

Research Article

The Influence of Income, Education and Age on the Food Security of Farmer Households in Rias Village, South Bangka Regency

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Abstract: Food security is a condition where the food needs of households are met, as reflected by the adequate availability of food. Various factors can influence the food security of farmer households, including income, education, and age. This study aims to analyze and determine the influence of income, education, and age factors on the food security of farmer households in Rias Village, South Bangka Regency. The research method used in this study is a quantitative research method. The data used in this study is primary data with a sample of 97 respondents. The analytical techniques used in this study are classical assumption tests and multiple linear regression analysis. The results of the study indicate that income, education, and age factors have a significant impact on household food security in Rias Village, South Bangka Regency.

Keywords: Age, Education, Food Security, Income.

I. INTRODUCTION

The Bangka Belitung Islands are an agricultural island region that is known to have a variety of resources ranging from mineral energy to agricultural and plantation potential. The potential for agriculture to become an important sector in fulfilling people's living needs. Not only that, agriculture is the focus of how the country creates economic defense based on export-import activities. As a potential sector, agriculture is also part of the supporting economic structure outside of the industrial and service sectors. It is said this because agriculture has significant advantages in absorbing local labor (Octavia, 2021). Agriculture as the basis for national food production is still needed, especially to maintain economic stability. Therefore, national food needs currently still rely on the agricultural sector as a tool for economic development (Majidah, Sukidin and Hartanto, 2021).

Food is a series of basic needs apart from clothing and shelter. A country's growth will not continue if food needs are not met optimally. According to Wuli (2023), food security in Indonesia is still relatively low, as evidenced by the indication of an imbalance between groups of people whose consumption of rice is said to be high and people whose consumption of animal products, vegetables and fruit is said to be low. The rice plant has a significant role in the country's economy, functioning as an ingredient to meet people's basic needs and as a source of income for farmers to fulfil their livelihoods. One example is the South Bangka Regency, which is known as a rice-producing district. To meet the food needs of its population, Indonesia requires the availability of food in sufficient and distributed quantities, which meets consumption adequacy and sufficient national stock according to the operational requirements of extensive and distributed logistics.

South Bangka Regency is one of the districts in the Bangka Belitung Islands Province, which makes the largest contribution to the production of lowland rice commodity crops. According to the Central Statistics Agency for the Bangka Belitung Islands Province (2018), South Bangka Regency has the highest harvested area and rice production yields of several districts in the Bangka Belitung Islands Province. The following explains the production results and rice planting area in 2017-2022. Rias Village, located in Toboali District, South Bangka, has been recognized by the Bangka Belitung Provincial Government as a rice granary. Initially, Rias Village was the first transmigration settlement area in South Bangka. As many as 90 percent of the residents of Rias Village are involved in work as rice farmers. The South Bangka Regency Government, under the leadership of the Regent, has designated Rias Village as a food security zone. The plan is to build an agricultural market as a step to improve community welfare.

Based on this, it is necessary to carry out straightforward research in order to analyze how much influence these variables have on food security in the research entitled "Analysis of Factors that Influence the Food Security of Farmer Households in Rias Village, South Bangka Regency".



II. LITERATURE REVIEW

A) *Food security*

Food security is a condition where all individuals have adequate access, physically, socially and economically, to food that is safe, nutritious and sufficient to meet their dietary needs for a healthy and active life. This concept includes several important aspects: food availability, namely the existence of an adequate supply of food from various sources; food access, which includes the ability to obtain food through efficient income and distribution; food utilization, which includes processing and consuming food in ways that support health; and food stability, which ensures that price fluctuations, disasters or crises do not disrupt food access and availability. Food security is a crucial element in agricultural and social policy because of its direct impact on people's welfare and health (Chaireni et al., 2020). Food security is an indicator of community welfare and national independence. Food security is also related to aspects of quality, safety, diversity, nutrition, suitability and sustainability of food. Household food security can be measured through one indicator, namely looking at total expenditure which consists of food and non-food expenditure.

Many factors can cause high or low household food security. Sapuro et al. (2020) stated that the food security of farming households could be influenced by income, prices of basic commodities, and maternal nutritional knowledge. Meanwhile, according to Hernanda et al. (2017), factors that can influence the food security of farming households are income, rice production, land area, number of family members, age of the head of the family and length of education of the head of the family.

Farming household food security refers to the ability of farming families to meet their food needs in a sustainable manner, both from their own production and from economic access that allows them to buy food. This resilience is very dependent on the agricultural products they grow, access to markets to sell products and buy other necessities, as well as environmental and weather conditions that affect production. In addition, economic factors, such as fluctuations in food prices and income from agricultural products, also play an important role in ensuring the availability and access to sufficient food for farming families. Food security is important because it is the basis for the health, welfare and social stability of a society (Damayanti et al., 2016). Food security ensures that all people have sufficient, safe and nutritious access to food, which is essential for optimal growth, development and body function. Apart from that, food security also affects economic stability because a healthy and strong society is more productive. At a broader level, food security reduces the risk of social and political conflict that often arises from food scarcity or unequal distribution. In the long term, food security contributes to environmental sustainability, as it encourages wise agricultural practices and natural resource management.

B) *Income*

Income is the total real income of all household members, which is used to meet collective and individual needs in the household (Rungkat et al., 2020). Food security and income are closely related, where income influences accessibility to adequate food. This is in accordance with the food accessibility theory put forward by Dr. Shenggen Fan, according to him, low income significantly limits individual and household access to adequate and nutritious food (Fan, 2019).

C) *Education*

Jenilan (2018) suggests that education is a systematic process in which knowledge, skills, values and habits are transferred from one generation to the next. This process can take place in various settings, including schools, families, communities, and formal and informal institutions. Education aims to develop the potential of individuals so that they can function effectively in society and achieve their personal goals. The level of education possessed by farmers shows the level of knowledge and insight of farmers in applying technology and innovation to improve farming activities (Fadhilah et al., 2018). This study refers to the most recent level of formal education, such as primary school, secondary school, high school, and college, among agricultural family families in Rias Village, South Bangka Regency. Education is a purposeful and deliberate attempt to create an atmosphere for learning and a process in which pupils actively develop their capacity for religious spiritual power, self-control, personality, intellect, noble ethics, and the necessary skills.

D) *Age*

Age is not only a marker of time but also an important factor that influences various aspects of a person's life, from health education to social and legal status (Wahyuni and Lestari, 2018). Age influences farmers' behavior regarding decision-making in farming activities. The farmer's age is one of the factors related to the farmer's workability in carrying out farming activities. Farmers who work in their productive age will be better and more optimal than those in their non-productive age. Apart from that, age can also be used as a benchmark to see farmers' activity in work (Permana et al., 2016).

E) Framework of Thinking

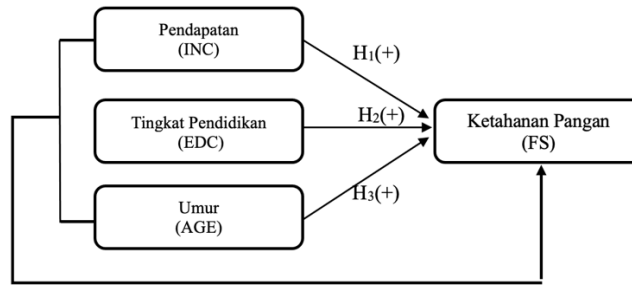


Figure 1. Thinking Framework

F) Research Methodology

This research uses a quantitative approach; namely, the results of the analysis are presented in the form of numbers, which are then interpreted and explained in a description. This research was carried out in Rias Village, South Bangka Regency. The sample used in this research was 97 farmers. Data collection was carried out using questionnaires and interviews. The analysis test was carried out using reviews version 13. The multiple linear regression test was also used in this research to predict the value of the dependent variable when the values of the independent variables were known. Apart from that, this test also aims to determine the direction of the relationship between the independent variable and the dependent variable.

$$FC = a + b1IN + b2EDU + b3AGE + e$$

- FC* = Food Security
- a* = Constant
- b1 b2 b3* = Regression coefficient
- IN* = Income
- EDU* = Education
- AGE* = Age
- e* = Error

III. RESULTS AND DISCUSSION

Based on the results of the questionnaire that was distributed to respondents and also the calculation of the Food Expenditure Share, the results of the food security of farming households in Rias Village, South Bangka Regency were obtained, namely that there were 97 respondents, 69.1% or 67 farming households were in the food secure category. There were 30.9 % or 30 farming households are in the food insecure category. Based on these results, it can be seen that more farming households are food secure than farming households that are food insecure. One indicator that supports food security in farming households is that each farmer has sufficient income for daily needs. Apart from that, farmers who cultivate a lot of their own land have barns so that access to food is abundant. The availability of sufficient food means that farming households have food stability. In terms of income, it is known that of the 97 respondents, none or 0% of farmers had an income of less than 1,000,000. Furthermore, there are 16 or 16.5% of farmers with an income of 1,000,000 – 3,000,000, there are 16 or 16.5% of farmers with an income of 3,000,000 – 5,000,000, there are 31 or 32% of farmers with an income of 5,000,000 – 7,000. 000, there are 17 or 17.5% of farmers with an income of 7,000,000 – 10,000,000, and there are 17 or 17.5% of farmers with an income of more than 10,000,000.

Meanwhile, the average income of farmers in Rias Village, South Bangka Regency itself, is 5,910,309. Based on these results, farmers have a fairly high average income. In terms of education, it is known that there are 0 farmers or 0% of farmers, who have studied for less than 6 years, there are 43 or 44.3% of farmers who have studied for 6 years, there are 21 or 21.65% of farmers who have studied for 9 years, there are 26 or 26.8% of farmers have studied for 12 years, and 7 or 7.2% of farmers have studied for more than 12 years. Meanwhile, in terms of age, of the 97 respondents, there are no or 0% of farmers aged less than 20 years, there are no or 0% of farmers aged 20-25 years, there are 19 or 19.6% of farmers aged 26-40 years, there are 73 or 75.3% of farmers are aged 41-60 years, and there are 5 or 5.1% of farmers aged more than 60 years. Based on this data, it can be seen that most farmers are aged 41-60 years.

A) Descriptive Statistics Test

Table 1. Descriptive Statistics Test

	X1	X2	X3	Y
Mean	5910309.28	8.96	48.18	0.69
Median	5000000	9	50	1
Maximum	15000000	17	65	1
Minimum	1500000	6	28	0
Std. Dev.	3161437.059	3,136	7,782	0.465
Sum	5.73E+08	869	4673	67
Sum Sq. Dev.	9.59E+14	943.8	5814.02	20.7
Observations	97	97	97	97

Based on this table, it can be seen that the mean or average value of the income variable is 5,910,309, the average value of the education variable is 9, and the average value of the age variable is 48. The maximum value of the income variable is 15,000,000, the maximum value of the education variable is 17, and the maximum value for the age variable is 65. The minimum value for the income variable is 1,500,000, the minimum value for the education variable is 6, and the minimum value for the age variable is 28. The standard deviation value for the income variable is 3161437.059, the standard deviation value for the education variable is 3.136, and the standard deviation value of the age variable is 7.782. Meanwhile, the total value or sum of the income variable is 573,300,000, the sum value of the education variable is 869, and the sum value of the age variable is 4673.

B) Classical Assumption Test

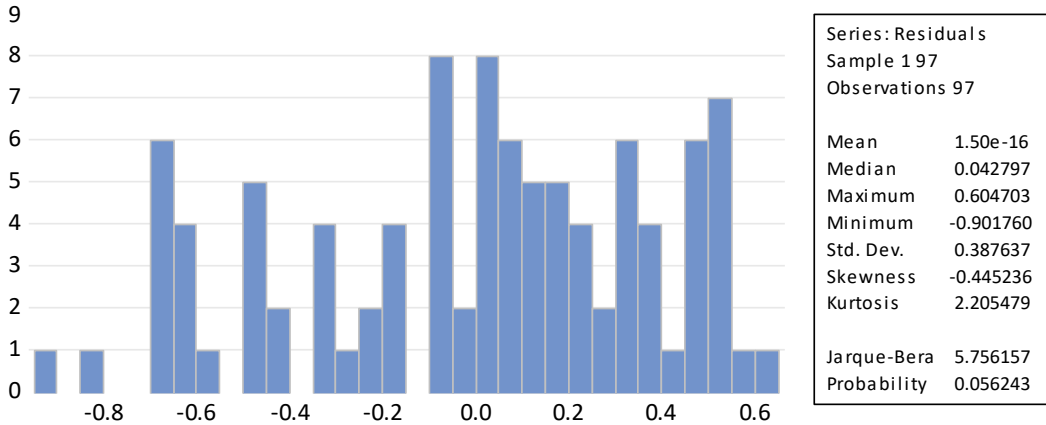


Figure 2. Normality Test Histogram

In this figure, it can be seen that the histogram results of the normality test of income, education and age variable data on the food security of farming households in Rias Village, South Bangka Regency, follow or are close to the pattern line. This shows that the data obtained and used in this research is normally distributed. In the data normality test, some criteria determine whether the data obtained is acceptable or not. If the value $probability \geq 0.05$, then the data can be said to have a normal distribution, whereas if the value $probability (2-tailed) \leq 0.05$, then the data is said to be not normally distributed and is not accepted. Based on the results of the normality test in the table, the values obtained $probability$ amounting to 0.0562, which is greater than 0.05, which means the data used in this research is normally distributed and acceptable.

Table 2. Multicollinearity Test

Variable	Centered VIF
Income	5,394
Education	1,125
Age	5,313

Based on this table, it is known that the test results show that the centered VIF value of the income variable is 5.394, the education variable is 1.125, and the age variable is 5.313, which means that these values are no more than 10, so it can be concluded that the data used in this research do not have symptoms of multicollinearity.

Table 3. Heteroscedasticity Test

Heteroskedasticity Test: Glejser			
Null hypothesis: Homoskedasticity			
F-statistic	5.125232	Prob. F(3.93)	0.0025
Obs*R-squared	13.76178	Prob. Chi-Square(3)	0.0532
Scaled explained SS	7.624766	Prob. Chi-Square(3)	0.0544

Based on table 4.3, in prob. The chi-square value obtained was 0.0532, where the value was $0.0532 > 0.05$, so it could be concluded that the data used in this research did not have heteroscedasticity or homoscedasticity.

C) Multiple Linear Regression Test

Table 4. Unstandardized Coefficients Values

Variable	B	Std. Error
C	-0.968	0.455
Income	2.94	2.95
Education	0.067	0.0136
Age	0.018	0.012

Based on this table, the results of multiple linear regression analysis show the following equation.

$$-0.968 + 2.94INC + 0.067EDC + 0.018AGE$$

The multiple linear regression equation obtained from the coefficient of each variable is a constant value that obtains a negative value of 0.968. The negative sign indicates a different direction of influence between the independent variable and the dependent variable. This shows that if all independent variables, including income, education and age, increase, the dependent variable will decrease by 0.968. The regression coefficient value of variable X1 (Income) has a positive value of 2.94, so it can be interpreted that if variable The regression coefficient value for variable X2 (Education) is positive at 0.067, it can be interpreted that if variable The regression coefficient value for variable X3 (Age) is positive at 0.018, so it can be interpreted that if variable

Table 5. T-test results

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	-0.968623	0.455116	-2.128301	0.0360
X3	0.018347	0.011906	1.541055	0.0267
X2	0.067178	0.013596	4.941105	0.0000
X1	2.94E-08	2.95E-08	0.994919	0.0224

Hypothesis testing with the t-test has criteria if the value is sig. < 0.05 , then Ha is accepted, and H0 is rejected. On the other hand, if the sig value. > 0.05 , then Ha is rejected, and H0 is accepted. Based on the t-test results in Table 4.6, which can be seen in the sig column. It can be seen that the income variable (X1) has a sig value. Equal to $0.0224 < 0.05$. In the education variable (X2), the sig value. Equal to $0.000 < 0.05$. Meanwhile, for the age variable (X3), the sig value. $0.0267 < 0.05$. Based on these results, it can be concluded that the variables income, education and age show a significant influence on the dependent variable.

Table 6. F Test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,296	3	2,099	13,531	,000b
	Residual	14,425	93	,155		
	Total	20,722	96			
a. Dependent Variable: Food Security						
b. Predictors: (Constant), Age, Education, Income						

The F test has criteria if the value is sig. < 0.05 , then Ha is accepted, and H0 is rejected conversely if the value is sig. > 0.05 , then Ha is rejected, and H0 is accepted. Based on table 4.7, the calculated f value can be seen in column F, showing that the calculated f value is 13,531 and the sig value. 0,000. The value $0.000 < 0.05$ so that it can be concluded that Ha is accepted and H0 is rejected or indicates that together, the independent indicators have a significant influence on the dependent variable, namely food security.

IV. CONCLUSION

Based on the results of the analysis and discussion regarding the factors that influence food security in Rias Village, South Bangka Regency, it was concluded that income influences in determining the food security of farming households in Rias Village, South Bangka Regency. Higher-income increases food security because it allows better access to quality and diverse food.

Education influences in determining the food security of farming households in Rias Village, South Bangka Regency. Better education improves food security through improved agricultural knowledge and practices and more effective resource management. Age influences in determining the food security of farming households in Rias Village, South Bangka Regency. Age influences food security because physical ability and agricultural productivity tend to depend on a person's productive age. Simultaneously, income, education and age influence the food security of farming households in Rias Village, South Bangka Regency. The work's key findings and consequences should be clearly explained in the Conclusions section, highlighting their importance and relevance.

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