



Farmer Attitudes on Farmer Behavior in Adopting Innovation of Rice Planting (Transplanter) In the Seputih Agung Subdistrict

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ABSTRACT: The use of mechanization in agriculture in addition to increasing rice productivity can also be a strategy in overcoming labor scarcity as well as the use of technology and the adoption of the transition from using traditional tools to modern tools. The transplanter machine is a new innovation for some people in Central Lampung Regency, such as in Seputih Agung District, which is one of the sub-districts that received transplanter assistance from the government which is expected to be implemented by farmers on their farming land. Transplanter machine technology if adopted by farmers is very profitable, because it can facilitate the planting of rice seeds, speed up work time, is effective, and also saves production costs for the planting process. The behavior of farmers in adopting transplanters is formed through the level of knowledge they have which will affect farmers in determining their attitude to accept and implement an innovation. The objectives in this study were to determine farmers' attitudes towards transplanter innovation adoption, determine farmer behavior in adopting transplanter innovation and analyze the effect of farmers' attitudes towards transplanter innovation adoption. This research was conducted in January 2023 in Seputih Agung District, Central Lampung Regency for farmers who are members of farmer groups receiving transplanter machine assistance with 70 respondents. The research method used is quantitative descriptive with statistical analysis of Partial Least Square (PLS) assisted through SmartPLS Software version 3.0. The results showed that the cognitive attitudes of farmers were included in the fairly high category, which means that farmers had sufficient knowledge about rice transplanter machines. The affective attitude of farmers is included in the high enough category, which means that the affective attitude is sufficient to provide support for the attitude of farmers in adopting transplanter innovations. The conative attitude of farmers is included in the fairly high enough category, which means attitudes that tend to be followers or imitators. This also happened in Seputih Agung Subdistrict, farmers wanted to use the transplanter machine if many farmers had used it and acknowledged the benefits they would get. The behavior of farmers in adopting transplanter innovations as measured by selecting seeds and selecting seeds, making nurseries in dapog, setting spacing, setting soil depth, and setting the number of seeds is included in the moderate category. The results of the analysis of the variable attitude of farmers towards the behavior of farmers in adopting transplanter innovations have a significant influence, these results indicate that the greater the attitude of farmers is able to increase the behavior of farmers in adopting transplanter innovations.

KEYWORDS: Attitude, Adoption, Behavior, Transplanter.

1. INTRODUCTION

In the rice farming system, planting is one of the activities that takes up a lot of human labor, around 25% of the entire rice farming process. The high demand for labor required at the time of planting rice resulted in a scarcity of labor and coupled with the cost of wages which was quite expensive so this indicated that mechanization in agriculture was needed. The use of mechanization in agriculture, in addition to increasing rice productivity, can also be used as a strategy for efficiency in labor as well as for the use of technology and the adoption of the transition from using traditional tools to modern tools in the form of agricultural machinery. According to Hertanto (2019) that new technology and agricultural machinery are considered to be able to streamline work in agriculture and are also expected to reduce production costs, namely rice planting machines or transplanters. The transplanter machine is a new innovation for some people in Central Lampung Regency, such as in Seputih Agung District, which is one of the sub-districts that received transplanter assistance from the government. Transplanter machine assistance from the government, which has been provided since 2015, is expected to be implemented by farmers on their farming land. Transplanter machine



technology if adopted by farmers is very profitable, because it can facilitate the planting of rice seeds, speed up work time, is effective, and also saves production costs for the planting process (Kadarsan, 2011).

The use of a transplanter machine can reduce planting costs and at the same time speed up growing time because this machine has been designed to plant rice seeds so that it is more effective and efficient when planting (Asnamawati, 2015). Based on the benefits obtained, farmers should be able to encourage themselves to use this machine. However, seeing the current conditions in the field in Seputih Agung District, the development of the use of transplanter machines is still low, the majority of farmers still carry out the process of planting rice in the conventional way. Therefore it is necessary to convey information to farmers about the benefits and advantages of using this machine so that farmers can know how the attitude of the farmers so that the process of technology adoption can occur. The farmer's attitude is the perception of the farmer's reaction or response as shown by his positive or negative attitude towards the transplanter machine. According to Notoatmodjo (2011) attitude or commonly known in terms of attitude is a response or reaction of someone who is still closed and has not actually done it in terms of action. Attitude is an individual's view of an object to take an action consisting of cognitive, affective, and conative attitudes. Cognitive elements are all parts of the intellect that have a relationship with what is known to humans. The affective element is the emotional part or everything that is felt by humans. The conative element is a visual component that has a relationship with the will to act and human habits. Attitudes can be formed if they have been preceded by knowledge of the object or experience that has been passed. A positive attitude towards an innovation tends to have the potential to adopt it and vice versa if a negative attitude towards an innovation tends not to adopt it. Adoption is a process of accepting and rejecting something new or an innovation offered and pursued by other parties, namely extension workers, then it is communicated to take decision actions so that these innovations can be adopted by farmers. This adoption effort is in line with the situation of farmers in Seputih Agung District who receive transplanter assistance and have great potential to increase lowland rice productivity and overcome labor shortages during the planting season. The behavior of farmers in adopting transplanters is formed through the level of knowledge they have which will affect farmers in determining their attitude to accept and implement an innovation. The existence of a good and positive attitude regarding an innovation will encourage behavioral changes in individuals to adopt an innovation. Therefore it is necessary to conduct research on Adoption of Transplanter Innovations in Lowland Rice Farmers in Seputih Agung District.

2. RESEARCH METHODOLOGY

This research was conducted in Seputih Agung District, precisely in Simpang Agung Village, Bumi Kencana, Endang Rejo, and Bumi Mas, Central Lampung Regency, Lampung Province, Indonesia in January 2023. The selection of the research site was determined purposively with the consideration that Seputih Agung District is the 5th largest sub-district with a land area of 6,333 ha with the majority of people working as farmers and this sub-district also received the help of transplanter machines from the government so that it has the potential to increase rice crop productivity and overcome labor scarcity during the rice planting season. This study was conducted on farmers receiving transplanter machine assistance selected using the random sampling technique. The method used in this case Research is a survey method with a quantitative descriptive research approach, which uses numerical data on an ordinal scale of 70 respondents. Data collection methods are primary data and secondary data. Primary data is data obtained by direct interviews using questionnaires, while secondary data is data taken from previously recorded and available data. Analysis of objectives one and two using descriptive statistical methods, namely by looking at the most values that will appear (mode) with categories very high (score 5), high (score 4), quite high (score 3), low (score 2) and very low (score 1). The third objective was answered using parametric statistical tests using PLS test to determine the effect of two variables consisting of independent variable (X) including farmer attitude towards transplanter innovation adoption and dependent variable (Y) including the level of transplanter innovation adoption.

3. RESULTS AND DISCUSSION

Attitude of Farmers

Farmer's attitude is an individual's mental awareness that influences, colors, and even determines the activities of the individual concerned in responding to objects or units that have meaning for him. Attitude is a form of one's view between likes/dislikes or agrees/disagree with an object or a particular situation. Farmers' attitudes towards the adoption of transplanter innovations include



statements of agreement or disagreement which are divided into three, namely attitudes in the affective, cognitive, and conative aspects as follows:

a. cognitive

Cognitive attitude is an attitude related to one's knowledge, belief, or understanding of an object, individual, or situation. Cognitive indicators include aspects of thinking, knowledge of facts, understanding of concepts, or belief in something. This study assessed the cognitive attitudes of farmers as shown in Table 1.

Table 1. Assessment of respondents' cognitive attitudes towards behavior in adopting transplanter innovations

No	Statement	Score (Mode)	Percentage (%)
Cognitive			
1	<i>transplanter</i> machine is a modern machine that is used to plant rice seeds practically	4	62,9
2	<i>transplanter</i> machine uses a rice nursery on the dapog system.	3	42,9
3	<i>transplanter</i> machine can increase the cost of planting rice	4	57,1
4	<i>transplanter</i> machine can slow down the rice planting time	4	47,1
5	<i>Transplanter</i> machine can save the use of labor	4	68,6
6	<i>transplanter</i> machine can hamper the rice planting process so that the planting is not simultaneous	3	44,3
Mode	3	High	
Positive description :		Negative description :	
1 = Very low		1 = Very high	
2 = Low		2 = High	
3 = High enough		3 = High enough	
4 = High		4 = Low	
5 = Very high		5 = Very low	

Based on Table 1, it shows that the cognitive attitude of farmers is included in the fairly high category, which is at a score of 3. Cognitive attitudes include perceptions, thoughts, memories, and information in adopting transplanter innovations. Some farmers have complete knowledge about rice transplanter machines and farmers are quite active in accessing information. Farmers heard information about the rice transplanter machine from other farmers who know or have used the machine. Farmers are sufficiently involved in the extension activities provided by extension workers so that farmers know a lot about the benefits, use, and results of rice transplanter machines. Farmers' cognitive attitudes can change along with the circumstances in the surrounding environment which have a positive impact on their rice cultivation activities. In line with Waskito's research, et al (2016) that the cognitive attitude of farmers is a measure of innovation adoption but is not always consistent with the sustainability of innovation adoption.

b. Affective

Affective attitude is an attitude related to one's feelings, emotions, or affective evaluation of an object, individual, or situation. Affective indicators can include positive or negative emotional responses, feelings of joy or disappointment, enthusiasm or fear, and so on. This study assesses the affective attitude of farmers as shown in Table 2.

Table 2. Assessment of the affective attitude of respondents to behavior in adopting transplanter innovations

No	Statement	Score (Mode)	Percentage (%)
Affective			
1	Using a <i>transplanter machine</i> can increase the confidence of farmers among the community	3	52,9
2	<i>Transplanter</i> machines have many positive impacts on farmers so that they make farmers' hearts happier	3	61,4



No	Statement	Score (Mode)	Percentage (%)
3	Farmers are happy because the <i>transplanter machine</i> is very difficult and complicated to use in the rice planting process	3	35,71
4	Farmers feel sad because using a <i>transplanter machine</i> requires very little labor.	3	64,3
Mode	3	High enough	

Positive description :

- 1 = Very low
- 2 = Low
- 3 = High enough
- 4 = High
- 5 = Very high

Negative description :

- 1 = Very high
- 2 = High
- 3 = High enough
- 4 = Low
- 5 = Very low

Based on Table 2, it indicates that the affective attitude of farmers is included in the fairly high category, which is at a score of 3. This situation indicates that affective attitudes are sufficient to provide support for farmers' attitudes in adopting transplanter innovations. The affective attitude of farmers includes the feelings and emotions of the farmers themselves, namely the characteristics of interests, attitudes, self-concept, and values. Negative questions from the affective attitude of farmers are also still in the high enough category which will cause fear of farmers such as increased costs of planting rice, slow planting time, and delays in the process of planting rice. The farmer's experience in using the transplanter will influence the attitude in adopting the machine innovation. In line with the research of Kusnadi, Mikasari and Yesmawati (2019) that a person's actions to behave as a realization of existing attitudes will be greatly influenced by the experiences they have experienced. The attitude embodied by action will relate to the object encountered, which then creates a reaction in a person to act.

c. Conative

Conative attitude is an action that arises from a person's attitude which includes intention, motivation, or tendency to act in accordance with the attitude one has. This study assesses the conative attitude of farmers as shown in Table 3.

Table 3. Assessment of respondents' conative attitudes toward behavior in adopting transplanter innovations

No	Statement	Score (Mode)	Percentage (%)
Conative			
1	Farmers use <i>transplanter machines</i> because they complicate the process of planting rice.	3	42,9
2	Farmers use <i>transplanter machines</i> because they can reduce the cost of planting rice	3	58,6
3	Farmers use <i>transplanter machines</i> because they can slow down the rice planting time	3	48,6
4	Farmers use <i>transplanter machines</i> because they can save labor usage	4	68,6
Mode	3	High enough	

Positive description :

- 1 = Very low
- 2 = Low
- 3 = High enough
- 4 = High
- 5 = Very high

Negative description :

- 1 = Very high
- 2 = High
- 3 = High enough
- 4 = Low
- 5 = Very low

Based on Table 3, it shows that the farmer's conative attitude is included in a fairly high category which is at a score of 3. The habit that often occurs in rural areas is an attitude that tends to be a follower or imitator. This also happened in Seputih Agung Subdistrict,



farmers wanted to use the transplanter machine if many farmers had used it and acknowledged the benefits they would get. Conative attitude is an attitude related to the possibility or tendency of a farmer to carry out or apply the introduced technology on his land. The use of transplanters is influenced by internal and external aspects of farmers such as farmers' knowledge obtained either from their own experience or from the experiences of others. The farmer's conative aspect is formed from the tendency to behave in accordance with the object itself. Farmers understand the process of determining concrete actions in their social life and it occurs subjectively so that there are individual differences in the attitudes of farmers. In line with the research of Yuniarsih, et al (2020), it can be seen from the positive attitude of farmers that technology can increase production and the belief that farmers are able to apply technology in their fields.

Farmer Behavior in Adopting Transplanter Innovations

Adoption means someone behaves using an innovation. The behavior of farmers in adopting transplanter innovations is all a series of activities carried out by farmers in using transplanters in rice farming. Behavior is all activities and actions of the community which has a very wide area covering activities that can be viewed directly or indirectly (Notoatmodjo, 2011). The behavior of farmers in adopting transplanter innovations consists of selecting and selecting seeds, making nurseries with dapog, setting plant spacing, setting soil depth, and setting the number of seeds as follows:

Table 4. Farmer behavior in adopting transplanter innovations

No	Statement	Score (Mode)	Percentage (%)
Selection and selection of seeds			
1	Farmers select and separate the good and bad rice seeds .	4	61,4
2	Farmers rarely use quality seeds	4	57,1
Making a nursery with dapog			
3	Farmers make seed nurseries with the dapog system	1	38.5
4	Farmers use old rice seeds (> 25 days) for planting	4	58.5
Setting spacing			
5	Farmers adjust the spacing with the legowo row system	4	50.0
6	Farmers set the height of the stagnant water at least 5 cm	4	52,8
Setting the soil depth			
7	Farmers use <i>the transplanter</i> in conditions of messy land and little water	1	38.5
8	The farmers set the depth of the mud used for the operation of <i>the transplanter</i> to be at least 10 cm	3	48,6
Setting the number of seeds			
9	Farmers set the <i>transplanter machine</i> to plant 5-7 seeds per hole to avoid the influence of competition between plants so that the number of tillers can grow optimally	4	31,4
10	<i>The transplanter</i> sticks the rice seeds into the paddy soil where the number of seeds has been regulated regularly	3	40.0
Mode		4	Tall

Positive description :
 1 = Very low
 2 = Low
 3 = High enough
 4 = High
 5 = Very high

Negative description :
 1 = Very high
 2 = High
 3 = High enough
 4 = Low
 5 = Very low



Based on Table 4, it shows that the selection and selection of seeds is included in the high category, which is at a score of 4. Farmers select and separate good and bad rice seeds, this is because farmers have often carried out selection and selection of rice seeds in every rice planting activity. Making nurseries with dapog is included in the low category, which is at a score of 1. Farmers who plant using transplanters obtain seeds by buying ready-to-plant seeds, this is because farmers do not yet have the ability and skills to make seedbeds with the dapog system and still think the dapog system is more complicated, so training in making seeds with the dapog system is needed by extension agents. Setting spacing is included in the high category, which is at a score of 4. This shows that farmers often adjust spacing to make land use more effective. The setting of soil depth is included in the low category, which is at a score of 2.5. The setting of soil depth is shown by farmers when using a transplanter in conditions where the land is messy and a little water is still low. This is because farmers think that after the seeds are planted, they need a lot of water to quickly adapt to the land. This attitude needs to be corrected because if the soil still contains a lot of water at the time of planting, the planting of the seeds by the transplanter's fork does not reach the soil surface so that the seeds do not stick properly on the surface of the land and can cause a reduction in the uniformity of seed distribution. The setting for the number of seeds is included in the fairly high category, which is at a score of 3.5. This result means that the farmer has managed the number of seeds quite well, namely planting 2-3 seeds in holes. According to the farmers, the small number of seeds for each hole besides reducing the need for seeds, can also avoid competition between seedlings at the start of vegetative growth and can stimulate optimal tiller growth. Overall, the behavior of farmers in adopting transplanter innovations as measured by selecting seeds and selecting seeds, making nurseries in dapog, setting spacing, setting soil depth, and setting the number of seeds was included in the moderate category. These results show that farmers who implement a series of activities in adopting transplanter innovations are still not carried out optimally. In line with the research of Putra et al (2022) which states that behavior in adopting an innovation requires good skills and requires a long period of time to better understand an innovation.

The effect of the level of farmers' attitude towards the farmer behavior in adopting transplanter innovation

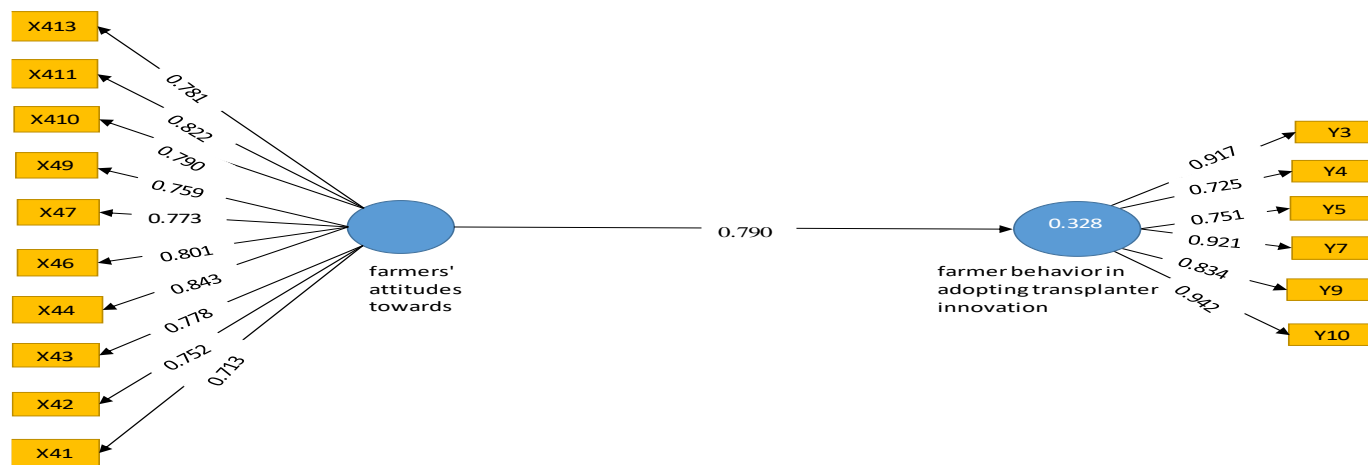


Figure 1. PLS analysis model

Table 5. The results of the test of the effect farmers' attitude toward on farmer behavior in adopting transplanter innovations

Dependent variable (Y)	R-square	Path coefficient	P-values
Attitudes of farmers towards the adoption of transplanter innovations	0.328	0.790	0.000

Based on Figure 1 and Table 5, it indicates that the influence of farmer attitude variables (X) has a significant effect on farmer behavior in adopting transplanter innovations (Y). The farmer attitude variable has a simultaneous influence with a sig value (0.00



< 0.05). Based on these figures, it can be seen that the combined effect is equal to 0.328 percent ($R^2 \times 100\%$) indicating that the effect of farmer attitudes on farmer behavior in adopting transplanter innovations is 32.8 percent and the remaining 67.2 percent is influenced by other factors not explained in this section. This research. The statistical test results show that the greater the attitude of farmers is able to increase farmer behavior in adopting transplanter innovations. Field results show that farmer attitudes are a factor that contributes significantly to farmer behavior in adopting transplanter innovations. Farmers' attitudes toward transplanter innovation can be observed at the time of the introduction of the technology. According to the farmer respondents, each stage of the introduction activity, which began with socialization activities, continued with method demonstrations and plot demonstrations, was the reason for making the decision to adopt this technology. At first some farmers were unsure about the decision to adopt because it was related to several external and internal factors from the farmers themselves, but their attitude may change due to changes in the cognitive and affective components. Changes in cognitive, affective and conative components occur when knowing that other farmers benefit from using the transplanter, which in turn changes behavior. The higher the level of cognitive, affective and conative changes in farmers, the farmers tend to want to use transplanters in their farming. In line with the research of Fujiarta et al (2019) that the attitude embodied by action will be related to the object faced, which then arises a reaction in a person to act. The higher the level of cognitive, affective and conative changes in farmers, the more likely farmers are to want to use transplanters in their farming. According to Meyers (1996), attitude is a pleasant or unpleasant evaluation reaction to something or someone, which is shown in one's beliefs, feelings, or actions.

The results of this study are supported by the Theory of Planned Behavior developed by Icek Ijazek 1985 which states that a person's behavior is influenced by his intention to carry out that behavior, which is influenced by attitude. According to this theory, attitude refers to an individual's evaluation of the behavior to be performed. In the context of adopting a transplanter innovation, farmers will shape their attitude towards the transplanter based on their perception of its benefits. If farmers believe that the transplanter can increase farm efficiency and productivity, then they are likely to have a positive attitude towards using the innovation.

4. CONCLUSION

The results showed that the cognitive attitudes of farmers were included in the fairly high category, which means that farmers had sufficient knowledge about rice transplanter machines. The affective attitude of farmers is included in the high enough category, which means that the affective attitude is sufficient to provide support for the attitude of farmers in adopting transplanter innovations. The conative attitude of farmers is included in the fairly high enough category, which means attitudes that tend to be followers or imitators. This also happened in Seputih Agung Subdistrict, farmers wanted to use the transplanter machine if many farmers had used it and acknowledged the benefits they would get. The behavior of farmers in adopting transplanter innovations as measured by selecting seeds and selecting seeds, making nurseries in dapog, setting spacing, setting soil depth, and setting the number of seeds is included in the moderate category. The results of the analysis of the variable attitude of farmers towards the behavior of farmers in adopting transplanter innovations have a significant influence, these results indicate that the greater the attitude of farmers is able to increase the behavior of farmers in adopting transplanter innovations.

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