

ANALYSIS OF THE RELATIONSHIP OF INCOME WITH THE PROPORTION OF HOUSEHOLD FOOD EXPENDITURE OF RICE FARMS IN GAMPONG ALUE MERBAU, LANGSA CITY

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Submitted 08 July 2021; Approved 14 March 2022

ABSTRACT

The purposes of this research were 1) to analyze the household income of rice farmers in Gampong Alue Merbau, 2) to analyze the proportion of household food expenditures for rice farmers in Gampong Alue Merbau, 3) to analyze the relationship between income and the proportion of household food expenditures for rice farmers in Gampong Alue Merbau. This research was conducted in Gampong Alue Merbau, East Langsa District, Langsa City. The analytical methods used are rice farmer household income analysis, rice farmer household food expenditure proportion analysis, and Pearson Correlation analysis. The results showed that the average household income of rice farmers was Rp 2,898,804/month. The average proportion of household food expenditure is 52%. Income with the proportion of food expenditure has a significant relationship. The correlation coefficient value is -0.579, which indicates a moderate relationship. The correlation coefficient value in the analysis results is negative, which means that income and the proportion of food expenditure have an opposite relationship. If the income is high, the proportion of food expenditure is low; if the income is low, the proportion of food expenditure is high.

Keywords: *food expenditure, food security, income, household*

BACKGROUND

Food is the most important basic need for human survival. Indonesia is committed to realizing food security, as stated in Law no. 18 of 2012 concerning food. Food security is the condition of fulfilling food for the state to individuals as reflected in the availability of sufficient food both in quantity and quality, safe, nutritious, evenly distributed, and affordable. It does not conflict with the religion, belief, and culture of the community to be able to live healthy, active, and productive in a sustainable manner (Rachmat, 2015).

The Food Security Agency (BKP) at the end of 2019 noted that 88 districts in Indonesia were vulnerable to food insecurity spread across 17 provinces, one of which was Aceh Province which was categorized as vulnerable and very vulnerable. This is in accordance with BPS data for 2020 on the percentage of per capita expenditure by commodity group, and area of residence in Aceh in 2019. The percentage of community expenditure in urban areas is 49.96% for food consumption and 50.04% for non-food consumption. The percentage of community expenditure in rural areas is 60.86% for food consumption and 39.14% for non-food consumption. This situation indicates that people in rural areas are still in a condition of food insecurity and vulnerability. Therefore,

Langsa City is one of the cities in Aceh Province that through the Department of Marine Fisheries and Agriculture (DKPP) has prioritized agricultural development goals to increase food production, especially rice commodities. The area of rice plantations in Langsa City in 2018 was

1,654 ha. East Langsa District is the center of rice production in Langsa City. Gampong Alue Merbau is one of the villages in the East Langsa District with the majority of the population as rice farmers. Gampong Alue Merbau has the largest farming household, namely 268 farming households. With the largest number of farming households in Langsa City, it is proper for farmers as community food producers to be able to meet household needs, both food and non-food needs are based on household income.

Income is a factor that determines household expenses. In low-income households, food expenditure is greater than non-food expenditure. This is because the income received will be prioritized to meet food needs so that the proportion of food expenditure is high. The lower the proportion of household food expenditure, the better household food security will be (Iskandar, 2017). An analysis of the proportion of food expenditure in households is important because it is an indicator to describe the food security of rice farming households in Gampong Alue Merbau.

RESEARCH METHODS

This study used the survey method. This research was conducted in Gampong Alue Merbau, East Langsa District, Langsa City. The data was collected in the form of primary data and secondary data. The time of the research was carried out in January 2021. The data analysis methods used in this study are as follows.

Rice Farmer Household Income Analysis

Rice farming income can be calculated by the following formula.

$$\pi = TR - TC$$

Information:

π : Income (Rp/month)

TR : Total revenue (Rp)

TC : Total cost (Rp)

Farmer household income can be calculated using the following formula:

$$Pd = Pd_{on} + Pd_{off}$$

Information:

Pd : Total Farmer's Household Income (Rupiah/month)

Pd_{on} : Income from farming (Rupiah/month)

Pd_{off} : Income from outside the farm (Rupiah/month)

Proportion of Household Food Expenditure for Rice Farmers

$$PPP = \frac{PP}{TP} \times 100\%$$

Information:

PPP : Proportion of food expenditure (%)

PP : Food Expenditure (Rupiah/month)

TP : Total expenditure ((Rp/month) (Ilham and Bonar, 2008))

If the proportion of food expenditure is low ($< 60\%$ of total expenditure), it means the household is food-insecure. Otherwise, if the proportion of food expenditure is high ($\geq 60\%$ of total expenditure), it can say that the household is a food-insecure household (Mulyo et al., 2015)

The Relationship between Income and the Proportion of Household Food Expenditure for Rice Farmers

Analyzing the relationship between income and household food expenditure with Pearson Correlation analysis. The value of the correlation coefficient (r) value can be known with the SPSS 23 program. The value of the coefficient (r) ranges from -1 to $+1$. A positive value ($+$) indicates a unidirectional relationship (if one variable increases, the other variables also increase) and a negative value ($-$) indicates an opposite relationship (if one variable increases, the other variable decreases). According to Alhusin (2003) in Nilasari (2013), the value of the correlation coefficient (r) is divided into five categories as follows:

1. $0 - 0.20$: Very low
2. $0.21 - 0.40$: Low
3. $0.41 - 0.60$: Medium
4. $0.61 - 0.80$: Quite high
5. $0.81 - 1$: High

The hypotheses proposed are:

1. H_0 : There is no significant relationship between income and the proportion of household food expenditures.
2. H_1 : There is a significant relationship between income and the proportion of household food expenditures.

To test the significance level of the correlation analysis using the following criteria:

1. If the value of $\text{sig} > 0.05$, it means that H_0 is accepted.
2. If the value of $\text{sig} < 0.05$, it means that H_0 is rejected.

RESULT AND DISCUSSION

Rice Farming Income Analysis

1. Fixed Cost

Fixed costs incurred in this study are land rent and depreciation costs which are calculated in one growing season.

Table 1. Average Fixed Costs for Paddy Rice Farming in Gampong Alue Merbau 2021

No.	Description	Total Fixed Cost (Rp)
1.	Land lease	2,583,000
2.	Tool Shrink	58,525
Amount		2,641,525

Table 1 shows that the total fixed costs are Rp. 2,641,525. The cost of land rent incurred by farmers is Rp. 2,583,000. Farmers in Gampong Alue Merbau generally pay rent every harvest season

with the rice produced, which is 900 kg/ha. The rental value is because the paddy fields in Gampong Alue Merbau are semi-irrigated rice fields. The depreciation cost of the tools in this study was Rp. 58,525 which consisted of a hoe of Rp. 5,360, a sprayer of Rp. 20,640/MT, a machete of Rp. 6,400/MT, a sickle of Rp. 1,125 and a hand tractor of Rp. 25,000. The calculation of the depreciation value of the equipment uses the straight-line method between the purchase value and the economic life of the equipment.

2. Variable Cost

Variable costs incurred to buy seeds, fertilizers, pesticides, and pay labor wages. Table 2 shows that the total variable cost is Rp. 5,280,550/season. The cost of using seeds is Rp. 330.500/season. The cost of using fertilizer is Rp. 591,550/season. The cost of using pesticides is Rp. 131,833/season. Using labor is the largest cost incurred by farmers in their farming, namely Rp. 4,226,667/season. The workforce consists of family workers and outside the family who carry out seeding, land preparation, planting, fertilizing, spraying, and harvesting activities. Several rice farming activities in Gampong Alue Merbau have used the services of agricultural machines such as hand tractors and combine harvesters in carrying out farming activities such as land processing and harvesting. The costs incurred for land processing are Rp. 1,750,000/ha/season, and the costs incurred for rice harvesting activities are Rp. 2,500,000/ha/season. In planting activities, it is Rp. 1,750,00/ha/season up to Rp. 2,000,000/ha/season, and other activities, such as seeding, fertilizing, and spraying at Rp. 100,000/person/day.

Table 2. Average Variable Costs in Paddy Rice Farming in Gampong Alue Merbau in 2021

No.	Description	Total Cost (Rp)
1.	Seed	330,500
2.	Fertilizer	591,550
3.	Pesticide	131,833
4.	Labor	4,226,667
Amount		5,280,550

3. Rice Farming Income

Farming income is the difference between the costs incurred and earned income. Table 3 shows that the income from rice farming is Rp. 15,534,900/season. In this study, the amount of farmers' income calculated from the amount of rice production sold, reduced by zakat. The zakat is an obligatirmers must issue must as stated in Aceh Qanun Number 10 of 2018 concerning Baitul Mal. Farmers each harvest will issue a testicle of 10% of the resulting production. The average total fixed cost is Rp. 2,641,525/season, while the average total variable cost is Rp. 5,280,550/season. The average total cost of production is Rp. 7,922,075/season. Thus, the income of lowland rice farming is Rp. 7,612,825/season.

Table 3. Analysis of Average Costs and Income of Paddy Rice Farming in Gampong Alue Merbau, East Langsa District in 2021

No.	Description	Amount (Rp)
1.	Revenue (TR)	15,534,900
2.	Total Fixed Cost (TFC)	2,641,525
3.	Total Variable Cost (TVC)	5,280,550

4.	Total Production Cost (TFC + TVC)	7,922,075
5.	Income (π)	7,612,825

Rice Farmer Household Income Analysis

Rice farming household income is obtained from the farm and non-farm income. Table 4 shows that the average total household income of rice farmers in Gampong Alue Merbau is Rp. 2,898,804/month, which consists of farm income and non-farm income. The amount of farm income is Rp. 1,345,471/month, while the amount of non-farming income is Rp. 1,553,333/month. The percentage of farm income is 47%, while the income outside of farming is 53%. The percentage of non-farm income is greater than the percentage of farm income; this indicates that most of the farmers in Gampong Alue Merbau work outside of farming to increase household income. Meanwhile, Arida et al. (2015) reported that 94.43% of the household income of respondent farmers came from lowland rice farming, which was Rp. 1,492,634/month.

Table 4. Average Household Income of Rice Farmers in Gampong Alue Merbau in 2021

No.	Income Source	Rp/Month	Percentage (%)
1.	Farming		
	Rice Farmer	1,268,804	44
	Breeder	76,667	3
	Amount	1,345,471	47
2.	Outside Farming		
	Civil servant	200,000	7
	Trader	456,667	15
	Labor	49,333	17
	Other	403,333	14
	Amount	1,553,333	53
	Total Number	2,898,804	100

The Proportion of Household Food Expenditure for Rice Farmers

The proportion of food expenditure is the ratio between household food expenditure per month and total household food expenditure per month. Table 5 shows that the average monthly food expenditure of rice farmers in Gampong Alue Merbau is Rp. 1,427,450. The largest food expenditure is meat with a value of Rp. 334,267 or 23,42% of total food expenditure. Respondent farmer households generally have a habit of consuming fish meat rather than other types of meat.

The second-largest food expenditure is rice with a value of Rp. 276,667 or 19.38% of the total food expenditure. The third largest food expenditure is cigarettes with a value of Rp. 210,000 or 14.86% of the total food expenditure. The fourth-largest food expenditure is processed food and beverages with a value of Rp. 131,667 or 9.22% of total food expenditure. The need for vegetables is the fifth largest expenditure with a value of Rp. 112,333 or 7.87% of the total food expenditure. The lowest food expenditure was tubers with a value of 2,367 or 0.17% of the total food expenditure. A study by Praza (2020) argued that the people of Aceh prioritized meat consumption, namely fish meat, compared to other food groups, even being the largest expenditure on rice, this is because the people of Aceh have a habit of consuming fish meat.

Table 5. Average Food Expenditure of Farmers' Households for a Month in Gampong Alue Merbau in 2021

No.	Food Group	Value (Rp)	Percentage (%)
1.	Rice	276,667	19.38
2.	Corn	2,800	0.20
3.	Tubers	2,367	0.17
4.	Nuts	9,316	0.65
5.	Meat	334,267	23.42
6.	Eggs and Milk	53,733	3.76
7.	Oil and Coconut	70,400	4.93
8.	Sweetener	59,933	4.20
9.	Fruits	56,667	3.97
10.	Vegetables	112,333	7.87
11.	Know	12,833	0.90
12.	Tempe	14,000	0.98
13.	Instant noodles	19,500	1.37
14.	Drink Ingredients	32,300	2.26
15.	Spices	28,667	2.01
16.	Prepared Food and Beverages	131,667	9.22
17.	Cigarette	210,000	14.71
Amount		1,427,450	100.00

Table 6 shows that the average monthly non-food expenditure of rice farming households in Gampong Alue Merbau is Rp. 1,323,850. The largest non-food expenditure was housing and household facilities with a value of Rp. 195,533 or 14.77% of the total non-food expenditure. Expenditures for agricultural inputs are the second-largest expenditure with a value of Rp. 175,667 or 13.27% of the total non-food expenditure. Vehicle fuel expenditure became the third largest expenditure with a value of Rp. 173,000 or 13.07% of the total non-food expenditure.

Education expenditure is the fourth largest expenditure with a value of Rp. 170.033 or 13.07% of the total non-food expenditure. Expenditure on clothing needs became the fifth largest expenditure with a value of Rp. 148,467 or 11.21% of the total non-food expenditure. The transportation group became the lowest expenditure with a value of Rp. 1,100 or 0.08% of the total non-food expenditure.

Table 6. Average Non-Food Expenditure of Farmers' Households for a Month in Gampong Alue Merbau in 2021

No.	Non-Food Group	Value (Rp)	Percentage (%)
1.	Housing and Household Facilities	195,533	14.77
2.	Home Maintenance and Minor Repair	16,533	1.25
3.	Electricity	95,667	7.23
4.	Water	5,000	0.38
5.	Motor Vehicle Fuel	173,000	13.07
6.	Fuel for other purposes	43,833	3.31
7.	Education	170.033	12.84
8.	Social activities	8,167	0.62
9.	Communication	78,667	5.94

10.	Daily needs	72,567	5.48
11.	Clothing Purchase	148,467	11.21
12.	Tax	38,582	2.91
13.	Health	12,467	0.94
14.	Agricultural Study Program	175,667	13.27
15.	Venture capital	37,767	2.85
16.	Party and ceremony/festival purposes	50,800	3.84
17.	Transportation costs	1,100	0.08
Amount		1,323,850	100.00

Table 7 shows that the total expenditure of rice farming households per month is Rp. 2,751,300, which consists of food expenditure of Rp. 1,427,450 or 52% of the average total household expenditure and non-food expenditure of Rp. 1,323,850 or 48% of the average total household expenditure. This shows that the proportion of food expenditure is greater than non-food expenditure, meaning that rice farming households in Gampong Alue Merbau prioritize household income to meet their food needs.

The value of the proportion of food expenditure in the study was 52%. This value indicates that the proportion of food expenditure is relatively low, namely <60% of total expenditure, meaning that rice farming households in Gampong Alue Merbau are food insecure households. In line with Nilasari’s research (2013), the proportion value of food expenditure is 59.12% of total expenditure and the proportion of non-food expenditure is 40.88%. This means that farmer households allocate their income first for food needs, if basic needs have been met, the family will meet non-food needs.

Table 7. The Proportion of Household Food Expenditure of Farmers in Gampong Alue Merbau 2021

Expenditure	Amount (Rp/month)	Proportion (%)
Food	1,427,450	52
Non-Food	1,323,850	48
Total Expenditure	2,751,300	100

The Relationship of Income with the Proportion of Food Expenditure of Paddy Farmers

Relationship between income and the proportion of household food expenditure using Pearson correlation was analyzed using SPSS 23. Table 8 shows the results of the correlation analysis using SPSS 23 between income and the proportion of household food expenditures showing a significant value, namely 0.001. The significant value between income and the proportion of household food expenditure is $0.001 < 0.05$, if the significant value is less than 0.05 then H_0 is rejected, meaning that there is a significant relationship between income and the proportion of household food expenditure of rice farmers in Gampong Alue Merbau.

Table 8. Result of Relationship Analysis of Income and Proportion of Food Expenditure of Rice Farmers in Gampong Alue Merbau in 2021

		Correlations	
		Income Household	Proportion of Food Expenditure
Household Income	Pearson Correlation	1	-,579**

	Sig. (2-tailed)		,001
	N	30	30
Proportion of Food Expenditure	Pearson Correlation	-,579**	1
	Sig. (2-tailed)	,001	
	N	30	30

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

The results of the correlation analysis between income and the proportion of household food expenditure show the correlation coefficient value of -0.579. The value of 0.579 means that income with the proportion of food expenditure has a correlation coefficient value which shows a moderate relationship. The value of the correlation coefficient in the results of the analysis is negative, which means that the income variable and the proportion of food expenditure have an opposite relationship. If income is high, the proportion of food expenditure is low, otherwise if income is low, the proportion of food expenditure is high.

CONCLUSION AND SUGGESTION

The conclusion and suggestion from this research are bellows:

1. The average household income of rice farmers in Gampong Alue Merbau is Rp 2,898,804/month, which consists of an average farm income of Rp 1,345,471/month and an average non-farming income of Rp 1,553,333/month.
2. The average proportion of household food expenditure for rice farmers in Gampong Alue Merbau is 52%. This value indicates that food expenditure is relatively low, namely < 60% of total expenditure, meaning that rice farming households in Gampong Alue Merbau are food insecure households.
3. Income with the proportion of food expenditure has a significant relationship. The correlation coefficient value is -0.579 which indicates a moderate relationship. The correlation coefficient value in the analysis results is negative, which means that income and the proportion of food expenditure have an opposite relationship. If the income is high, the proportion of food expenditure is low, otherwise if the income is low, the proportion of food expenditure is high.

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