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Analysis of Rice Farmers' Decisions in Selling Production Results in East OKU Regency

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ABSTRACT

This study aims to analyze the key factors influencing rice farmers' decisions to sell their production in East OKU Regency. Methodology: The research was conducted in three districts—East Buay Madang, Buay Madang, and Madang Suku I—selected purposively based on their large rice production areas. Using a case study approach, data were collected from 118 respondents through multi-stage random sampling. Logit regression analysis was employed to identify the factors affecting farmers' sales decisions. The results indicate that production volume, urgent financial needs, middlemen involvement, and milling costs significantly influence farmers' decisions to sell their rice in the form of grain. Meanwhile, labor availability does not have a significant impact. The findings highlight that most farmers prefer selling unprocessed grain due to immediate financial needs and dependency on middlemen, despite the lower prices compared to selling processed rice. To enhance farmers' income and economic resilience, it is essential to stabilize grain prices, reduce milling costs, and provide better financial support and market access. Encouraging more farmers to process their grain into rice before selling could lead to greater profitability and reduced reliance on middlemen.

1. INTRODUCTION

1.1. Research Background

South Sumatra Province is one of the ten main rice production centre provinces. The program launched by the government to achieve national food sovereignty is through sustainable food self-sufficiency efforts, increasing food diversification, increasing added value, competitiveness and exports, as well as increasing farmer welfare. [1].

South Sumatra Province is a heterogeneous and conducive province, with various ethnicities, races, religions and cultures, the people of South Sumatra prioritize togetherness, as proven to this day, South Sumatra is known as a zero conflict area. South Sumatra has the greatest potential in the agricultural sector, as the number five national contributor of rice suppliers and the largest rice contributor on the island of Sumatra with a production of 2,759,343 tons [2]. The following is rice production data in South Sumatra province as follows:

Table 1. Rice production in South Sumatra Province 2020-2022.

Regency	Rice Production (tons)		
	2020	2021	2022
OKU	17 739.97	16 365.67	12 140.31
OIC	484 604.79	525 218.03	444 370.50
Muara Enim	83 125.84	51 866.22	45 436.39
Lahat	73 128.99	70 278.25	65 585.83
Musi Rawas	103 511.64	123 933.68	127 435.43
Musi Banyuasin	136 642.56	157 015.79	150 680.10
Banyuasin	905 845.79	917 156.76	892 285.26
South OKU	37 418.38	38 509.64	51 020.23
East OKU	575 340.17	633 627.74	558 995.26
Ogan Ilir	71 846.34	82 073.28	78 145.79
Four Lawangs	55 920.35	60 730.88	49 409.61
Pali	17 220.71	15 586.11	17 251.12
North Musi Rawas	6 495.60	12 924.13	12 628.29
Palembang	12 682.17	14 304.74	10 892.42
Prabumulih	136.49	137.53	145.95
Natural Fence	12 735.42	14 798.80	15 333.25
Lubuk Linggau	9 001.03	8 532.43	9 188.56

Based on Table 1, it can be seen that East OKU Regency is the second largest production district after Banyuasin Regency, with production of 558,995.26 tons with the highest food security index compared to other districts/cities. This achievement is based on an assessment of three criteria including availability, affordability and utilization of food, from a nutritional perspective. The following is the realization of the planting area in East OKU Regency as follows:

Table 2. Realization of Planted Area in East OKU Regency, 2022

No.	Subdistrict	Year Ha)	
		2021	2022
1	Martapura	1,511.0	3,799.0
2	Mayang Flower	355.0	2,543.0
3	Jaya Pura	488.0	750.0
4	Peliung Chief Crocodile	3,125.0	8,525.0
5	Madang Crocodile	2,193.0	12,286.0
6	East Madang Crocodile	2,017.7	16,856.7
7	Crocodile Leader of the King's Nation	1,800.0	7,998.0
8	Madang Tribe II	3,221.0	11,195.0
9	Madang Tribe III	285.0	3,942.0
10	Madang Tribe I	3,528.0	14,923.0
11	Belitang Madang Raya	2,937.0	7,454.0
12	Belitang	1,243.0	9,078.0
13	Belitang Jaya	408.0	1,670.0
14	Belitang III	1,965.0	5,648.0
15	Belitang II	2,215.0	6,177.0
16	Belitang Mulya	1,870.0	5,484.0
17	Semendawai Tribe III	4,995.0	11,047.0
18	East Semendawai	3,707.0	9,050.0
19	Cempaka	1,095.0	6,473.0
20	West Semendawai	842.0	5,825.0

Based on Table 2, the largest planting area is in East Buay Madang, Buay Madang and Madang Suku I Districts, with a realized planting area of 16,856.7 Hectares for BMT, 12,286 Hectares for Buay Madang and 14,923 Hectares for Madang Suku I District. Currently, there is a phenomenon which often happens to rice farmers in East Buay Madang District, where there are some farmers who choose to sell their rice production in the form of grain.

This happens because there are many parties involved in the production-to-sales process, such as middlemen, where the majority of farmers when harvesting will directly sell it to the middleman in the form of grain, the sale of the harvest is mostly done by rice farmers by selling the harvest in the form of grain to the middleman, even though the sales This has several problems, namely the amount of harvest is piling up while sales are limited, apart from that there is a lack of manpower to process the grain into rice, because the grain cannot be directly consumed by the public, it needs further processing to be consumed so sales are limited to middlemen, plus the price of grain is low.

However, in East Buay Madang District several farmers sell their crops in other forms, namely rice, so the price they receive is higher and sales are not limited to middlemen. According to observations made by [3], it shows that the price of grain and rice has widened since the fall of President Soeharto, which has

become a problem in itself for the rice economy. Conditions like this are increasingly being exploited by middlemen to influence prices at the farmer level. It can be seen that the market price for grain in Kapandayan Village is IDR 4,700/kg – IDR 5,200/Kg. Meanwhile, the price obtained by farmers who sell paddy in the form of rice is IDR 9,000/Kg – IDR 9,500/kg. In this case, there is a significant difference in price received by rice farmers who sell in the form of grain and rice farmers who sell in the form of rice. This difference in selling prices should encourage farmers to prefer selling in the form of rice because the price is higher, but in actual conditions in society the majority of rice farmers sell in the form of grain at 68% and the rest in the form of rice at 32%.

Based on the background above, researchers are interested in research with the title Analysis of farmers' decisions to sell rice when selling their products in East OKU Regency.

1.2. Literature Review

1.2.1. Concept of Rice Farming

Farming is a collection of natural resources that occur in that place for agricultural production such as land, water, and improvements that have been made. Farming can take the form of farming and raising livestock. Meanwhile, according [4], farming is a way of life for farming families and the way farming is managed is still heavily influenced by non-economic factors, especially socio-cultural factors. Farming in developing countries, including Indonesia, is still self-sufficient, meaning that farming is Most of them are intended to meet primary and family needs, therefore many types of food crops are cultivated.

1.2.2 Grain Conception

Grain is rice fruit that has been threshed from the panicles (straw) (Rahardi et al., 2013). Grain is a commodity resulting from rice production which is a staple food in Indonesia. (Harini, 2013). Rice plants are plants that belong to the Graminae family. Rice plants are classified from Kingdom Plantae (plants), Division Spermatophyta, Subdivision Angiospermae, Class Monocot (monocotyledonous), Order Glumiflorae (poales), Family Gramineae (Poaceae), Subfamily Oryzoideae, Genus: *Oryza*, Species *Oryza sativa* L. [5].

There are 25 species of *Oryza* in the rice plant, the most famous species being *Oryza sativa* with two species, namely japonica (feather rice grown in subtropical areas) and indica (cere rice grown in Indonesia). Cultivation is divided into two, namely upland rice (dry land and not flooded with water) and lowland rice (rice that is always flooded with water) (Purwono and Purnamawati, 2011).

1.2.3 Rice Conception

Rice is rice grains that have had their outer shell (husk) removed which becomes coarse bran. According to [6] the word "rice" is the part of the rice grain (grain) that has been separated from the husk. The husk (Java strawberries) is anatomically called 'palea' (the part that is covered) and 'lemma' (the part that covers it). Based on the National Standardization Agency (BSN) following SNI 6128:2015, rice is the main product obtained from the process of milling grain from the rice plant (*Oryza sativa* L.) where all the husk layers are peeled off and all or part of the grain and bran layers have been separated in the form of whole grains of rice, head rice, broken rice, or groats.

1.3 Research Objectives

This research aims to find out what factors influence farmers' decisions to sell rice in the form of unhulled rice in East OKU Regency.

2. MATERIALS AND METHODS

2.1 Time and Location Research

This research will be carried out in East OKU Regency, specifically in the Districts of East Buay Madang, Buay Madang and Madang Suku I. The location determination was carried out purposively with the consideration that these three Districts are the districts with the largest land area and production compared to other Districts in East OKU Regency.

2.2 Research Method

The research method used in this research is the case study method. According to Ref. [7], the case study method is a research method used for types of research where the research location selects a special (typical) population compared to other research locations. The sampling method used in the research entitled Analysis of Rice Farmers' Decisions in Selling their Produce in East OKU Regency is multi-stick random sampling. This method is a technique used for random sampling and comes from members of the existing population [8].

2.3 Population and Sample

Respondents were taken from three sub-districts, namely East Buay Madang, Buay Madang and Madang Suku I, with the reason that these three sub-districts are the sub-districts with the largest land area, with the criteria for land area being no more than 1 Ha which can be seen in the following table:

Table 3. Number of population and respondents in East OKU Regency, 2023

No	Village	Population	Percentage	Respondent
1	East Madang Crocodile	190	30%	57
2	Madang Crocodile	96	30%	29
3	Madang Tribe I	105	30%	32
Total		387		118

2.4 Collecting Data Method

Method data collection used in this research was by using observation and interview methods. The observation method is the observation of several aspects of the problem to obtain the necessary facts [9], while the interview method is an activity of collecting question-and-answer information. Interviews are a process of interaction and communication in the form of asking respondents directly to obtain information [10].

2.5 Data Types And Sources

The data used in compiling this research, namely primary and secondary data. The primary data in this research is a questionnaire which contains statements that are given to respondents to answer. Secondary data in this research was

obtained from literature studies and other books related to the discussion.

2.6 Data Analysis Method

The data processing method used is the logit regression analysis method

$$\text{Log} \left(\frac{Y}{1-Y} \right) = b_0 + b_1 \text{Log}X_1 + b_2 \text{Log}X_2 + b_3 \text{Log}X_3 + b_4 \text{Log}X_4 + b_5 \text{Log}X_5 + \dots + e$$

Information:

Y = Decision to sell in the form of grain (1)

Decision not to sell grain (rice) (0)

Bo = Constant

b1 = Regression equation coefficient or regression parameter (for i = 1,2,3,4,5)

X1 = Production (Kg)

X2 = Labor (People)

X3 = Urgent Needs (Yes; 1 No; 0)

X4 = Middleman (To Middleman ; 1 Not to Middleman ; 0)

X5 = Milling Cost (Rp)

To test whether all the independent variables influence the dependent variable, the F test is used.

Decision-making criteria:

- F-count $\leq$ F-table ($\alpha = 0.05$), then accepting H0, means that all independent variables do not influence income (dependent variable).
- F-count $>$ F-table ($\alpha = 0.05$), then rejecting H0 means that all independent variables influence income (dependent variable)

To find out how much dependent variation is caused by variations in the independent variables, the coefficient of determination value is calculated.. R^2 value ranges from $0 \leq R^2 \leq 1$

Often the value of the coefficient of determination (R^2) increases if the number of independent variables is added to the model thereby reducing the degrees of freedom. To assess this matter, the adjusted coefficient of determination value can be used with the following formula [11]:

$$R^2 \text{ Adjuster} = R^2[(n-1)/(n-k-1)]$$

Information:

k = Number of independent variables in the estimation model

n = Number of data

If the test results show that F-count $>$ F-table, then proceed with the t-test to determine the effect of each independent variable on the dependent variable.

$$t \text{ count} = \frac{b_i}{S_{bi}}$$

$$S_{bi} = \sqrt{\frac{\text{Residual Sum of Squares}}{n-k-1}}$$

Information:

bi = i-th regression coefficient

Sbi = Standard deviation i

Decision-making criteria:

- t-count $\leq$ t-table ($\alpha = 0.05$), then accepting H_0 which means the independent variable does not have a real influence on land conversion (dependent variable).
- t-count $>$ t-table ($\alpha = 0.05$), then rejecting H_0 which means the independent variable has a real influence on the transfer of function (dependent variable).

3. RESULT AND DISCUSSION

The results of the analysis of factors that influence rice farmers' decision-making in selling rice production in East OKU Regency are positive, namely production variables, urgent needs, middlemen and milling and labour costs have a negative influence. To analyze the factors that influence rice farmers' decision-making in selling rice production in East OKU, logit regression is used. The results of the logit regression of actors and factors that influence rice farmers' decision-making in selling rice production in East OKU can be seen in Table 4 as follows:

Table 4. Logit Correlation Results Factors that Influence Rice Farmers' Decision-Making in Selling Rice Production in East OKU, 2024

		Variables in the Equation				
		B	S.E	Wald	Sig.	Exp(B)
Step	X1	,717	,415	15,130	.002*	-1,482
1	X2	4,254	,442	4,638	.043*	6,197
	X3	,587	.411	3,217	.000*	3,265
	X4	1,098	,505	5,174	.001*	-1.124
	X5	4,398	,535	4,477	.003*	1,874
	Constant	-1,278	.114	25,378	.000	,266
		$R^2 = 0.811$				

* = Very significant effect of 0.01

Based on Table 4, an analysis of the factors that influence rice farmers' decision-making in selling rice production in East OKU Regency can be carried out. From the regression results, values are obtained $R^2 = 0.811$ stating that there is an 81% chance that the farmer's decision for rice farmers' decision making in selling rice production can be explained by the variables production (x1), labor (x2), urgent needs (x3), middlemen (x4), and milling costs (x5). Meanwhile, the remaining 19% is influenced by other variables that are not in the model. Chi-Square of 42,587 explains that together the production variables (x1), urgent needs (x3), middlemen (x4), and milling costs (x5) have a significant effect on farmer decisions and labour (x2) has no real effect on farmers' decisions in selling their products in the form of grain for greater clarity on the results of the logit regression relationship analysis, the factors that influence rice farmers' decision making in selling rice production in East OKU Regency will be explained as follows:

3.1 Production (X1)

The logit regression results show that the Exp(B) price value is -1.482. This means that every 1% increase in rice production will reduce the opportunity for farmers' decisions to sell rice production in the form of grain by 1.482%. After carrying out the Wald test, it turned out that a significance of 0.002 was obtained, which was smaller than $\alpha = 0.01$. So production has a significant

or real influence on farmers' decisions in making rice farmers' decisions in selling rice production in East OKU Regency.

This is in line with research by [12] which states that production influences farmers' decisions in the postponed grain sales program, this is because the more production, the higher the production costs, in line with the research of Ref. [13] stated that the area of land owned by farmers greatly influences the production costs that must be incurred. The larger the land area owned by farmers, the greater the production costs that must be incurred. Vice versa, if the land area owned by farmers becomes smaller, the costs for the production process will also decrease, thus influencing farmers' decisions to choose to postpone selling production in the form of grain. Apart from that, rice production costs, such as land rental and wages for farm workers, have increased. Farmers often sell grain to meet daily needs and overcome increasingly high production costs

3.2 Labor (X2)

The regression results show the Exp(B) value for product quality is 6.197. This means that every time the workforce increases or increases by 1%, it will increase the opportunity for the farmer's decision to sell in the form of grain by 6.197%. After carrying out the Wald test, it turned out that a significance of 0.043 was greater than $\alpha = 0.01$. This means that labor does not have a significant or real effect on farmers' decisions to sell their rice production in the form of grain. Based on the results of the research, labor is not needed because at the time of sale, the factory takes it to the farmers.

This is in line with research by [14] that labor is a main production factor. These factors determine the position of farmers in their farming business. Farmers in their farming business not only contribute labor, but are also farm managers who manage the overall production organization. Meanwhile, according to [15], rice farmers use labor for lowland rice farming using daily labor to carry out land processing, planting, maintenance, spraying, fertilizing and harvesting activities. Most farmers use a lot of labor because farming activities from planting to harvest still use traditional methods. So labor is a primary need for both farmers who sell grain and sell it in non-grain form [16] the quantity of grain produced is higher, even though the price of grain is lower than the price of grain without mechanization and the costs incurred are lower than the costs without mechanization, especially in land processing and post-harvest labor even though equipment rental costs are higher.

3.3 Urgent Needs (X3)

The logit regression results show that the Exp(B) value of farming experience is 3.265. This means that every 1% increase in urgent needs will increase the farmer's decision opportunities by 3.265%. After carrying out the Wald test, it turns out that a significance of 0.000 is smaller than $\alpha = 0.01$. So urgent needs have a significant or real influence on farmers' decisions in selling rice production in the form of grain. In line with research results from [17] when farmers face urgent needs, they are often forced to sell rice in the form of grain.

This situation occurs when grain prices are high, allowing farmers to earn a greater income. However, when grain prices drop, their income declines, making it difficult for them to meet basic needs. Therefore, the government must stabilize grain prices to prevent significant drops, ensuring that farmers remain financially secure and motivated in their rice farming business.

Additionally, selling grain yields lower income compared to selling processed rice.

3.4 Middleman (X4)

The results of the logit regression show that the Exp(B) value for land area is -1.124. This means that every sale to middlemen or an increase of 1% will increase the opportunity for farmers' decisions to sell their rice production in the form of grain by 1.124%. After carrying out the Wald test, it turned out that a significance of 0.001 was greater than $\alpha = 0.01$. So middlemen have a significant or real influence in selling rice production in the form of grain. This is in line with research by [1] which states that the reason why farmers sell their agricultural products to middlemen is that middlemen provide loans in the form of capital which requires farmers who lack capital to sell their agricultural products to middlemen, apart from that the results will usually be sold to the middleman.

3.5 Milling Cost (X5)

The results of the logit regression show an Exp(B) value of 1.874. This means that every additional milling cost or increase of 1% will increase the opportunity for farmers' decisions to sell their rice production in the form of grain by 1.874%. After carrying out the Wald test, it turned out that a significance of 0.003 was greater than $\alpha = 0.01$. This means that milling costs partially influence farmers' decisions to sell their rice production in the form of grain.

So the results of this research agree with [11] which states high rice milling costs can affect farmers and grain prices. According to Ref. [15] causes of costs milling is expensive i.e. 1) Dry Season and Irrigation: During the dry season, farmers find it difficult to grow rice on dry land. Production costs must be added to irrigation costs, especially because the dry season lasts a long time. Pumping using diesel fuel also increases costs. 2) Price of Diesel: The use of diesel to drive rice milling machines is a high-cost factor. 3) Price of Modern Rice Milling Machines: Modern rice milling machines with sophisticated methods are quite expensive, on average millions of rupiah per unit¹. These machines require a significant initial investment but can improve grinding efficiency and quality. 4) El Nino: Climate change, such as the El Nino phenomenon, also affects rice production and production costs. El Nino can cause drought and disrupt planting patterns.

4. CONCLUSION

This study analyzed the factors influencing rice farmers' decisions in selling their production in East OKU Regency. The findings indicate that production volume, urgent financial needs, middlemen involvement, and milling costs significantly affect farmers' choices, while labor availability does not have a notable impact. The results highlight that many farmers opt to sell their rice in the form of grain, despite receiving lower prices compared to selling processed rice. This decision is driven by immediate financial requirements and the influence of middlemen, who often provide easier market access. Additionally, high milling costs pose a barrier to farmers processing their grain into rice before selling. To improve farmers' welfare and economic

stability, policy interventions should focus on stabilizing grain prices, reducing milling costs, and providing farmers with better access to financial support and market opportunities. Encouraging more farmers to process their grain into rice before selling could enhance profitability and reduce dependency on middlemen. Future research should explore strategies to empower farmers in optimizing their production and sales decisions, ensuring a more sustainable and profitable agricultural sector in the region.

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