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The Analysis of the Community Food Barns Role in Maintaining Food Reserves Availability in Buay Pemuka Peliung Sub-District, East OKU District

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A B S T R A C T

This study aimed to determine the role of community food barns in maintaining food reserve availability in Buay Pemuka Peliung Sub-District, East OKU District, and to identify the factors influencing household food availability among farmers in the same area. The research employed a quantitative descriptive method and utilized multiple regression analysis for data evaluation. The findings indicated that community food barns are crucial in ensuring food security for farmers in the Buay Pemuka Peliung Sub-District. Specifically, the food barns serve three main functions: storing food, mitigating food shortages during crop failures or droughts, and increasing group income among farmers. The presence of these food barns has proven to be highly beneficial, providing secure storage for farmers' harvests. Moreover, the study identified several factors influencing household food availability among farmers, including land area (X1), income (X2), paddy prices (X3), number of family members (X4), farmer's age (X5), and education level (X6). Among these, the variable that had the most significant impact on household food availability was the land area, with a partial regression coefficient (beta coefficient) value of 3.099.

1. INTRODUCTION

1.1. Research Background

Food security is one of the most strategic issues in national development, particularly for developing countries like Indonesia with a large population. Ensuring food security is vital because it is intrinsically linked to social security, economic stability, political stability, and national security. The importance of food security is growing, especially in the face of global climate change, which poses significant challenges to food production worldwide. By 2050, global cereal production is projected to decrease by one percent, while the world population is expected to increase by the same margin. This disparity underscores the urgent need for sustainable agricultural practices and robust food security policies to meet future food demands and maintain stability across various sectors. The potential for food vulnerability is widely open in the coming decades [1].

Community Food Reserves (CPM) are one component of Regional Government Food Reserves, as mandated by Law No. 18 of 2012 concerning Food (Ministry of Law and Human Rights, 2020). The development of CPM is carried out through the Community Food Barn (LPM) program. Both the central and regional governments implement the development of Community Food Barns (LPM) through efforts to empower communities by enhancing human resource capabilities in managing food barns, optimizing available resources, and strengthening institutional capacity. Through this empowerment, it is hoped that community food barns can be developed independently and sustainably and can play an optimal role in food provision. Regional governments project districts as service centres by arranging hierarchies of districts based on the number of social and economic service facilities owned by the district. The superior food crop commodities of each district must be directed for development, namely by developing production centres and processing industry centers [2].

The development of CPM can be seen from the perspective of developing community food barns, where the existence of community food barns can bring food access closer to its members. The institutionalization of food reserves that has developed in society is the food barn, with a more specific focus

on the rice barn. The existence of rice barns is as old as the history of rice in Indonesia, as the barn serves as a place for storing harvests and reserves until the next harvest season. Initially, food barns were private, but in line with the social nature of society demanding a community food reserve system, community barns/village barns developed. The existence of community food barns is seen as an effective model of village community food security apparatus as a storage place [3] to maintain supply stability where excess supply can lower rice prices, and with storage, sales can be postponed until farmers receive better prices. Both the central and regional governments implement the development of Community Food Barns (LPM) through efforts to empower communities by enhancing human resource capabilities in managing food barns, optimizing available resources, and strengthening institutional capacity. Through this empowerment, it is hoped that community food barns can be developed independently and sustainably and can play an optimal role in food provision.

The presence of farmers and agricultural land in Indonesia is strongly supported by geographical conditions and soil fertility. According to records from the Department of Food Crops and Horticulture of the East Ogan Komering Ulu District Government, there has been an increase in terms of cultivated area and harvest area from year to year [4]. Out of 514 districts/cities in Indonesia, only 20 areas are national food reserves, one of which is East Ogan Komering Ulu District. East Ogan Komering Ulu District plays an important role in maintaining food security, especially for the people of East Ogan Komering Ulu District and South Sumatra in general. The East Ogan Komering Ulu (OKU) District Government is designated as a National Food Reserve, thus continuously striving to improve the quality of agricultural production. In January 2023, farmers in several villages in East Ogan Komering Ulu had carried out a harvest covering an area of 2,512 hectares with a production yield of 19,718 tons of unhulled rice, while in February the harvest yield reached 51,049 tons of unhulled rice from an area of 6,686 hectares.

Table 1. Realization of Cultivated Area, Harvest, Rice Production in East Ogan Komering Ulu District, 2018-2022

No	Year	Cultivated Area (Ha)	Harvested Area (Ha)	Yield (Ton Gkg /Ha)	Production (Ton Gkg)	Production (Ton Gkp)
1	2018	101.817	96.726	6,59	638.199	737.717
2	2019	96.965	92.117	6,24	575.340	665.056
3	2020	104.891	99.646	6,36	633.628	732.433
4	2021	100.852	95.809	6	574.966	664.624
5	2022	113.763	108.075	6,49	701.510	810.900

Based on the table above, it can be seen that in 2021, rice production in East OKU was 574,966 tons of unhulled rice (GKG), which increased to 701,510 tons of unhulled rice (GKG) in 2022, representing a 22 percent increase. The increase in production in East OKU is attributed to the continuous implementation of the Community Food Barn (Lumbung Pangan Masyarakat) program since 2009. The community food barn is one of the village institutions built jointly by the government and the community to prepare local food availability. The functions of the community food barn vary, including improving community welfare through the availability of food close to the community and maintaining stable food security among community members.

Food security is defined as the condition in which food needs for every community are fulfilled, reflected by the availability of sufficient, safe, equitable, affordable food, and based on the diversity of local resources [5]. The role of food barns in maintaining food security includes storing food for farmers, addressing food shortages during crop failures or droughts, and increasing group income. Factors influencing the sustainability of food barns in maintaining food security include farmers' understanding of food barns and the benefits received by farmers as members of the food barn group. Government-provided social assistance funds (Bansos) can be directed towards supporting the development of food barns. Additionally, innovative government programs are needed to support the sustainability of community food barns.

Based on the research by PSP-LP IPB (2001), food barns can play a role in (1) storing surplus food production during harvests, (2) meeting the food needs of communities during droughts, (3) simulating capital fertilization through contributions in the form of food or cash, (4) assisting farmers struggling with capital by providing alternative microcredit for residents, thereby avoiding banking practices or loan sharks, (5) preventing farmers from early selling losses and avoiding buying food at high prices during droughts. Overall, food barns in East OKU District serve as places for storing food reserves for their members and meeting the needs of members who lack food. Members have the right to obtain rice loans in agreed amounts. In addition to providing assistance or loans in the form of unhulled rice, some food barns provide agricultural capital loans in the form of production facilities such as fertilizer. Some food barns also play a social role by providing loans for urgent needs such as medical expenses when members are sick. Specifically village food barns, also play a role in exempting contributions for village activities such as commemorating Independence Day, ceremonial events, and others [6]. Below are data on food barn groups in the Buay Pemuka Pliung District of East OKU District.

Based on Table 2, the existence of Food Barn Groups in East OKU District reached a total of 6,493 people. The highest membership is in Buay Pemuka Peliung Sub-district with 1,461 members. This indicates that the Buay Pemuka Peliung Sub-district is the largest food barn in East OKU District compared to other sub-districts.

According to BKP (2021) and Fung and Wang (2018), the presence of Community Food Reserves (CPM) is very important. In the future development of CPM, it cannot be separated from the presence of Community Food Barns (LPM). The existence of Village Community Food Barns will strengthen community food security, as food is always available in the community. Village Community Food Barns are also crucial for addressing food problems due to natural disasters, emergencies, and times of famine. The problems still faced in the development of LPM include: (1) Management of food barns often still does not develop optimally and is not yet self-sufficient; (2) Management of food barns, in their administration, is not good (lack of expertise) and lacks cohesion within the group; (3) Suboptimal and discontinuous coaching, especially after the program ends; and (4) Lack of group business capital for the development of LPM. In addition, there are also other problems faced, including

the variation in the performance of CPM management through the development of LPM.

Table 2. Data on Food Storage Groups in Buay Pemuka Peliung District, East OKU Regency, 2023

No	Sub Districts	Total (Person)
1.	Martapura	343
2.	**Buay Pemuka Peliung**	**1461**
3.	Buay Madang	876
4	Belitang	264
5	Belitang III	311
6	Cempaka	142
7	Semendawai Suku III	953
8	Madang Suku I	60
9	Madang Suku II	764
10	Belitang II	413
11	Buay Madang Timur	585
12	Jayapura	30
13	Bunga Mayang	0
14	Buay Pemuka Bangsa Raja	23
15	Belitang Mulya	65
16	Belitang Madang Raya	203
17	Madang Suku III	37
18	Belitang Jaya	115
19	Semendawai Barat	86
20	Semendawai Timur	56
	Total Number	**6.493**

According to the research findings [7] food barns play a crucial role in maintaining food security, especially within communities. The role of food barns in maintaining food security includes storing food for farmers, addressing food shortages during crop failures/famine seasons, and increasing group income. Factors influencing the sustainability of food barns in maintaining food security include farmers' understanding of food barns and the benefits received by farmers as members of the barn group. Government-provided social assistance funds (bansos) can be directed towards supporting the development of food barns. Additionally, innovative government programs are needed to support the sustainability of community food barns. Similar sentiments were expressed in a study by [8] in the research location of Bondowoso District, emphasizing the need for stronger community food barns so that communities are not entirely dependent on the government and can provide assistance to the needy. Consistent with this, studies by [8] also revealed that rural food security depends on the presence of community food barn institutions that can store harvests before they are sold at market prices satisfactory to farmers. Building on the above discussion, this study aims to analyze the role of community food barns in maintaining food reserves in the Buay Pemuka Peliung Sub-district of East OKU District.

Based on the formulation of the above problems, the objectives of this study are to (1) Determine the role of community food barns in maintaining food reserves in the Buay Pemuka Peliung Sub-district of East OKU District. (2) Identify the factors influencing the availability of food for farmer households in the Buay Pemuka Peliung Sub-district of East OKU District.

1.2. Literature Review

The role is a dynamic aspect of an individual's position in the social structure because their position involves actions or dynamic changes, which lead to certain outcomes or events [9]. Status or position cannot be separated from the role, and there is no role without a position. Humans have their respective roles according to their patterns and capacities (status or position) in social interaction.

Food barns are food reserve institutions in rural areas, playing a role in addressing community food insecurity [10]. Food barns have existed in line with rice culture and have become part of the community food reserve system. The presence of food barns tends to decline due to several reasons, namely: (a) the implementation of the Green Revolution introducing superior rice technology, and agricultural modernization considered incompatible with traditional community barns, (b) the presence of Bulog, which plays a role in stabilizing supply and prices of food (rice) in each region at all times, resulting in no incentive to store rice, (c) globalization leading to the emergence of various foods, including processed foods reaching rural areas, has changed consumption patterns, and (d) inconsistent and project-oriented coaching activities leading to ineffective coaching.

According to Ref. [11], the factors influencing the availability of household food reserves for farmers include land area, household income, rice prices, number of family members, farmer's age, and education level.

1.2.1. Land Area

Rice production is influenced by the area of agricultural land. Most of the growth in agricultural production comes from expanding cultivated areas. The productivity level per unit, whether per unit of land, labor, or capital, is still very low. Thus, there is still an opportunity to increase production through productivity improvement. Cultivated land area refers to the total area of rice fields cultivated by farmers. Land area affects rice production and farmers' income. One indicator of the welfare level of rice farmers is the area of land they cultivate. If the land area owned by farmers is smaller than the standard area, farmers may still not be able to meet their needs. The standard land area that farmers should own is a minimum of 0.25 hectares for Java and a minimum of 0.5 hectares for areas outside Java [12]. Land area affects rice production and farmers' income. The larger the cultivated land area managed by farmers, the greater the production and income obtained if accompanied by proper land management [13]. Agricultural land is a determinant of the impact of agricultural commodities. In general, it is said that the larger the land area (cultivated or planted), the greater the amount of production generated by that land.

1.2.2. Income

Farmers' income is the difference between income and all expenses; in other words, income includes gross income or total receipts and net income. Gross income or total receipts is the total value of agricultural commodity production before subtracting production costs [14]. Farm income is the difference between receipts and all costs. Total income is the total value of agricultural commodity production before subtracting production costs [15], According to Engel's Theory, the smaller the income, the greater the portion of that income allocated to consumption, and vice versa, the higher the income, the greater the portion allocated to savings. Applied to Engel's Theory, rice farmers with higher incomes do not face difficulties in meeting their household consumption needs. Household income can affect the availability of food reserves for farmers because farmers with higher incomes can meet their

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energy needs by purchasing food outside the home without needing to maintain food stocks (rice) at home.

1.2.3. Rice Prices

Rice, as defined in the Kamus Besar Bahasa Indonesia, refers to rice grains that have been separated from their stalks (straw). In commodity trading, rice is an important stage in rice processing before consumption because large-scale rice trading is done in the form of rice grains. The technical definition of trading for rice refers to the rice grains separated from their stalks by threshing. According to [16], one of the factors that can affect the food security of farmer households is the price; higher prices will increase food security.

1.2.4. Number of Family Members

According to [17], one factor that can affect the food security of farmer households is the number of family members; the more family members there are, the higher the food security.

1.2.5. Farmer's Age

Age influences farmers' decision-making behavior in farming activities. A farmer's age is one of the factors related to the farmer's ability to work in carrying out farming activities. Farmers working at a productive age will be better and more efficient than non-productive age. The older a person gets, the lower their productivity becomes. This is because their physical strength is not as strong as when they were younger [18].

1.2.6. Education Level

Education is the ability to enhance farmers' understanding of everything, including increasing knowledge, and skills, and changing attitudes. The depth of a skill is determined by a person's work experience or level of education. The longer the work experience or the higher the level of education, the deeper their skill mastery should be. Farmers' education level will affect the application of innovations, mental attitude, and work behavior in farming. A higher level of education will make it easier to apply innovations [19].

Furthermore, Ref. [20] stated that factors influencing the decrease in the value of food reserves in an area include climate, uneven harvest seasons, and emergencies such as natural disasters. Poor climate conditions can cause floods or droughts for a considerable period, leading to crop failures in some areas. Uneven harvest seasons in each region require food consumption to be met from the production of that area even if the production level is low. Meanwhile, emergencies such as natural disasters can make it difficult for some areas to produce food, thus being unable to meet the level of food consumption in their area.

1.3. Research Objective

This study aims to Determine the role of community food barns in maintaining food reserves in the Buay Pemuka Peliung Sub-district of East OKU District and identify the factors influencing the availability of food for farmer households in the Buay Pemuka Peliung Sub-district of East OKU District.

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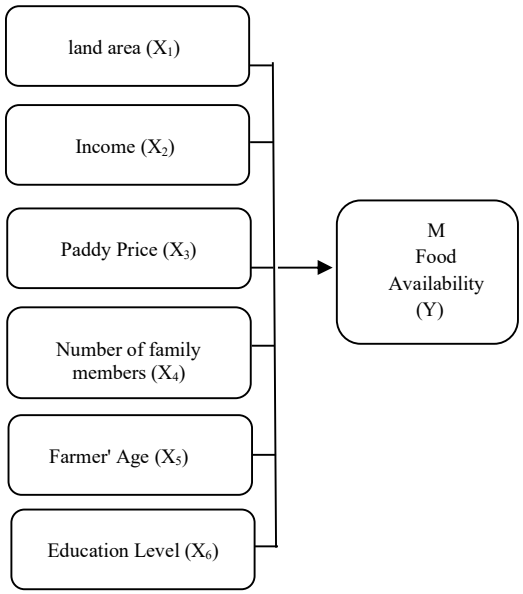

Fig 1. Research Approach Model

1.4. Research Objective

This study aims to Determine the role of community food barns in maintaining food reserves in the Buay Pemuka Peliung Sub-district of East OKU District and identify the factors influencing the availability of food for farmer households in the Buay Pemuka Peliung Sub-district of East OKU District..

2. MATERIALS AND METHODS

2.1. Research Scope

The research location is in three villages within the Buay Pemuka Peliung Sub District of East OKU District, namely Pematang Basuki Village, Bandar Jaya Village, and Pahang Asri Village. The determination of the research location was done purposively, namely in three villages within the Buay Pemuka Peliung Sub District of East OKU District, considering that in these locations rice production has continued to increase in the last three years, and the area is irrigated, allowing for three rice harvests per year. Additionally, Buay Pemuka Peliung Sub District was designated as one of the food barn districts in East OKU District in 2022. The research is planned to be conducted in August 2023.

2.2. Methodology

The research method used in this study is a survey method. [21] states that survey research is conducted on large or small populations, but the data studied are from samples taken from that population, thus discovering relative incidents, distributions, and sociological and psychological variable relationships.

2.3. Sampling Method

The sampling method used in this study is proportional stratified random sampling with a total population of 375 farmer households. The sampling method can be seen in the following table for a clearer understanding.

Table 3. Population and Sample Size of Farmer Households in Buay Pemuka Peliung Sub District, East OKU District

No	Village Name	Population (KK)	Sample (KK)	%
1	Pematang Basuki	100	25	25
2	Bandar Jaya	125	31	25
3	Pahang Asri	150	38	25
	Total	375	94	

2.4. Data Analysis

The data processing method aims to address the research questions. To answer the first research question, which is to determine the role of food barns in maintaining food reserves in the Buay Pemuka Peliung Sub District, East OKU District, it will be presented in the form of a table, text, diagram, or graph.

The analysis used to address the second objective, which is to identify the factors influencing the availability of food for farmer households in the Buay Pemuka Peliung Sub District, East OKU District, is a multiple linear regression analysis. This analysis will be conducted using multiple linear regression analysis with the assistance of SPSS 22. The model of the regression equation to be used is.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Where:
Y = Availability of food for farmer households (kg/year)
Bo = Constant
X1 = Land area (ha)
X2 = Income (Thousand Rp/year)
X3 = Rice price (Rp/kg)
X4 = Number of family members (people)
X5 = Farmer's age (years)
D = Education level
0: Graduate from elementary school
1: Others (junior high school, senior high school, college)
β1- β6 = Regression coefficients
a = Constant
e = Residual or error

To determine if the results of the equation above meet the criteria of BLUE (Best Linear Unbiased Estimator), several tests need to be conducted to check for violations of classical assumptions, which include:

1) Normality Test

The normality test aims to determine if the residual values are normally distributed or not [22]. The statistical test used for the normality test in this study is the One-Sample Kolmogorov-Smirnov Test. Data is considered to be normally distributed if the significance > 0.05.

2) Multicollinearity Test

The multicollinearity test checks for correlations between independent variables in the regression model. A good regression model should not have correlations among independent variables [23]. The method commonly used for testing multicollinearity is examining the regression model's Tolerance and Variance Inflation Factor (VIF) values. Guidelines for determining a regression model without multicollinearity are:

- Tolerance value > 0.1
- VIF value < 10 (Azizah et al., 2021).

3) Heteroskedasticity Test

The heteroskedasticity test is conducted to determine whether there is heteroskedasticity in the regression model. This can be done by examining scatterplot graphs or from the predicted values of the dependent variable (SRESID) with residual errors (ZPRED) [24].

To observe the partial effects of each independent variable included in the model on the dependent variable, the criteria for testing are:

a) t-test

This test is used to determine the partial effect of an independent variable on the variation of the dependent variable. The decision-making basis for determining the t-table is:

$$t\ (\alpha/2;\ df = n-k-1):$$

- If t-calculated > t-table, then reject Ho and accept Ha, meaning it is influential.
- If t-calculated < t-table, then accept Ho and reject Ha, meaning it is not influential.

To determine whether all independent variables included in the model have a collective effect on the dependent variable, a Simultaneous Test (F-test) is conducted. The testing criteria are:

- If the calculated F-value is greater than the tabulated F-value at a certain significance level, it means there is a significant overall influence between independent variables on the dependent variable.
- If the calculated F-value is smaller than the tabulated F-value at a certain significance level, it means there is no significant overall influence between independent variables on the dependent variable.

To assess the extent of the influence of variable X in explaining variable Y, the coefficient of determination (R^2 / KP) is used. The coefficient of determination (R^2 / KP) is essentially used to indicate how much variable X explains variable Y.

$$\text{Adjusted } R^2 = \text{Adjusted } r^2 \times 100\%$$

Where:
Adjusted R^2 = value of the coefficient of determination
r = value of the correlation coefficient

2.5. Hypothesis

It is suspected that land area (X1), income (X2), grain price (X3), number of family members (X4), farmer age (X5), and education level (X6) significantly influence the availability of food for farmer households in Buay Pemuka Peliung Sub District, East OKU District.

3. RESULT AND DISCUSSION

3.1. The Role of Community Food Barns in Maintaining Food Reserve Availability

The role of food barns in maintaining food security in Buay Pemuka Peliung Sub-district, East OKU District, is essential to the livelihoods of farming communities. The research conducted yielded three roles: food barns serve as storage facilities, address food shortages during crop failures or in times of drought, and

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their presence can increase group income for farmers. The presence of food barns in Buay Pemuka Peliung Sub-district, East OKU District, is indeed highly beneficial. Food barns are used as storage facilities for farmers' harvests.

The storage mechanism at food barn locations varies depending on the rules established and agreed upon by all members of each food barn. The food barn in Pematang Basuki village sets a rule that every time there is a harvest, farmers are required to submit a portion of their harvest for storage in the food barn. The mechanism for submitting harvests is that every 1 Ha of land is required to submit 25 kg of rice or paddy for storage. On the other hand, the food barns in Bandar Jaya and Pahang Asri villages have different storage mechanisms. Harvest storage is obtained only from loan returns. Each member of the food barn who borrows rice or paddy is required to return the amount of the loan plus a 1% interest on the loan at harvest time. This interest is stored in the food barn. The initial capital for the food barn is obtained from social assistance (bansos) from the government amounting to Rp 200,000,000, which is then supplemented by contributions from members.

The stored harvests from farmers can be either paddy or rice. This is in line with establishing food barns to meet the food needs of their members. Besides serving as storage facilities for harvests, food barns also play a role in addressing food shortages during crop failures or droughts. During harvest time, farmers do not always get good harvests as expected. Sometimes, adverse weather conditions result in yields that are lower than anticipated. During such times, farmers can address this by borrowing from the food barn. This greatly helps farmers so they do not have to worry too much about their food availability. Almost all members of these food barns have benefited from the programs held by these food barns.

Food barns also play a role in increasing group income. The food supply in the barn will increase over time as more farmers utilize assistance from the food barn. This also has a positive impact on the group's food barn income. During times when food prices are high, some of the food supply in the barn will be sold. The proceeds from sales will be used for the management of the food barn itself

3.2. Factors Influencing the Availability of Food for Farmer Households

3.2.1. Classic Assumption Tests

This study used several tests to determine whether there were deviations from classic assumptions, including tests for normality, multicollinearity, and heteroskedasticity. The significance results of the normality test using the Kolmogorov-Smirnov test yielded an asymp. Sig (2-tailed) value of 0.569 > 0.050, indicates that the data in this study are normally distributed. The multicollinearity test results for all variables showed that the Tolerance values were greater than 0.1 (Tolerance > 0.1) and the VIF values for each variable were less than 10 (VIF < 10), meaning there was no multicollinearity in the regression model. The heteroskedasticity test results using scatter plot diagrams showed that the points were randomly distributed and did not form any specific or regular patterns. This indicates that the disturbance errors have the same variance (homoscedasticity), and it can be concluded that there is no heteroscedasticity in the estimated regression model.

3.2.2. Multiple Linear Regression Analysis

The significance level represents the confidence level. In this study, a significance level of 0.01 (1%) is used, meaning the confidence level or the level of truth is 99%, and the error level is 1%. If we reconsider the form of the equation after natural logarithm transformation and multiple linear regression equation, it is as follows:

$$Y= 2.686+ 2.671LnX_1+ 0.151\ LnX_2+ 0.001\ LnX_3+ 0.080\ LnX_4+ 0.004\ LnX_5+ 5.220\ LnX_6$$

The multiple linear regression equation can be interpreted as follows:

- The constant value is 2.686. This indicates that if the variables land area (X1), income (X2), rice price (X3), number of family members (X4), farmer's age (X5), and education level (X6) are all zero, then the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District is 2,686 units.
- The coefficient value of the land area variable is 2.671. This means that if farmers use superior seeds for rice farming activities, the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District will increase by 2,671 units.
- The regression coefficient of the income variable is 0.151, indicating that every increase in income of one Rupiah will increase the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District by 0.151 units.
- The regression coefficient of the rice price variable is 0.001, indicating that every 1% increase in the rice price will increase the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District by 0.001%.
- The regression coefficient of the number of family members variable is 0.080, indicating that every increase of one person in the family will increase the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District by 0.080%.
- The regression coefficient of the farmer's age variable is 0.004, indicating that every one-year increase in the farmer's age will increase the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District by 0.004%.
- The regression coefficient of the education level variable is 5.220, indicating that every one-year increase in the farmer's education level will increase the availability of household food for farmers in Buay Pemuka Peliung Sub District, East OKU District by 5.220%.

3.2.3. Statistical Tests

The hypothesis test, or statistical test, also known as the first-order test, consists of the coefficient of determination or R^2, the F-test or simultaneous test, and the t-test or individual test.

- Coefficient of Determination

The Adjusted R Square value is 0.998. This means that 99.8% of the food reserve availability in Buay Pemuka Peliung Sub District, East OKU District can be explained by the independent variables included in the model, such as land area (X1), income (X2), grain price (X3), number of family members (X4), farmer's

age (X5), and education level (X6). The remaining 0.2% is explained by other variables outside the study, such as weather, climate, farming experience, farmer's age, technology, etc.

Table 4. The results of the statistical tests

Variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
Constant	2.686	0.164		16.382	.000
Land Area (X_1)	2.671	0.156	3.099	17.128	.000***
Income (X_2)	.151	0.110	-0.029	2.381	.002***
Paddy Price (X3)	.001	0.001	-0.024	2.078	.004***
Number of Family Members (X_4)	.080	0.001	-0.003	1.910	.003***
Farmer's Age (X_5)	.004	0.029	0.004	1.745	.003***
Education Level (X_6)	5.220	0.294	1.040	17.786	.000***
R. Square		0.998			
Adjust R. Square		0.997			
F Count		5.0533			0,000***
F Table		2. 23			
t Table 1 %		1.66256			
t Table 5 %		1.98761			

*** = Significant at the 99% confidence level
ns = Not significant

- Simultaneous Test (F-Test)

The F-test results indicate that the simultaneous testing of all the estimated parameters at a 99% confidence level shows that the F table value is greater than the F calculated value (5.0533 > 2.330). This means that the independent variables, including land area (X1), income (X2), grain price (X3), number of family members (X4), farmer's age (X5), and education level (X6), collectively have a significant impact on the availability of food reserves in Buay Pemuka Peliung Sub District, East OKU District.

- Partial Test (t-Test)

To determine the t table, refer to the statistical table at a significance level of 0.01 with df 1 (number of variables - 1), and df 2 (n - k - 1), where n is the number of data points and k is the number of independent variables (Priyatno, 2011: 138). The t-test results show that the variables of land area, number of seeds, labor, and education level individually have a significant impact on the availability of food reserves in Buay Pemuka Peliung Sub District, East OKU District. In contrast, the fertilizer variable does not have a significant impact on the food reserve availability in Buay Pemuka Peliung Sub District, East OKU District.

The land area variable has a t calculated value > t table, namely 17.786 > 1.66256, which means that land area significantly impacts the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District at a 99% confidence level. The land area is crucial in supporting the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District, considering that the yield obtained by farmers from the land they cultivate is partly stored in the barn as reserves that will later be sold or borrowed by fellow group members or other farmer group members. Increasing productivity per unit area is necessary to support the development of food barns at the regional level, ultimately supporting the development of Indonesian food barns, which in turn can improve farmers' welfare, and ensure food sovereignty, and national food security.

The income variable has a t calculated value > t table, namely 2.381 > 1.66256, which means that income has a significant impact on the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District at a 99% confidence level. The success of the Community Food Barn Empowerment Program in East OKU District can be felt, especially in Buay Pemuka Peliung Sub District. This empowerment program aims to enhance the role of food barns in providing community food reserves in rural areas and sustainably increasing the income of farmer members of the food barn group. Through the implementation of the Village Community Food Barn Empowerment Program, it is hoped to impact farm income based on farmers' participation in LPMD positively. The household head's income and education level positively affect food security, while the ability to meet financial needs (savings) negatively affects food security levels. The number of family members and the age of the household head does not affect the food security level of farming households.

The grain price variable has a t calculated value > t table, namely 2.078 > 1.66256, which means that the grain price significantly impacts the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District at a 99% confidence level. The proportion of household income from the agricultural sector will influence the strength of the agricultural exchange rate for farmers, which is closely related to the role of agriculture in meeting farmers' household needs. Differences in the agricultural role are influenced and related to various social groups, including large and small landholders and farm labourers, and also depend on the profitability of farming, market strength, and government policies. Thus, the complex mechanisms of demand, supply, and policy will affect the formation of the agricultural exchange rate. The formation of prices is not solely determined by the agricultural sector but also by the behavior of sectors outside agriculture, including the real, fiscal, and monetary sectors [25].

The number of family members variable has a t calculated value > t table, namely 1.910 > 1.66256, which means that the number of family members significantly impacts the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District at a 99% confidence level. The number of family members has a positive and significant impact on rice production at a 1% significance level. The coefficient value of the number of family members is 0.080. This indicates that if the number of family members increases by 1 percent, assuming other inputs remain constant, food availability can still be increased by 0.080 percent. Previous studies have mentioned that several factors influence a region's food security. The most influential factors on household food security are the number of family members and household expenditure.

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Research conducted by [26] on factors affecting the food security of poor households in Srandakan District, Bantul, stated that gender and type of work did not affect the level of food security. Factors influencing RTM food security in Srandakan include the head of household's age, marital status, number of family members, and income. The most dominant factors affecting RTM food security are the number of family members and household income.

The number of family members has varied effects. On one side, more family members can decrease food security because more members add to the family's burden in meeting food needs [27]. On the other hand, more family members can increase food security because more members can work, thus improving food security [28]. The number of family members negatively affects the likelihood of farmer households being food secure, assuming other variables are constant. This is because some family members work as day laborers, helpers, tailors, etc., with uncertain income. Additionally, some family members in Buay Pemuka Peliung Sub District, East OKU District, are still in school or unemployed, thus not contributing to household income.

The farmer's age variable has a t calculated value < t table, namely 1.745 > 1.66256, indicating that the farmer's age significantly impacts the food availability of farming households in Buay Pemuka Peliung Sub District, East OKU District at a 99% confidence level. The age variable has an elasticity value of 0.004, meaning that if age increases by one year, food availability in Buay Pemuka Peliung Sub District, East OKU District, will increase by 0.004 percent. This finding aligns with Ref. [29], who found that the head of household's age affects the likelihood of farmer households being food secure. This occurs because most respondents (farmers) are non-productive or over 65 years old, and a person's age can affect productivity. As a person ages, productivity declines due to decreased physical strength compared to when they were younger, assuming other variables are constant.

The level of education has a calculated t-value > tabulated t-value, which is 17.786 > 1.98761, meaning that the level of education significantly influences the availability of household food supplies for farmers in the Buay Pemuka Peliung Sub District, East OKU District, with a confidence level of 99%. The level of education has an elasticity value of 5.220, indicating that an increase in education level by one year increases food reserve availability in the Buay Pemuka Peliung Sub District, East OKU District. This suggests that higher levels of education among household heads are associated with food security. These research findings are consistent with those obtained by [30], which states that the education level of household heads positively affects the likelihood of farmer households being food secure, assuming other variables remain constant.

The highest standard coefficient of partial regression (beta coefficient) is for land area usage, with a value of 3.099, meaning that land area usage has the greatest influence on the availability of household food supplies for farmers in the Buay Pemuka Peliung Sub District, East OKU District. Cultivated land area not only directly affects production but also influences farming management systems, which in turn affect the use of technology, capital, and other production factors, ultimately impacting production.

4. CONCLUSION

Based on the analysis results, it can be concluded that food granaries in the Buay Pemuka Peliung Sub-District, East OKU District, play a crucial role in maintaining food security for farming communities. The research identified three primary functions of these granaries: serving as storage facilities for food, mitigating food shortages during crop failures or drought seasons, and increasing group income for farmers. The presence of food granaries has proven to be highly beneficial, providing secure storage for farmers' harvests. Additionally, the study identified several factors influencing the availability of household food supplies for farmers in the Buay Pemuka Peliung Sub-District. These factors include land area (X1), income (X2), rice prices (X3), number of family members (X4), farmer age (X5), and education level (X6). Among these, land area usage was found to be the most influential factor, with a partial regression coefficient (beta coefficient) value of 3.099.

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