of 0.000 or less than 0.05. It means that the variable of availability of capital has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.
6. The variable of intensity of extension (X2.2) obtained a significance value of 0.000 or less than 0.05. It means that the variable of intensity of extension has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.
7. The variable of Availability of Labor (X2.3) has a significance value of 0.000 or less than 0.05. It means that the variable of availability of labor has a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. Hence, H0 is rejected, and H1 is accepted.

The effect of Internal Factors on Farmer's Motivation in Implementing the *Jajar Legowo* Planting System

Effect of age on farmer's motivation

The score of regression coefficient (-0.063) indicates the variable of age has an effect on motivation of -6% with a significance value of 0.007 or less than 0.05. Thus, in this study, the variable of age had a significant effect on the farmer's motivation in implementing *Jajar Legowo* planting system. It is inseparable from field conditions showing the average age of some farmers is entering old age with data recapitulation as many as 14 people aged over 50 years. Based on this condition, it can be assumed that the higher the age of someone, the lower the level of motivation she/he has. It is in accordance with the theory put forward by (Soekartawi, 1993) stating that farmers who are getting older are usually fanatical about tradition, and it is difficult to give them an understanding that can change their way of thinking, working and living. They tend to be apathetic towards new technologies and innovations. The result of research conducted by (Made et al., 2016) shows that the results is in line with this study, where farmer's age does not correlate with farmer's motivation in implementing innovations of hybrid corn variety because the average age of respondent farmers is a productive age. Therefore, there is not too much difference between farmers. The average age of farmers is in the productive age. The early majority is 49 years, and the late majority is 38 years. Both of them have the motivation to run their corn farming by using innovations of hybrid corn varieties, to get higher yields both in terms of productivity and income.

The effect of land area on farmer's motivation

The variable of land area has a regression coefficient score of 0.328, meaning every 1 unit intervention on the variable of land area will increase the farmer's motivation by 0.328 with the requirement of other variables remain or constant. The results of the t-test calculation on multiple linear regression analyses also show the significance value is less than 0.05, meaning that the variable of land area in this study has a significant effect on farmers' motivation in implementing *Jajar Legowo* planting system. This results are supported by the result of research conducted by (Nisa, 2015) stating that land area also plays an important role in affecting one's motivation in planting rice commodities. It is because the more land they have, the more results they will get. The results of research conducted by (Afrianika et al., 2020) are also in line with this study showing that land area had a significant effect on shallot production in Tawangmangu at the confidence level of 99%. The increase of farmer's motivation caused by the addition of land area can be accepted logically. It is because the wider the cultivated land, the greater the potential yield that can be received. *Jajar Legowo* planting system has been proven to be able to increase production and productivity. Then farmers hope that the potential income to be obtained will also increase with a large enough land area.

The effect of education on farmer's motivation

Typically, one's education will affect one's mindset, and the change in that mindset will have implications for motivation and performance. The results of statistical analysis in this study indicate that the regression coefficient score is (0.358), meaning that for every additional 1 unit of value in the variable of education, the value of farmer's motivation in implementing *Jajar Legowo* planting system will increase by 0.358. Whereas, the significance value on the t-test is 0.001 or less than 0.005, meaning the variable of length of education has a significant effect on the variable of farmer's motivation in implementing of *Jajar Legowo* planting system. The result of review conducted by (Stauri & Rasni, 2016) showed that from the treatment group receiving education in health science by demonstration method, there was a significant value (pv: 0.000 < α : 0.05) meaning that there was a difference between before and after the education in health science by demonstration method was carried out. The treatment group experienced an increase in knowledge between before and after the

intervention. The result of review conducted by (Faizin et al., 2015) regarding to the factors affecting farmer's motivation in increasing rice production in Bungaraya Village concludes that the factors affecting farmer's motivation in planting rice in Bungaraya Village include: the internal characteristics consisting of age (2.23), education level (2.17), number of dependents in the family (3.63), length of experience in farming (5.00), and length of being a member of a farmer group (5.00). The result of review conducted by (Listiana, 2012) showed the correlation between the education level of the respondents was 0.584 using SPSS. The results also showed that there was a significant relationship between the level of education and farmer's motivation in using hybrid rice seeds at the confidence level of 99%. Likewise, the effect of education on farmer's motivation to use hybrid rice is positive. The tendency of farmers having medium and high levels of education cause the motivation to use high classification of hybrid rice seeds. It shows that the higher the level of education of farmers, the higher the motivation of farmers to use hybrid rice seeds in their farming business.

In general, agricultural problems in Indonesia are very complicated. According to (Ishak & Afrizon, 2011), the problem of agricultural development in Indonesia lies in the low level of formal education of farmers, the low economic level of farmers, and the low ability to apply the technology. Although, several studies have shown that the correlation between education and farmer's income and motivation is not significant (Dewi, N, 2018). In the field-condition, the level of farmer's education is reasonably low, only at the elementary school level. This condition is frequently an obstacle in the introduction of new technologies like the *Jajar Legowo* planting system. Due to the low level of education, the farmer's mindset tends to believe in tradition more than technology. This is what makes it difficult to disseminate technology to farmers with low level of education. However, It does not apply for all. It is because, in some cases, there are also farmers who have low level of education, but they tend to be open to new technologies presented by extension workers.

The effect of the length of farming on farmer's motivation

Experience is the ownership of knowledge experienced by a person in a certain period of time as a result of learning. Experience or length of farming is basically one of the references for most farmers in making a decision to accept or reject a new technology. The results of statistical analysis in this study indicate that the regression coefficient score is (0.018), meaning that for every additional 1 unit of value in the variable of length of farming, the value of farmer's motivation in implementing the *Jajar Legowo* planting system will increase by 0.018 with the requirement of other variables fixed. Whereas, the significance value is 0.000 or less than 0.05 meaning that the variable of experience has a significant effect on farmer's motivation in implementing the *Jajar Legowo* planting system. Observations at the study site indicate that respondents with farming durations at the level of 1-10 years already have more information on conventional farming than the *Jajar Legowo* planting system, so that the motivation of these respondents is higher to try the introduction of *Jajar Legowo* planting system. The results of this study are in contrast to the results of research conducted by (Made et al., 2016) stating that the experience of corn farming has a negative correlation with farmers' motivation in implementing hybrid corn varieties innovations, meaning that an increase in experience of corn farming among farmers will reduce farmers' motivation to implement innovations. It could be due to past experiences that were detrimental to farmers, so that farmers no longer used the hybrid corn variety innovation. Farmers' losses in doing corn farming for the last two years have experienced many crop failures due to weather changes. The results of this study are different from the results of research conducted by (Falo et al., 2016) stating that the length of farming in lowland rice had no significant effect on the role of farmer groups. The difference in the results of the study is thought to be due to the different characteristics of the respondents and the focus of the study leading to the external conditions of the individual respondents.

The effect of External Factors on Farmer's Motivation in Implementing the *Jajar Legowo* Planting System

The effect of the availability of capital on farmer's motivation

Based on the results of the regression analysis, it showed that the variable of availability of capital (X2.1) had a significant effect on farmer's motivation as indicated by a significance value < 0.05 . It is in contrast to the results of research conducted by (Made et al., 2016) concluding that the availability of capital is negatively correlated with the farmer's motivation in implementing innovations in hybrid corn varieties. It is because as many as 90% of farmers obtain capital coming from loans. Most of these loans come from family and friends. The interest on loans received by farmers is reasonably high, up to 20%. In addition, the cost of farming hybrid corn is higher than that of the non-hybrid. It can cause a decrease in the motivation of farmers to implement innovations in hybrid corn varieties because the burden received by farmers is heavier.

Based on the results of observations of conditions at the research site, it shows farmer groups still rely on access to capital to local financial institutions such as Village cooperatives (Indonesian: *Koperasi Unit Desa* abbreviated *KUD*), rice middlemen/broker, and informal savings and loan service institutions in providing capital

needs. The need for capital is still a classic problem for farmers. Not a few farmers are engaged in the trap of moneylenders and middlemen who deliberately take advantage of the farmers' difficulties to reap the maximum profit. The trap has many variations, but most use the "ljon" system. The "ljon" system is a system of buying and selling rice plants or fruits that are still green at low prices. However, because of the need for funds, farmers have no choice but to carry out this "ljon" system.

Another trap found at the research site is the "tebasan" system (a system of buying and selling agricultural products before entering the harvest period). The middlemen estimate the estimated yield in buying unharvested grain by farmers. The cost of harvesting is entirely the responsibility of the buyer or middleman. The "tebasan" system or "ljon" system is equally detrimental to farmers. It is because farmers do not have a strong bargaining position, especially, when they are burdened with the problem of limited capital they have.

In principle, in mathematical calculations, the greater the capital used, it is expected that the higher the amount of rice production. This condition is in line with the results of statistical calculations showing a positive and significant regression coefficient between the availability of capital and the farmer's motivation in implementing the *Jajar Legowo* planting system. Another research which is identical is research conducted by (Ikhwan et al., 2013) stating that additional capital in the *Jajar Legowo* planting system is able to increase the productivity of rice plants. Research by (Sulistiana, 2013) is also similar research showing that the capital variable has a significant effect on production results in the small industry of shoe and sandal. It is in accordance with the Cobb-Douglas theory stating that production output is affected by capital. It shows high capital will increase the amount of production. It is because costs are needed to purchase materials, to get equipment, and to pay employee salaries in the production process. It can be assumed that capital affects farmers' income. It is because the higher the capital invested; the more prosperous farmers will be. The more considerable capital the more farmer's income will be, and vice versa. Hence, the availability of adequate capital will increase farmer's motivation in implementing technological innovations with *Jajar Legowo* planting system, and it will also increase the work productivity of farmers which will ultimately increase their income.

Effect of the variable of intensity of extension on farmer's motivation

Based on the results of the regression analysis showed that the variable of Intensity of Extension (X2.2) had a significant effect on farmer's motivation as indicated by a significance value <0.05 . The higher the intensity of extension carried out, the higher the motivation level of farmers in implementing *Jajar Legowo* planting system. The result of research by (Ratih; Suwanto; Mohammad, 2018) concluded that the quality of extension had a direct and positive effect on the motivation to use the yard. Another research that is almost identical to this study is the results of research by (Zuyyina & Fakhruddin, 2020) concluding that the effect of the intensity of extension on the increase of the family's productive economy in the group of Efforts to Increase Prosperous Family Income (Indonesian: *Usaha Peningkatan Pendapatan Keluarga Sejahtera*, abbreviated UPPKS) showed a positive and significant effect. However, the effect is only 3.9%, while the rest of 96.1% is the increase in the family's productive economy affected by other variables not examined in this study. The existence of extension activities carried out intensively (repeatedly) can affect "changes in respondent behavior." In this case, it is a change in the respondents' behavior who initially did not have desired to try to establish a productive economic business, now, many of them have productive economic businesses. It shows extension activities carried out repeatedly or intensively has an effect on the changes in respondent behavior. It happens because the intensity of extension is an activity expected to change perceptions, knowledge, attitudes, and behavior of farmers in making decisions. The result of research by (Rompas et al., 2020) also concluded that extension activity had an effect on pig farmers in terms of increasing knowledge, creating a positive attitude towards the pig farming business and increasing the skills of farmers in running a pig farming business in Kawangkoan District. The result of research by (Lalla, 2012) concluded that the adoption of *Jajar Legowo* planting system was affected by the training provided to farmers.

The results of previous and consistent research with the results of this study are also supported by the results of observations at the research site showing that the intensity of extension concerning material of *Jajar Legowo* planting system has been less intensive in the last 5 years. It causes the technical knowledge of farmers in implementing *Jajar Legowo* system is also lacking. However, not all farmers responded well to the technology of *Jajar Legowo* planting system. There are some arguing that *Jajar Legowo* planting system reduces the population so that production decreases. There are also those assuming that the *Jajar Legowo* planting system is more complicated, and the workforce is reluctant to implement *Jajar Legowo* planting system. Despite all the reasons given by several farmers who were met and asked for a response after the

extension activities concerning *Jajar Legowo* planting system was conducted, most of the farmers were enthusiastic about trying this technology.

The effect of the variable of availability of labor on farmer's motivation

Based on the results of statistical calculations, they indicate the variable of Availability of Labor has a significant effect on farmer's motivation in implementing *Jajar Legowo* planting system. If it is related to field conditions, it is true that more workers owned by farmers will also increase their motivation in implementing *Jajar Legowo* planting system. It is because labor is available from planting to post-harvest. Farm labor is the second factor of production besides land, capital, and management. Other types of labor besides human labor are livestock and mechanics. Sometimes, labor is the sole factor of production. It shows the position of farmers in their farming. Farmers not only manage farming, but are also become the backbone of the family as the primary source of labor for their farming. Farmers will seek some additional labor outside the family.

The availability of agricultural labor in farm households is the number of workers working in agriculture in each household (Sudrajat et al., 2020). The availability of labor in each farming household is inseparable from various factors affecting it, such as the land area controlled by the household, the income received from the results of their farming, the desire of household members to work in agriculture, the perception of household members towards agricultural work, and so on (Sudrajat; 2011; Sudrajat; 2013; Sudrajat, 2014). The results of the study found that 54% of farm households were able to provide 2 household members who were ready to work in agriculture; it is followed by 30% of only able farm households to provide 1 person; 12% of farm households were able to provide 3 people; and those who were capable to provide 4 people only as much as 3%. These findings illustrate that the availability of ready workers to work in agriculture is relatively low. It is because on average there are only 2 people. This is in line with what Sudrajat (2013) stated: Sudrajat (2014); Sudrajat (2018) stated that the low number of household members who no longer want to work in agriculture is strongly affected by social, economic and demographic factors in farming households. If this condition continues, agricultural activities in the future will be very worrying regarding the sustainability of agriculture in terms of the availability of labor. The decrease of availability of labor has encouraged farmers to be less interested in implementing *Jajar Legowo* planting system.

CONCLUSION

Based on the results of the study of the factors affecting farmer's motivation in implementing the *Jajar Legowo* planting system in Tegalsari, Kepanjen, Malang, several conclusions were obtained as follows:

1. Variables of the internal factors (age, land area, education, length of farming) and variables of the external factor (availability of capital, intensity of extension, and availability of labor) affect the variable of farmer's motivation in implementing *Jajar Legowo* planting system by 65.6%, while the rest of 34, 4% is affected by other variables not examined in this study.
2. The variable of the internal factor with the highest regression coefficient is the length of education, which is 0.358. Whereas, the variable of the external factor with the highest regression coefficient is the availability of capital, which is 1.024.

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