FARMER CHARACTERISTICS' EFFECT ON THE DECISION OF FARMERS IN CHOOSING LOCAL VARIETY RICE FARMING BUSINESS

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Abstract: Farmer characteristics are indicators that measure the ability of farmers to make decisions related to their farming activities. This study aims to determine the relationship between farmer characteristics and their decision to cultivate local varieties of lowland rice in Kuantan Singingi Regency. This research is survey research, the determination of samples from four sub-districts was selected purposively, each consisting of 15 farmers in each sub-district, the number of samples was 60 farmers. This study is a quantitative study using indicators and a measurement scale using the Likert Summated Branch (SLR) scale, with three categories of answers to the questions posed. The score expressed in integers (1,2,3) was then analyzed using a non-parametric analysis of Spearman's Rank Correlation using the SPSS-20 program. This finding shows that the number of family dependents has a significant relationship with farmers' decisions in farming local varieties of lowland rice and is negatively related, while the characteristics based on land area, farmer's age, education, and farming experience show a positive relationship but have no significant effect. Farmers who have some dependent families prefer to switch to planting high-yielding varieties to produce higher rice production and to meet the needs of family life. Based on the findings of this study, further research is needed on the potential development of local varieties of lowland rice as local superior varieties, taking into account aspects of land suitability, technology, and local wisdom.

Keywords: farmers' decisions, characteristics, rice fields, local varieties, family dependents

Abstrak: Karakteristik petani merupakan indikator yang mengukur kemampuan petani dalam mengambil keputusan yang berhubungan dengan kegiatan usahataninya. Penelitian ini bertujuan mengetahui hubungan antara karakteristik petani terhadap keputusannya membudidayakan padi sawah varietas lokal di Kabupaten Kuantan Singingi. Penelitian ini merupakan penelitian survey, penentuan sampel dari empat kecamatan dipilih secara purposive masing-masing berjumlah 15 petani pada setiap kecamatan, jumlah sampel berjumlah 60 petani. Penelitian ini merupakan penelitian kuantitatif dengan menggunakan indikator dan skala pengukuran menggunakan Skala Likert Summated Ranting (SLR), dengan tiga kategori jawaban dari pertanyaan yang diajukan. Skor dinyatakan dalam bilangan bulat (1,2,3) kemudian dianalisis dengan menggunakan analisis non parametrik Korelasi Rank Spearman menggunakan program SPSS-20. Temuan ini menunjukan bahwa jumlah tanggungan keluarga memiliki hubungan yang nyata dengan keputusan petani dalam berusahatani padi sawah varietas lokal dan berhubungan negatif, sedangkan karakteristik berdasarkan luas lahan, umur petani, pendidikan, pengalaman berusahatani menunjukan hubungan positif namun tidak memiliki pengaruh yang nyata. Petani yang memiliki jumlah tanggungan keluarga lebih memilih beralih menanam varietas unggul untuk menghasilkan produksi padi lebih tinggi dan untuk memenuhi kebutuhan hidup keluarga. Berdasarkan hasil temuan penelitian ini perlu penelitian lanjutan mengenai pengembangan potensi padi sawah varietas lokal sebagai varietas unggul lokal, dengan memperhatikan aspek kesesuaian lahan, teknologi, serta kearifan lokal.

Kata kunci: karakteristik, keputusan petani, tanggungan keluarga, varietas local, padi sawah

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INTRODUCTION

Agricultural and economic development are significant programs for the world's food problems to alleviate the growing issues of poverty and hunger in developing countries (Norton et al. 2009). Improving food security is an effort to increase incomes and reduce farmer poverty (Scherer et al. 2018), according to Andhini (2017), "Sustainable development can continue to be pursued by running programs that continue to pay attention to the available resources. Maintain and increase the productivity of existing agricultural land by utilizing local resources (such as potential crop types, local superior seedlings, green fertilizers, compost, and biological fertilizers".

The Rice self-sufficiency program is part of national food security to ensure sufficient food available without food scarcity. Indonesia has the most extensive rice consumption globally, 114/kg/capita/year, so food security is national. The community must also maintain household food security to meet the food needs of families (Mahbubi, 2013).

Food improvement needs to adopt innovative technologies considering socio-economic factors related to farmers' characteristics (Edwina and Maharani, 2017; Scherer et al. 2018). Farmer characteristics are an essential indicator of measuring and seeing the extent of a farmer's ability to carry out economic-related activities (Prasetyo and Fariyanti, 2019). In addition, farmers' decisions on technology are also based on social rationality (Adriani et al. 2019).

Factors that affect farmers in making decisions for the farm are the level of education, the number of family dependents, business experience, and the availability of capital (Sri Wahyunia, Evaheldaa, 2020). According to Pattiselanno et al. (2018). The land area that becomes the primary capital of agriculture is closely related to the opportunity to develop farmers' businesses. Still, farmers tend to have a medium land area between 0.5 and 1 ha (Farid et al. 2019). Informal education of farmers can improve knowledge, attitudes, and self-perception to master innovation in improving their business. According to Burano & Siska (2019), experience is synonymous with long trying and can consider mistakes or failures. The higher the experience, the better the ability to try to farm. The number of family dependents can help business development and become a burden of life for the head of the family in increasing income, and

meeting family needs to influence farmers to decide to farm (Riana et al. 2019; Martauli, 2020).

Kuantan Singingi Regency is one of the regencies in Riau Province; most of the lives of its people work in the agricultural sector, especially on rice paddy commodities. Farmers' rice fields are generally the seeds of local rice varieties for generations from their ancestors. Some disadvantages of local types include; Long harvest life and production are lower than nationally superior varieties. Select varieties of harvest life are shorter so that planting can be done more than once a year. Local types have many disadvantages, but farmers still grow local varieties. This research becomes something important to be studied in terms of the characteristics of farmers. What factors cause farmers to survive still to produce local types or switch to superior varieties.

According to Ruzzante et al. (2021), the results of previous research show that farmer education, number of family members, land area, credit, land ownership, access to services, and organizational membership are positively correlated with the adoption of agricultural technology. While the study results (Kardaya et al. 2020), that the gogo rancah system carried out by rice farmers in Metro Subdistrict is positively related to the Age of farmers, the level of formal education of farmers. Research results (Adipaty et al. 2021), in rice fields, the intensity of extension is related to nature while long efforts, household income, and land ownership status are not related to birth. According to (Saqib et al. 2018). Access to credit loans in flood-prone areas of Pakistan is significantly related to education, agricultural experience, land, income, number of families, and proportion of land owned by farmers. Research (Nur et al. 2018) Reviewing from the economic side, namely income, marketing, and dependent expenses.

Previous research has been widely done related to the characteristics of farmers against various agricultural activities. Still, there have not been many characteristic studies related to the decision to maintain local rice varieties, and this study has differences in the methods and objects of previous research. Therefore, the purpose of this study is to find out how the characteristics of farmers (land area, age of farmers, education, experience, and the number of family dependents) to their decision to survive farming local varieties of rice fields in Kuantan Singingi Regency. This research is essential in developing agricultural

technology innovations, especially in rice fields, so it is necessary to first learn about the characteristics of farmers related to local food security policies by the government. It is expected that from this research for stakeholders to be able to make a policy in improving food security by developing local superior rice field varieties with aspects of land suitability, technology, and local wisdom.

METHODS

This research was conducted from April to October 2021 at Kuantan Singingi Regency. Although this type of research is a survey study, the determination of samples purposive sampling of farmers who do rice farming of local varieties that routinely plant every year, selected as many as 60 farmers, in detail can be explained in Table 1.

Table 1. Name of subdistrict, village, and sample of local varieties of rice paddy farmers

District	Village	Sample
Kuantan Hilir	Pulau Madina	15
Sentajo Raya	Pulau Komang	15
Kuantan Tengah	Seberang Taluk	15
Benai	Tebing Tinggi	15
		60

Research data consists of primary data and secondary data. The preliminary data were obtained through interviews and hands-on discussions supported by questionnaires to farmers who farm local rice varieties. At the same time, secondary data is data obtained through related agencies that have to do with this research. The data analysis method uses spearman's non-parametric correlation analysis using the SPSS-20 program. Spearman level correlation (rs) measures the randomness of free variable relationships with ordinal bound variables (Riduwan, 2010). The formula used is:

$$r_s = 1 - \frac{6\sum_{i=1}^{n} di^2}{N^3}$$

information: r_s (Spearman level correlation value); d (Difference of each pair of levels);N (Number of pairs for Spearman)

The Likert Summated Twig Scale (SLR) method measures farmers' decisions by forming three answers to questions asked. First, the score is expressed in integers (1,2,3).

Table 2 describes the categories and scores on a set scale to see the characteristic categories of farmers with the highest value provision (3), while the lowest value is (1) with the magnitude of the range is 0.66. Research Variables and Indicators

Table 2. Characteristic categories of farmers

The ability of The Farmer	
Categories	Score
Low	1.00 – 1.66
Keep	1.67 – 2.33
Tall	2.34 – 3.00

Table 3, explains the variables on farmer characteristics seen from the land (X1), farmer age (X2), farmer education (X3), the experience of farming (X4), and the number of family dependents (X5), with low parameters, have a score of 1, are having a score of 2 and high have a score of 3.

Table 3. Variables and research indicators

Construct	Variable	Indicators	Parameters	score
Farmer's Decision (Y)	Land (X1)	Land size	low keep tall	1,2,3
	Farmer's Age (X2)	Productive and unproductive	low keep tall	1,2,3
	Farmer's Education (X3)	Formal Education	low keep tall	1,2,3
	Experience of Trying (X4)	Long trying to farm	low keep tall	1,2,3
	Number of Dependents (X5)	Amount covered	low keep tall	1,2,3

The framework of thought of this study in Figure 1, illustrates that rice paddy farmers in making decisions determine whether planting local varieties or superior varieties is influenced by the characteristics of farmers and to see the influence of those characteristics analyzed with spearman range correlation.
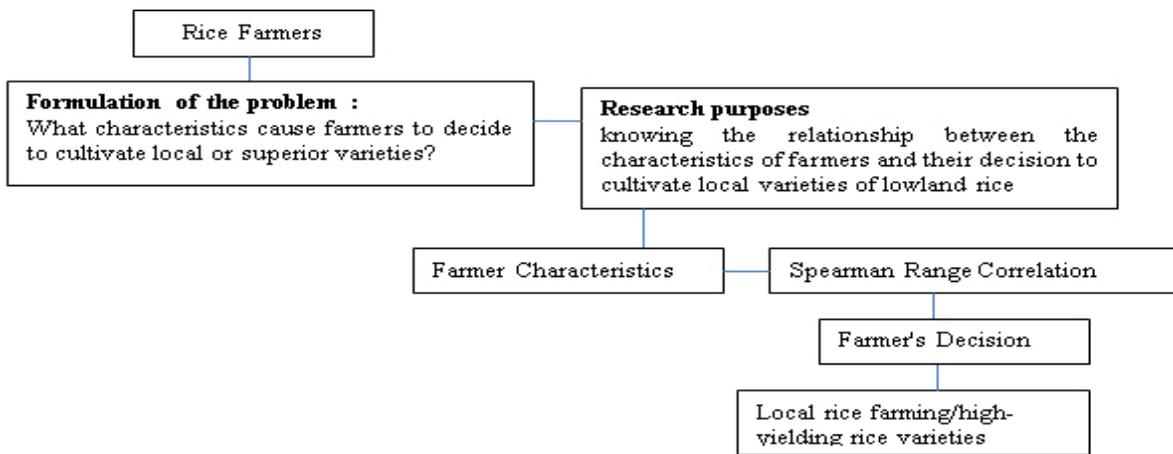
Figure 1. Research framework

Hypothesis

Ha: There is a relationship between farmer characteristics and the decision to cultivate local varieties of lowland rice in Kuantan Singingi Regency.

Ho: There is no relationship between farmer characteristics and the decision to cultivate local varieties of lowland rice in Kuantan Singingi Regency

RESULTS

Farmers' Decision to Grow Local Varieties of Rice

From Figure 1, it can be seen that the characteristics of rice farmers have an average land of 0.33 ha and are classified as narrow land, while the age of farmers is still classified as the productive age of 49 years. The education of the average farmer is educated after junior high school or the length of education is 9.23 years. The average farmer experience of 21.9 years is relatively long while the average number of family dependents is 3.35 people.

Land Area Relationship to Farmers' Decisions

Based on the output in Table 1, known significant values or sig. (2-tailed) of 0.660, because of the importance of Sign (2-tailed) $0.660 > 0.05$, there is no meaningful relationship between land area and the decision of farmers to survive local varieties of rice farming. it is more suit to choose However, the relationship is not signifcant. The direction of the relationship is positive. The results of SPSS analysts obtained a correlation

coefficient value of 0.058, meaning that the level of strength of land area relationship with farmers' decisions is 0.058. This shows a very weak correlation.

Research results Setiawan & Januar (2021) The farmers' decision to transfer commodities from the rice paddy farming business of dragon fruit has a real influence on income and land area. Land owned by farmers averages 0.34 hectares. As much as 81.67% of farmers have narrow land. Unlike research (Galih Wahyu Hidayat, 2021), the most significant land size cultivated by farmers is a medium land area category of 58.75%. According to Abas et al. (2021), farmers with a large land but limited labor will have difficulty intensively doing rice paddy farming, affecting production.

Farmer's Age Relationship to Farmer's Decision

Based on the output in Table 2 is known significant value or sig. (2-tailed) of 0.440, because of the value of Siq, (2-tailed) $0.440 > 0.05$, then there is no significant relationship between the age of the farmer and the farmer's decision to survive the farm of local varieties of rice fields, although the relationship is not significant the direction of the relationship is positive. The age of farmers who are getting older will affect the ability of their activities because the older the ability to work is also lower. Advanced age causes farmers to be unable to increase their productivity to grow IP200 or IP300 rice because it is related to the decline in physical ability. The results of SPSS analysts obtained a correlation coefficient value of 0.102, meaning that the level of strength of the farmer's age relationship with the farmer's decision was 0.102, indicating a very weak correlation. Therefore, unlike previous research (Adipaty et al. 2021), The age of farmers has a negative

effect, meaning that the higher the age of farmers, the lower the farmers' response to farming.

The most Age in this study is moderate age and is classified as very productive, and age is not related to the element of farmers because all farmers have a formative age. Usia petani paling banyak adalah pada usia 45-55 tahun yaitu sebesar 46.67%. Young farmers are less interested in working in rice farming, while in old age it is not productive and has low physical ability.

Educational Relationship to Farmers' Decisions.

People who have a traditional culture in conducting an agricultural system have specific knowledge or characteristics in implementing an agricultural system. (Reflis et al. 2011). The relationship of education with the farmer's decision has no significant relationship but relates to positive, sig values. (2-tailed) of 0.953, due to the Sign (2-tailed) value of 0.953 > 0.05 (Table 3).
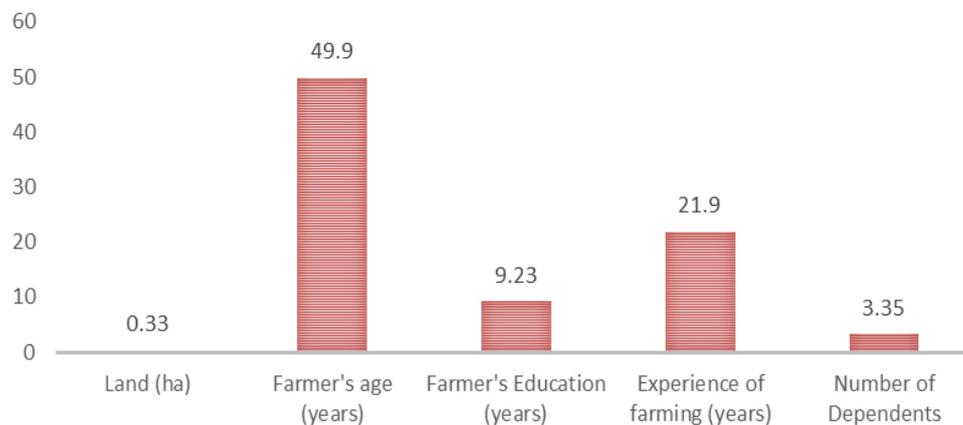

Figure 1. Average characteristics of local variety rice farmers

Table 1. Output results of analysis of land relations with farmers' decisions

Correlations			Farmer's Decision	Land
Spearman's rho	Farmer's Decision	Correlation Coefficient	1.000	.058
		Sig. (2-tailed)	.	.660
		N	60	60
	Land	Correlation Coefficient	.058	1.000
		Sig. (2-tailed)	.660	.
		N	60	60

Table 2. Characteristics of farmers based on land area

Land (ha)	Number of Farmers	Percentage (%)
<0,50	49	81,67
0,5-1,00	11	18,33
>1	0	0,00
Total	60	100,00

Table 3. Output analysis of farmers' educational relationships with farmer's decisions

Correlations			Farmer's Decision	Land
Spearman's rho	Farmer's Decision	Correlation Coefficient	1.000	.008
		Sig. (2-tailed)	.	.953
		N	60	59
	Education	Correlation Coefficient	.008	1.000
		Sig. (2-tailed)	.953	.
		N	59	59

According to the results of the study (Dhyna Dellaura Pujakesuma, 2020), farmer education has no real influence in making decisions trying to farm rice fields. The results of the study as much as 60% of the farmers have an average length of education ranging from 7 to 12 years. The level of education of farmers in detail can be explained in Table 4.

Different from research Permana et al. (2018), knowledge is significantly related to the decision of farmers to use swampland in rice paddy farming. According to the study results (Yuni Erlina, Evi Feronika Elbar, 2020), Farmers' education is relatively low, namely the completion of elementary school or the equivalent of 53.15%. Low education has an impact on the application of innovation. According to Saleh & Suherman, (2021), Formal and non-formal education of farmers influences the behavior of farmers to develop their business. However, research ressults (Burano and Siska, 2019) Characteristics of farmers from education are still relatively low education of the most farmers, namely the completion of junior high school by 38%.

Experience Relationships Strive For Farmers' Decisions

Based on the output in Table 5, known significant values or sig. (2-tailed) of 0.592, due to the value of Sign (2-tailed) 0.592 > 0.05, there is no significant relationship between the Experience of farmers and the decision of farmers to survive the local variety rice farming business. However, the relationship is not essential. The direction of the relationship is positive. The results of the SPSS analysis obtained a correlation coefficient value of 0.071, meaning that the strength level of the relationship between farmers and farmers' decisions is 0.071. This shows a very weak correlation. The results of previous research experience growing rice became a reason for farmers to grow rice fields in the Balunijuk village.

The most excellent Experience of 50% is in the moderate category, and 45% is in the high category, only 5% new category, but Experience does not affect farmers' decisions (Table 6). Rice farmers generally have experience trying to farm for quite a long time, namely 27-30 years. Although they have a long experience, there are still many farmers who still survive to grow local varieties. The experience of farmers who are long enough will add to the skills and ability of farmers in overcoming their farming problems. The name does not affect the decision to choose the variety to be planted.

Relationship Between Family Dependents and Farmer's Decision

Based on the output in Table 7 known significant or sig values. (2-tailed) of 0.005, because the value of Sign (2-tailed) 0.005< 0.05, then there is a significant relationship between the number of family collateral and the decision of farmers to survive farming local varieties of rice fields, The direction of the relationship is negative, the correlation coefficient value of 0.362 means that the level of strength of the family dependent relationship with the farmer's decision is 0.362 this shows a sufficient correlation. A considerable number of family dependents can be a source of family labor so that it can increase land-use productivity by planting IP200 or IP300 rice. The more the number of family dependents, the farmers take the decision not to grow local varieties of rice. This research from some characteristics of farmers is only the number of family dependents that affect the decision of farmers in growing local varieties of rice. The number of family dependents can be an asset of labor in developing a business, in addition to the number of dependents that will increase the needs of the family. The needs of the family are getting bigger so farmers try to further increase their efforts to meet the needs of the family.

Table 4. Characteristics of farmers based on education

Land (ha)	Number of Farmers	Percentage (%)
Low <7 years	20	33,33
Medium (7-12 years)	36	60,00
High (>12 years)	4	6,67
Total	60	100,00

Table 5. Output results analysis of the relationship of farmers' experience with farmer decisions

Correlations			Farmer's Decision	Land
Spearman's rho	Farmer's Decision	Correlation Coefficient	1.000	.071
		Sig. (2-tailed)	.	.592
		N	60	60
	Experience	Correlation Coefficient	.071	1.000
		Sig. (2-tailed)	.592	.
		N	60	60

Table 6. Characteristics of farmers based on experience

Land (ha)	Number of Farmers	Percentage (%)
New (<10)	3	5,00
Medium (10-20)	30	50,00
Old (>20)	27	45,00
Total	60	100,00

Table 7. Output of analysis of family dependent relationships with farmers' decisions

Correlations			Farmer's Decision	Land
Spearman's rho	Farmer's Decision	Correlation Coefficient	1.000	-.362**
		Sig. (2-tailed)	.	.005
		N	60	60
	Number of family dependents	Correlation Coefficient	-.362**	1.000
		Sig. (2-tailed)	.005	.
		N	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

In contrast to previous research on implementing organic rice farming efforts, family members did not significantly affect farmers' decisions (Ayati, Wibowo and Ridjal, 2018). Family dependents say closely related to food needs, and the more family members need food, the more (Sri Wahyunia, Evaheldaa, 2020). The characteristics of farmers based on the number of family dependents can be seen in Table 8.

Table 8 Farmers have fewer family dependents, which is less than four people. The decision of farmers to grow superior rice varieties is based on the number of family dependents. Fewer members are more likely to survive planting local rice varieties. Particular rice varieties require more labor because planting is done 2 to 3 times a year, while local rice varieties are only done yearly.

The weakness of this research is that in the collection of data obtained only from one village in each sub-district, village retrieval is less representative of the Subdistrict. Furthermore, farmers' age data are all productive ages, so age does not show the influence of age characteristics on the decision of farmers in doing local variety rice farming business, and it is necessary to take a sample of farmers based on grouping productive and unproductive ages.

Table 8. Characteristics of farmers based on the number of family dependents

Land (ha)	Number of Farmers	Percentage (%)
Low (<4)	34	56,67
Medium (4-5)	17	28,33
High (>5)	9	15,00
Total	60	100,00

Managerial implications

Managerial implications of this study, it was found that the technology of increasing rice production by local governments is still a policy of increasing food in terms of increasing land productivity from a program regardless of the characteristic aspect of farmers themselves. Through this study, it can be seen that the number of family development affects the decision of farmers to grow local varieties or superior varieties. This characteristic needs a strategy of approach and development through agricultural extension persuasively in changing the mindset of farmers by developing rice farming towards marketing by forming farmer economic institutions of farmers.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The relationship between the characteristics of farmers based on the number of family dependents has a significant negative relationship with their decision to farm local varieties of rice in Kuantan Singingi Regency, while the characteristics of farmers based on land area, farmer's age, education, and farming experience, have no significant relationship. A large number of dependents in the family causes farmers to decide to plant high-yielding varieties of rice that have higher production so that they can meet the needs of family life.

Recommendations

Development of the potential of local rice fields developed as superior local varieties, this development about aspects of land suitability, technology, and local wisdom. The more dependents of families, farmers prefer to move to excellent local types. This needs the attention of the government to facilitate infrastructure and production facilities, technology, and assistance from agricultural extensionists to increase rice paddy production. Further research is needed to be related to the role of the government in the development of

local superior rice to build the farmers' economy in the countryside, and this research revealed the relationship between farmer characteristics and the decision of farmers in choosing local variety rice 3 farming business but it still needs major revisions in the whole paper

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