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**FARMER'S RESPONSE TO UPSUS PAJALE'S  
PROGRAMS IN ORDER TO INCREASE CORN  
PRODUCTION IN JEMBER DISTRICT**

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**Abstract:** Special effort (UPSUS) program of sustainable self-sufficiency is one of the government efforts in manifesting food security. UPSUS of food self-sufficiency is focused on three types of main food commodities that are rice, corn, and soybean (PAJALE). UPSUS PAJALE program aims to increase the production of rice, corn, and soybean so that it reaches sustainable food self-sufficiency. Jember Regency is one of the corn centrals running UPSUS PAJALE program. Ambulu Sub District is one of the areas running UPSUS PAJALE program for new planting areas extension (PATB) of corn in Jember Regency. PATB program of corn leads to new planting extension. The PATB activity of corn supports the farmers in cultivating corn because there is facility assistance in the form of corn seed. The activity brings up farmers' response in conducting corn farming activity. Farmers' response can be knowledge, attitude, and behavior of farmers taking an important effect on the PATB activity implementation of corn. This research aims to (1) find out the farmers' respond on

UPSUS PAJALE program, and (2) find out factors affecting the farmers' response on UPSUS PAJALE program.

The research area determination with the purposive method was Ambulu Sub District Jember Regency. Sample determination method was by simple random sampling with total samples as 63 farmer respondents. Data collection method was by observation, interview, and documentation. The tools of analysis used proportion test of Z-statistic and multiple linear regression analysis.

The results of the research showed that (1) Farmers' response on PATB activity of corn on UPSUS PAJALE program to increase corn production in Ambulu Sub District Jember Regency included in high response category. (2) Factors affecting the farmers' response significantly on PATB activity of corn on UPSUS PAJALE program in Ambulu Sub District Jember Regency are price, visit frequency of field extension officer (PPL) and education. Factors not affecting significantly on the farmers' response on PATB activity of corn on UPSUS PAJALE program in Ambulu Sub District Jember Regency are land area, age, farm management, and land ownership.

**Keywords:** PATB of corn, UPSUS PAJALE Program, Response

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## Introduction

Corn is a strategic food crop commodity. Corn has an important role in meeting the needs of food and non-food such as seeds, feed and industry. Corn has the prospect of sustainable development to be able to increase food availability on a local and national scale. Over the past five years the volume of corn exports with an average growth of 171.69%. In 2016 this export volume decreased by 83.31%, due to priorities for meeting domestic needs, especially for animal feed raw materials (Ministry of Agriculture, 2017).

According to the Ministry of Agriculture (2017), it was explained that the largest consumption of corn was for animal feed needs which reached 61.69% with an average growth of 6.29%. The development of the livestock industry encourages the increasing need for corn. In 2012-2016 corn imports decreased by an average of 3.82% per year (Ministry of Agriculture, 2017). Based on the data, the decline in the volume of corn imports is due to the focus on increasing corn production, where corn is one of the commodities that is the main focus in the Food Self-Sufficiency UPSUS program. Another factor is due to the increased interest of farmers in growing corn with the assistance of input from the government.

The development of maize production from 2013-2017 experienced an increase of 50.95%, an increase in productivity reached 7.33%, while the harvested area increased by 40.64%. This increase occurred due to interference from the government through various steps that have been taken or will be taken (DG Crops, 2018). Government efforts in realizing food security through various approaches, one of them through a special effort (UPSUS) program for sustainable self-sufficiency. This program has been carried out since 2015-2017, with the aim of increasing the production of several commodities considered important, namely rice, corn, soybeans, sugar cane, shallots, chili, and beef so as to achieve food self-sufficiency. The UPSUS program is simultaneously implemented in several provinces in Indonesia, one of which is East Java (Ministry of Agriculture, 2017).

East Java is one area that is projected as a center for corn commodity development, as well as implementing the UPSUS PAJALE program. Corn production in East Java is the third highest after rice and sweet potato, with an increase of 5.29%. The UPSUS PAJALE program is a government program to achieve sustainable food self-sufficiency by focusing on three main types of food commodities namely rice, corn and soybeans (PAJALE) which have important effects on food security. The scope of UPSUS PAJALE consists of several activities, one of the activities in the context of increasing corn production is the optimization of the expansion of the corn planting area (PAT-corn), the provision of aid seed, fertilizer, agricultural machinery and equipment (Alsintan), as well as escort or assistance (Agency for Resilience East Java Food 2015).

Jember Regency is a corn center area that is implementing the UPSUS PAJALE program. The UPSUS PAJALE program in Jember Regency has been implemented since 2015. The target of this program is to increase planted area, increase in Planting Index (IP), increase production, quality and productivity. The implementation of the UPSUS PAJALE program is directed at mentoring activities and planting area. In addition, there are assistance in the form of production of seeds and agricultural machinery such as water pumps and tractors, which are evenly distributed in several regions.

The addition of corn planting area in the UPSUS PAJALE program in Jember Regency is directed at the activities of adding new corn planting area (PATB) of corn. Corn PATB is a corn cultivation activity carried out on land that has never been planted with corn. According to the Directorate General of Food Crops (2018), the criteria of the corn PATB do not have to open new land but can utilize fields, plots, annual tree shade or plantations, paddy dike land, commodity replacement land, land that is not utilized or untapped and similar land. Corn cultivation activities in Jember Regency are spread evenly, because generally corn is a commodity cultivated by farmers in each period of the growing season. Farmers feel that corn is more profitable compared to soybean, because it is more adaptable to various environmental conditions.

Ambulu District is the third highest corn production sub-district in Jember, which is accompanied by an increase in corn harvest area and productivity of corn farming. The UPSUS PAJALE program in Ambulu District leads to a number of activities including mentoring activities, corn PATB and production input assistance. Assistance activities carried out by extension workers and local offices in the form of socialization and assistance of field activities conducted every corn growing season. The existence of the UPSUS PAJALE program supports farmers in carrying out corn cultivation activities, because there is assistance in the form of input seeds in the form of corn seeds from the government. In the PATB activity, corn farmers use tegal land and land owned by plantations and Perhutani in corn cultivation activities. The UPSUS PAJALE program has raised the response of farmers in conducting corn farming activities. This response can be in the form of knowledge, attitudes, and behavior possessed by farmers towards the UPSUS PAJALE program. Therefore, the level of awareness of farmers in implementing the program has an important influence on the success of the UPSUS PAJALE program in Ambulu District.

Based on the description above, the research objectives are to (1) determine the response of farmers to the UPSUS PAJALE program in order to increase corn production in Jember Regency, and (2) factors that influence farmers' responses to the UPSUS PAJALE program in order to increase corn production in the District Jember

## **Literature Review**

### **1. Special Efforts Program (UPSUS) PAJALE**

Based on the Regulation of the Ministry of Agriculture of the Republic of Indonesia number 03 / Permentan / 0T.140 / 2/2015 concerning the guidelines for Special Efforts (UPSUS) to increase production of rice, corn and soybeans through the improvement of irrigation networks and their supporting facilities in the 2015 fiscal year has established special efforts to achieve self-sufficiency sustainable rice, corn and soybeans (Ministry of Agriculture, 2015). The 2015-2017 food self-sufficiency UPSUS is a special effort by the Ministry of Agriculture to succeed in self-sufficiency in rice, corn and soybeans in 2017. One of the efforts undertaken is assistance or escort involving the Ministry of Agriculture and related services to farmers (Indonesian Center for Biogen Research and Development, 2015) . According to the Ministry of Agriculture (2015), special efforts to achieve sustainable self-sufficiency in rice, corn and soybeans through tertiary irrigation network rehabilitation activities and other supporting activities are carried out in various activities namely the development of irrigation networks, land optimization, development of the System of Rice Intensification (SRI), Movement Application of Integrated Crop Management (GP-PTT), optimization of soybean Planting Expansion through Improvement of Planting Indications (soybean PAT-PIP), Corn Planting Expansion (corn-PATB), providers of agricultural facilities and infrastructure (seeds,

fertilizers, pesticides, tools and agricultural machinery), pest control and the impact of climate change, agricultural insurance and assistance.

## **2. Response Theory**

According to Sarwono (2002), excitement (stimulus) is a complicated thing, so to define it needs to be considered as a process of perception. There are three types of stimuli in accordance with the three elements of the sensing process, namely:

1. Stimulation which is an object in its physical form (distal excitement).
2. Stimulation as a whole spread in the proximal field (not yet related to the nervous system process)
3. Excitement as a phenomenal representation (the suggested symptom) of objects that are outside.

Response (reply) is a process of organizing excitatory. Proximal excitability is organized so that there is a phenomenal representation of proximal excitability, this process is called response.

Farmer response in this case also needs to be known because in the implementation of the UPSUS PAJALE program the response (response) has an effect on the success of the program. Research conducted by Hadi and

Ediyanto (2016), which discusses the response of farmers to organic rice farming, Handayana et al., (2017) who discusses the response of farmers to the provision of UPBS seeds, and research conducted by Novia (2011) which discusses the response of farmers to school activities Integrated Crop Management Field (SLPIT). The study of farmers' responses to the UPSUS PAJALE program has similarities with those three studies which discuss farmers' responses to the existence of an activity related to farm technicality in a government program. Based on the results of the study it was concluded that farmers have a relatively high response to the activities in the program. Based on Steven M. Caffé's theory in Rahmat (1999), farmers' responses can be seen from the aspects of knowledge, attitudes and behavior.

### **1. Multiple Linear Regression Theory**

According to Ghazali (2014), regression analysis estimates the relationship between the dependent variable and the independent variable. Regression analysis with one independent variable  $X$  is called simple linear regression, if it has more than one independent variable  $X$  it is called multiple linear regression. Multiple linear regression is used to test the effect of two or more independent variables (explanatory) on a dependent variable. Generally the equations in the multiple linear regression model are as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + e$$

Information:

Y = dependent variable

a = constant

$\beta_1, \beta_2, \beta_3, \beta_n$  = Parameters for variable X

X = independent variable

e = Error

The accuracy of the sample regression function in estimating the actual value can be measured from Goodness of fit, statistically it can be measured from the value of the coefficient of determination ( $R^2$ ), the statistical value of F and the statistical value of t. Statistical calculations are called statistically significant if their statistical test values are in critical areas (areas where  $H_0$  is rejected) and vice versa. The following explanation:

#### 1. Coefficient of Determination ( $R^2$ )

The coefficient of determination is used to measure how far the model's ability to explain variations in the dependent variable. Value of the coefficient of variation between zero and one. A small  $R^2$  value means ability

independent variables in explaining the variation of the dependent variable are very limited. A value close to one means that the independent variables provide almost all the information needed to predict the variation of the dependent variable.

#### 2. Test Statistics F

The F statistical test shows whether all independent variables included in the model have a joint or simultaneous effect on the dependent variable.

$$H_0 : \beta_1 = \beta_2 = \dots = \beta_k = 0$$

Testing this hypothesis is often called testing the overall significance (overall significance) of the regression line that wants to test whether Y is linearly related to X. Decision Making Test F that is, if  $F_{count} > F_{table}$  then  $H_0$  is rejected at a certain error rate (10%, 5% and 1%), which means that the independent variables tested together have a significant effect on the dependent variable, and vice versa.

### 3. Test Statistics t

T statistical test to find out how far the influence of one independent variable on the dependent variable by assuming the other independent variables are constant, if the assumption of normality error is met, then it can use the t test to test the partial coefficient of regression.

Decision making t test

$$H_0 : \beta_1 = 0$$

$$H_1 : \beta_1 \neq 0$$

If  $t_{count} > t_{table}$ , then  $H_0$  is rejected at a certain error rate (10%, 5% and 1%), meaning that there is an influence of the  $i$ -th dependent variable ( $X_i$ ) on the dependent variable.

Next to find out the factors that influence farmers' responses to the UPSUS PAJALE program. Research conducted by Hadi and Ediyanto (2016) discusses farmers' responses to organic rice farming, Novia (2017) discusses Farmers' Responses to SLPTT Activities, and Rozalina's research (2015), which discusses Farmers' Responses to the Use of Threshing Machines (Power Thresher) rice. Research on the factors that influence farmers' responses to the UPSUS PAJALE program has similarities with the three studies, which both want to know the factors that influence farmers' responses to the technical and technological farming of a government program. Based on these results it can be concluded that there are thought to be several factors that influence farmers' responses to the UPSUS PAJALE program which includes land area, price, age, farming experience, frequency of PPL visits, education, and land ownership.

Land area influences the response of farmers, because in the activities of a program there is a difference in the size of land owned by each farmer. Farmers who have narrow land area have a lower response compared to farmers who have relatively wide land area. This is because it is related to the behavior of farmers in corn farming activities. Farmers with large tracts of land have more opportunities to cultivate corn compared to farmers who have narrow land.

Prices affect the response of farmers, because when the price received by farmers is high, farmers will be more interested in carrying out activities that are planned by the government in a program. Conversely, when prices are low, farmers will switch to other commodities that are more profitable. This is because the price has an influence on the final opinion received by farmers from the results of their farming. In addition, when farmers' opinions increase, farmers can meet their needs both daily needs and basic needs.

Age influences the response of farmers, because the older the farmers, the higher the response of farmers. The older the farmers, the more they will interact with others. This

interaction will affect the growing insight of farmers, besides farmers who have an older age will be more open in accepting an agricultural innovation so it tends to have a high response.

Farming experience has an influence on farmers' responses. The longer a farmer does farming it will affect the response of farmers to a program. Farmers with long-term farming experience have a higher response because they are more experienced in corn farming activities both in terms of understanding and knowledge.

The frequency of PPL visits has an influence on farmers' responses, because the more frequent assistance activities from PPL are carried out, it will encourage farmers to be more active and open about agricultural innovation. It is also able to provide insights related to socialization and field activities provided by local PPL. Therefore, the farmer has a strong urge in himself to actively participate in every mentoring activity undertaken.

Education has an influence on the response of farmers, because the higher the education of farmers, the higher the response of farmers. One's education is associated with one's level of ability to solve problems, where education influences one's mindset and decision making process. Farmers who have high education are likely to be different from farmers who have a low level of education in their mindset, how to see a problem and decision making based on the knowledge and experience they have. Higher farmer education will tend to accept the existence of an agricultural innovation.

Land ownership affects the response of farmers, because when farmers own their own land, farmers are more entitled to decide to cultivate suitable crops, whereas when land owned by rent or not own property must follow the provisions of the landlord. Farmers who own their own land are also free to determine the planting pattern of corn, whereas if the land does not belong to either rent or plantation or Perhutani, the farmer must follow the planting pattern of the party concerned.

Based on this, then to answer the first problem formulation, namely the implementation of the UPSUS PAJALE program in the context of increasing corn production in Jember Regency, it will be analyzed descriptively according to the Republic of Indonesia Ministry of Agriculture Regulation No. 03 / Permentan / OT.140 / 2/2015 concerning the guidelines of UPSUS, PTT corn and technical guidelines for the implementation of corn activities in 2018. In the formulation of the second problem concerning the response of farmers to the UPSUS PAJALE program in order to increase corn production in Jember Regency will be analyzed using the Z-test proportion test. Next in the formulation of the third problem related to the factors that influence farmers' responses to the UPSUS PAJALE program in order to increase corn production in Jember Regency were analyzed using multiple linear regression analysis.



## Methods

The location of the study was determined intentionally (purposive method), namely in the District of Ambulu, Jember Regency. The basic consideration is that as one of the sub-districts running the UPSUS PAJALE program, as well as from 7 farmer groups receiving production input assistance in the form of corn seeds from the UPSUS PAJALE program in 2018, 5 of which are in Ambulu District precisely in Tegalsari Village, Sabrang Village, and Sumberejo Village. This research was conducted in 3 months, namely April - June 2019. Information data used in the study is in the MK 2 period precisely in August - September 2018.

The data collection in this study uses several techniques, namely (1) observation, (2) interviews directly with respondents of corn farmers in the UPSUS PAJALE program, and (3) documents obtained from various related agencies such as Subdistricts, Department of Agriculture, Jember Regency, Ministry of Agriculture, BPS and other relevant institutions as well as some relevant literature with research from books, research results and the internet. The sampling method uses the Simple Random Sampling method, to see the population of farmers in the farmer groups who run the UPSUS PAJALE program and get help with corn seeds in Ambulu District. The population used in this study were 5 farmer groups, with a total population of 161 farmers. Sample calculation is done using the formula from Parel et al., (1973) and the tolerance level of error is 5%. The calculation of the formula is as follows.

$$\begin{aligned} n &= \frac{NZ^2S^2}{Nd^2 + Z^2S^2} \\ &= \frac{161 \times (1,950)^2 \times 27}{161 (1)^2 + (1,950)^2 (27)} \\ &= 62,69 \text{ samples} \end{aligned}$$

Information:

n = Number of samples

N = Number of population

d = maximum acceptable error

S<sup>2</sup> = Variety value

Z = normal variable, which is the percentage value of reliability (Z) or the value at the 95% confidence level.

The calculation result of the formula from Parel et al., (1973) above shows that from the population of corn farmers in Ambulu District, Jember Regency, there were 161 farmers with an error rate of 5%, then a sample of 63 farmer respondents was obtained.

### 1. Z-statistical Proportion Test Analysis

To find out the response of farmers to the UPSUS PAJALE program using Z-statistical proportion test analysis. The first step of measuring variables in the study using a

Likert scale. Data obtained by using questions closed to respondents, then processed and analyzed using qualitative descriptive methods to look for responses. Determine the indicators and parameters of each aspect of the response namely knowledge, attitudes and behavior (Steven M. Caffé's theory in Rahmat, 1999). Indicators of the aspects of knowledge are knowing, understanding, applying, synthesis, and evaluation, while the attitude consists of receiving, responding, respecting and being responsible (Notoatmojo, 1997 in Donsu, 2017). Behavioral indicators consisting of persuasion, decisions, implementation, and confirmation (Roger, 1983). The parameters are based on the direction of corn PATB activities in Ambulu District, Jember Regency in accordance with the existing UPSUS guidelines. Here is a table of indicators and response parameters.

Table 1. Indicators and Response Parameters

Aspect	Indicator	Parameters
Knowledge	Know (3-9)	<ul style="list-style-type: none"> <li>- Know the direction of corn cultivation activities (1-3)</li> <li>- Priority for maize cultivation land (1-3)</li> <li>- Corn cultivation technology (1-3)</li> </ul>
	Understand (2-6)	<ul style="list-style-type: none"> <li>- Criteria for corn cultivation land (1-3)</li> <li>- Submission of PPL in mentoring activities (1-3)</li> </ul>
	Apply (2-6)	<ul style="list-style-type: none"> <li>- Aid of Production input (1-3)</li> <li>- Results of field assistance activities (1-3)</li> </ul>
	Synthesis (1-3)	<ul style="list-style-type: none"> <li>- Innovation of corn cultivation techniques (1-3)</li> </ul>
	Evaluation (2-6)	<ul style="list-style-type: none"> <li>- Target and production realization (1-3)</li> <li>- Target and price realization (1-3)</li> </ul>
Attitude	Receive (3-9)	<ul style="list-style-type: none"> <li>- Provisions of corn cultivation land (1-3)</li> <li>- Aid of Production input (1-3)</li> <li>- Socialization in PPL assistance activities (1-3)</li> </ul>
	Respond (3-9)	<ul style="list-style-type: none"> <li>- Farmer group activities (1-3)</li> <li>- Corn PATB Activity (1-3)</li> <li>- Mentoring activities (1-3)</li> </ul>
	Appreciate (1-3)	<ul style="list-style-type: none"> <li>- Implementation of assistance in the cultivation of corn (1-3)</li> </ul>

Behavior	To be responsible (1-3)	-	Carry out corn cultivation activities (1-3)
	Persuasion (3-9)	-	Farmers' interest in cultivating corn compared to other commodities (1-3)
		-	Desire to cultivate corn (1-3)
		-	Corn commodity is more profitable (1-3)
	Decision (3-9)	-	Cultivating corn (1-3)
		-	Using land according to cultivation criteria
Behavior		-	corn (1-3)
		-	Participate in field assistance activities (1-3)
	Implementation (1-3)	-	Technical cultivation of corn (1-3)
	Confirmation (2-6)	-	Comparing corn commodities with other commodities (1-3)
		-	Farmer group services in the distribution of seed assistance (1-3)

Farmers' responses are expressed in scores as decision making criteria. Each indicator and sub-variables above are given a range of values between 1-3 with a category of values divided into 1 (low), 2 (medium) and 3 (high). The data obtained in this study in the form of ordinal, then to determine the range of scales used the Likert Scale formula as follows (Levis, 2013):

$$i = \frac{R - r}{n}$$

Information:

i: interval value

R: Highest cumulative score

r: lowest cumulative score

n: number of categories / classes

From the formula above then obtained

Response = (Maximum value - Minimum value):  $3 = (81 - 27) : 3 = 18$

So the criteria for decision making:

a. Score 27-45 low farmer response

b. Score 45 - 63 response of farmers being

c. Scores 63-81 high response of farmers

The next step uses the proportion test with the following equation:

$H_0: p \leq 50\%$

$H_1 : p > 50\%$

$H_0$  : less than or equal to 50% of corn farmers have a high response rate to the existence of the UPSUS PAJALE program in the context of increasing corn production in Jember Regency

$H_1$  : more than 50% of corn farmers have a high response rate to the existence of the UPSUS PAJALE program in order to increase corn production in Jember Regency.

Then determine the actual level used is equal to 5% ( $\alpha = 0.05$ ) with  $n = 63$  corn farmers. Perform test statistics with equations:

$$Z \text{ count} = \frac{\frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}}}{n}$$

Information:

$p$ : High proportion of response in the sample

$$\bar{p} = \frac{\text{jumlah respon tinggi dalam sampel}}{\text{jumlah dalam sampel}}$$

$N$ : Total number of samples (people)

$P$ : Proportion of population is 50%

$Z$ : Z test value

Testing Criteria:

- a.  $Z \text{ count} \leq Z \text{ table}$  then  $H_0$  is accepted and  $H_1$  is rejected
- b.  $Z \text{ count} > Z \text{ table}$  then  $H_0$  is rejected and  $H_1$  is accepted

## 1. Analysis of Farmer's Response Factors to the UPSUS PAJALE Program

To analyze the factors that influence farmers' responses to the UPSUS PAJALE program by using multiple linear regression analysis with the help of the application of the Statistical Product and Service Solution (SPSS) program. The equation used is as follows Ghazali (2014):

$$\hat{y} = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7D + e$$

Information:

$\hat{y}$  = Farmer response

$a$  = constant

$b_1 \dots b_n$  = The coefficient of each variable of  $x_1 \dots x_n$

$x_1$  = Land area (Ha)

$x_2$  = Price (Rp / kg)  
 $x_3$  = Age (Years)  
 $x_4$  = Farming Experience (Years)  
 $x_5$  = Frequency of PPL visits (times / planting season)  
 $x_6$  = Education (Year)  
 Dummy: D = Land ownership  
           (0 = self-owned land, 1 = rent)  
 $E$  = 5% (0,05)

## Findings

### 1. Farmer's Response to Corn PATB Activities in the UPSUS PAJALE Program in the context of Increasing Corn Production in Ambulu District, Jember Regency

Response is a reaction or response to a stimulus or stimulus either in the form of knowledge information obtained through the five senses. The response can be realized in the form of knowledge, attitudes and behavior of a person. Everyone's response will be different for something they receive, including the farmers' response to the corn PATB activity in the UPSUS PAJALE program in Ambulu District, Jember Regency. Measurement of farmers' responses to corn PATB activities in the UPSUS PAJALE program can be seen from three aspects, namely knowledge, attitudes and behavior. Measurement of the response of farmers is known by calculating the number of scores in the list of questions asked to respondents. The scoring method was carried out using a Likert scale and then a proportion test was conducted regarding the level of response of farmers.

Farmers' responses in the form of knowledge, attitudes and behavior can be divided into 3 categories, namely low, medium and high response categories. The response is said to be low if the score is 27-45, the response is moderate when the score is 46-63, and the response is high if the score is 63-81. The following are the results of the scoring tabulation on indicators of farmers' responses to corn PATB activities in the UPSUS PAJALE Program.

Table 2. Scores of Farmers Response to Corn PATB Activities in UPSUS PAJALE Program in the Context of Increasing Corn Production in Ambulu District

Response Categories	Number of Farmers (people)	Percentage (%)
Low (score 27 — 45)	3	4,76
Medium (score 46 — 63)	26	41,27
High (score 63 — 81)	34	53,97
<b>Total</b>	<b>63</b>	<b>100</b>

Source: Primary Data, Processed in 2018.

Based on Table 2. it can be concluded that not all farmers have the same response to corn PATB activities in the UPSUS PAJALE program in Ambulu District. Farmers included in the low response category were 3 farmers, farmers with a moderate response category were 26 farmers, and farmers with a high response category were 34 farmers. This shows that the farmers in Ambulu District had mixed responses with the existence of corn PATB activities in the UPSUS PAJALE program. 54% of farmers have a high response to corn PATB activities, meaning that more than 50% of farmers cultivate corn in accordance with the provisions of the corn PATB activities. As many as 41% of farmers with a moderate response means some farmers carry out corn cultivation activities according to the existing recommendations, but not all stages are carried out completely because farmers tend to carry out technical cultivation of corn in general. Only about 5% did not implement corn cultivation in accordance with existing regulations. When farmers have a high response, it will be easier for farmers to accept new things, either technical cultivation or new innovations in corn farming in corn PATB activities. Farmers will increasingly have an open mind to the information that farmers receive, besides that farmers can also receive direction well when socializing related to corn PATB activities.

The first hypothesis in this study states that the alleged response of farmers to corn PATB activities in the UPSUS PAJALE program is relatively high. To prove the truth of the hypothesis, the following proportion test is carried out.

$$\begin{aligned}
 Z_{\text{count}} &= \frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}} \\
 &= \frac{34/63 - 0,5}{\sqrt{\frac{0,5(1-0,5)}{63}}} \\
 &= \frac{0,039}{0,062} \\
 &= 0,629 \text{ and } Z_{\text{table}} = 1,645
 \end{aligned}$$

Based on the calculation results, the Z value is 0.629, where the value is less than the Z table value, which is 1.645. This means that H0 is accepted and H1 is rejected or the hypothesis of farmers' response to corn PATB activities in the UPSUS PAJALE program is high. So that less than or equal to 50% of farmers have a high response rate to the UPSUS PAJALE program in the context of increasing corn production in Jember Regency. This is due to the farmers' lack of understanding regarding the direction of the corn PATB UPSUS PAJALE program in the context of increasing corn production. Especially for the land used by corn cultivation farmers does not fit the land criteria that have been determined in the corn PATB activities. Most farmers use paddy fields for maize cultivation. The lack of active farmers in field assistance activities as well as socialization conducted by PPL, resulted in a passive mindset. Therefore, the level of understanding and mastery of material possessed by farmers

is still lacking, coupled with the thinking of farmers who still emphasize the fulfillment of needs by accepting farm products as they are.

# **1. Factors Affecting Farmer's Response to Corn PATB Activities in the UPSUS PAJALE Program in the Context of Increasing Corn Production in Ambulu District, Jember Regency.**

Farmer response is knowledge, attitudes and behaviors owned by farmers with the existence of corn PATB activities in the UPSUS PAJALE Program. Farmers will have a good attitude to accept or reject the existence of such corn PATB activities. Farmer's response will affect the ongoing activities of the corn PATB. Linear regression analysis is used to determine the factors that influence the response of farmers to corn PATB activities in the UPSUS PAJALE program in order to increase corn production in Ambulu District, Jember Regency. The dependent variable is in the form of farmer response ( $\hat{y}$ ) and the independent variable consists of land area ( $x_1$ ), price ( $x_2$ ), age ( $x_3$ ), farming experience ( $x_4$ ), frequency of PPL visits ( $x_5$ ), education ( $x_6$ ) and ownership land ( $D$ ). Regresi analysis is carried out using the SPSS application program with the aim of making analysis easier. There are disturbances that might occur in linear regression analysis, to find this out then a classic assumption test is carried out including:

## **1. Normality Test**

Based on the results of SPSS output, the factors that influence farmers' responses to corn PATB activities in the UPSUS PAJALE program in order to increase corn production in Ambulu District, Jember Regency, show that the points on the graph are scattered around a diagonal line and follow a diagonal line, so in this analysis it is said that graphs of farmers' responses to corn PATB activities in the UPSUS PAJALE program meet the classical assumptions of the normality test.

## **2. Heteroscedasticity Test**

The results of the analysis of farmers' responses to corn PATB activities in the UPSUS PAJALE program in Ambulu District show that the points on the scatter plot graph spread above and below zero and do not form a specific pattern or spread randomly, so it can be concluded that the analysis results on the model can be meet the assumption of heteroscedasticity.

## **3. Autocorrelation Test**

Based on the results of the analysis note that the analysis results state that the statistical value of DW if it is in the range of 1.55 to 2.46 there is no autocorrelation. In this category the DW value of 1,679 is obtained in the range of 1.55 to 2.46, it can be concluded that there is no autocorrelation violation or the analysis results meet the assumptions of autocorrelation.

## **4. Multicollinearity Test**

Multicollinearity test results on the analysis of farmers' responses to corn PATB activities with tolerance values on all independent variables  $> 0.10$  or VIF values of all variables free  $< 10$ . This means that the analysis did not occur multicollinearity or the model meets the assumptions of the multicollinearity test. The results of the analysis on multiple linear regression that explain the variation of factors that influence the response of farmers to corn PATB activities in the UPSUS PAJALE program in Ambulu District, Jember Regency can be seen in Table 3.

Table 3. Variant Analysis of Factors Affecting Farmer's Response to Corn PATB Activities in UPSUS PAJALE Program in Ambulu District

Independent variable	Coef. Regression	t-count	Sig.
Land area	-.031	-.223	.824
Price	.001	3.045	.004
Age	-.007	-1.405	.166
Farming experience	-.005	-.744	.460
Frequency of PPL visits	.190	3.687	.001
Education	.037	2.510	.015
Land Ownership (D)	-.050	-.706	.483
(Constanta)	-1.573		
R Square	.387		
Adjusted R Square	.309		
F Count	4.964		

Source: Primary Data, Processed in 2018

Note: 95% confidence level

Based on Table 3. it is known that the magnitude of the constants in the results of the regression analysis of -1.573 shows that when there is no influence of the independent variables, the response of corn farmers to corn PATB activities is -1.573. The value of the coefficient of determination ( $R^2$ ) results of the analysis is 0.309 meaning that 30% of farmers' responses to corn PATB activities in the UPSUS PAJALE program are influenced by independent variables in the model, while the remaining 70% is influenced by other variables outside the model. The magnitude of the F-calculated value is 4.964 with a significance (0,000)  $<$  significant level 0.05. This means that the independent variables together affect the dependent variable. This shows that the variable land area (x1), price (x2), age (x3), farming experience (x4), frequency of PPL visits (x5), education (x6) and land ownership (D) together have a significant effect. response to farmers' response to corn PATB activities in the UPSUS PAJALE program.



Factors that are thought to influence the response of farmers to corn PATB activities in the UPSUS PAJALE program are:

1. Land area (x1)

The magnitude of the regression coefficient value of the land area variable in the corn PATB activity in the Pajale UPSUS program is -0.031. The value of t-count on the variable land area is -0.223 with a significance level of 0.824. Significance value  $0,824 > \text{significant level } 0.05$  so that  $H_0$  is accepted and  $H_1$  is rejected. This means that the land area partially has no real influence on the response of farmers to the corn PATB activities. That is because the corn PATB activities do not discriminate the area of arable land owned by farmers, both farmers who have narrow land area and large land will have the same opportunity in corn farming in corn PATB activities.

2. Price (x2)

The results of the regression analysis showed that the value of the price coefficient on the corn PATB activity in the UPSUS program was 0.001. The value of t-count on the price variable is 3045 with a significance level of 0.004. Significance value of 0.004 nyata level of significance 0.05 so that  $H_0$  is rejected and  $H_1$  is accepted. This means that the price of corn partially has a significant effect on the response of farmers to corn PATB activities. That is because when the price of corn is good, farmers will be more enthusiastic in cultivating corn compared to other commodities.

3. Age (x3)

The regression coefficient value of the age variable in the activities of the corn PATB activity in the UPSUS PAJALE program is -0.007. The value of t-count in the age variable is -1,405 with a significance level of 0.166. Significance value  $0.166 > \text{significant level } 0.05$  so that  $H_0$  is accepted and  $H_1$  is rejected. This means that the farmer's age partially does not have a significant effect on the response of farmers to corn PATB activities on the UPSUS PAJALE program. The older age of farmers does not mean that farmers have a high response to corn PATB activities in the UPSUS PAJALE program. The response of farmers in the corn PATB activities to the UPSUS PAJALE program was not distinguished by the age level of the farmer. Both young farmers and older farmers have the same response to the existence of corn PATB activities on the UPSUS PAJALE program.

4. Farming experience (x4)

The regression coefficient value of the farming experience variable in the corn PATB activity in the UPSUS PAJALE program is -0.005. The t-count value for the land area variable is -0.744 with a significance level of 0.460. Significance value of  $0.460 > \text{significant level } 0.05$  so that  $H_0$  is accepted and  $H_1$  is rejected. This means that the partial farming experience has no real influence on the response of farmers to corn PATB activities. In the corn PATB activity, both farmers who have experience of farming with new and long term will continue to conduct corn PATB activities in the UPSUS PAJALE program.

5. Frequency of PPL visits (x5)

The magnitude of the frequency coefficient value of PPL visits on corn PATB activities in the UPSUS program is 0.190. The value of t-count on PPL visit frequency variable is 3,687 with a significance level of 0.001. Significance value of 0.001 nyata level of significance 0.05

so that  $H_0$  is rejected and  $H_1$  is accepted. This means that the frequency of PPL visits partially has a real influence on the response of farmers to corn PATB activities. That is because the more frequent PPLs conduct field visits for assistance and outreach, the farmers will have a better response to corn PATB activities. The high response of farmers is influenced by the important role of the instructor himself.

#### 6. Education (x6)

The results of the regression analysis showed that the magnitude of the value of the education coefficient on corn PATB activities in the UPSUS program was 0.037. The t-value of the education variable is 2,510 with a significance level of 0.015. Significance value of 0.015 nyata level of significance 0.05 so that  $H_0$  is rejected and  $H_1$  is accepted. This means that education partially has a real influence on farmers' responses to corn PATB activities. This is because farmers who have a high level of education will be more receptive to explanations of what is delivered by PPL or can easily accept the existence of new things including corn PATB activities in the UPSUS PAJALE program.

#### 7. Land ownership (D)

The regression coefficient value of the land ownership variable in the corn PATB activity in the UPSUS PAJALE program is 0.050. The t-value of the variable land ownership is 0.706 with a significance level of 0.483. Significance value  $0.483 >$  significant level 0.05 so that  $H_0$  is accepted and  $H_1$  is rejected. This means that partial land ownership has no real influence on farmers' responses to corn PATB activities. This does not mean that farmers who do farming on their own land have a better response compared to farmers whose land is leased. The existence of the same goal in managing farming between owner farmers and tenant farmers in farming, in the form of increased income, so that farmers will give a good response in the farming they pursue in the activities of the corn PATB without considering the status of land ownership.

## Conclusion

1. Farmers' response to corn PATB activities in the UPSUS PAJALE program in the context of increasing corn production in Ambulu District, Jember Regency is classified in the high response category.

2. Factors that significantly affect farmers' responses to corn PATB activities in the UPSUS PAJALE program in Ambulu District, Jember Regency are price, frequency of PPL visits and education. Whereas the factors that did not significantly affect the response of farmers to the corn PATB activities in the UPSUS PAJALE program in Ambulu District, Jember Regency were land area, age, farming experience, and land ownership.

## References

- Badan Ketahanan Pangan Jawa Timur dan World Food Programme (WFP). 2015. *Peta Ketahanan Pangan Jawa Timur*. Jawa Timur: Badan Ketahanan Pangan.
- Badan Penelitian dan Pengembangan Pertanian. 2016. *Pedoman Umum PTT Jagung*. Jakarta: Pusat Penelitian dan Pengembangan Tanaman Pangan.
- Direktorat Jenderal Tanaman Pangan. 2018. *Kebijakan Pembangunan Tanaman Pangan Dalam Mendukung Upsus Pajale 2018*. Bogor: Direktorat Jenderal Tanaman Pangan.
- Direktorat Jenderal Tanaman Pangan. 2018. *Petunjuk Teknis Pelaksanaan Kegiatan Jagung Tahun 2018 Revisi 2*. Jakarta: Direktorat Jenderal Tanaman Pangan.
- Donsu, Jenita Doli Tine. 2017. 2017. *Psikologi Keperawatan Aspek-aspek Psikologi, Konsep Dasar Psikologi, Teori Perilaku Manusia*. Yogyakarta: Pustaka Baru Press.
- Ghozali, Imam. 2014. *Ekonometrika Teori, Konsep dan Aplikasi dengan IBM SPSS 22*. Semarang: Universitas Diponegoro.
- Kementerian Pertanian Republik Indonesia. 2015. *Pedoman Upaya Khusus (UPSUS) Peningkatan Produksi Padi, Jagung dan Kedelai Melalui Program Perbaikan Jaringan Irigasi dan Sarana Pendukungnya TA 2015*. Jakarta : Direktur Jenderal Prasarana dan Sarana Pertanian.
- Kementerian Pertanian Republik Indonesia. 2017. *Outlook Tanaman Pangan dan Hortikultura*. Jakarta: Pusat Data dan Sistem Informasi Pertanian. ISSN: 1907-1507.
- Levis, Leta Rafael. 2013. *Metode Penelitian Perilaku Petani*. Yogyakarta: Ledalero.
- Parel, C.P., G.C. Caldito, P.L. Ferrer, G.G.De Guzman, C.S. Sinsioco, and R.H. Tan. 1973. *Sampling Design And Procedures*. Quezon : Tril Edition, PSSC Social Survey Series1.
- Rakhmat, Jalaluddin. 1999. *Psikologi Komunikasi*. Bandung: PT Remaja Rosdakarya.
- Rogers, Everett M. 1983. *Diffusion of Innovations*. London: The Free Press. Diakses pada tanggal 08 Maret 2019.