

# The Effect of Labor Allocation on Household Welfare in Rice Farming on Tidal Areas

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**Abstract:** *The allocation of labor for farmers affects the welfare of farmer households. Decent Living Needs (KHL) for the total farmer family is the standard farmer family needs that must be fulfilled by the farmer every month. The total decent living needs of a farming family are strongly influenced by the number of members of the farming family and the calorie needs of each family member which can be grouped based on age criteria. The allocation of labor for farmers in rice - monoculture and rice - corn farming activities affects the welfare of farmer households. There is a lot of free time that farmers have in monoculture and maize rice farming activities that should be optimized by farmers, based on the results of the research, the results show that the level of farmers' welfare in rice-based farming activities is still not as prosperous because the total family income earned by farmers is still less than the need for decent living (KHL) needed by farmers every month so that they are still experiencing shortages every month.*

**Keywords:** allocation of labor, decent living needs, rice-based farming

## 1. Introduction

The level of labor productivity is the added value of the Gross Domestic Product (GDP) divided by the number of people working to produce added value. Labor Social Security is a protection for workers in the form of compensation in the form of money as a part of the lost or reduced income, and services as a result of events or conditions experienced by workers in the form of work accidents, illness, pregnancy, childbirth, old age, and passed away.

The role of sub-optimal land to support food security continues to increase in Indonesia, given the limited expansion of potential land. But until now, land development that is less than optimal is not easy. Ecological and technical constraints are the main problems. Agricultural technology innovation and business diversification can be seen as a solution to the problem (DessyAdriani et al, 2017).

Local wisdom in the use of resources on tidal land is the main source of livelihood for farmers. However, the effect of low levels of agricultural technology on rice in tidal lowlands has an impact on uncontrolled irrigation water conditions. As a result, low-income farmers develop other productive economic businesses based on local and non-local resources. The income contribution from the rice business reaches 37% of the total income of the farmers. Most farmer households have medium to high levels of livelihood vulnerability for all indicators consisting of arable land area, lowland rice productivity, per capita income, education, agricultural technology and sources of income. The existence of farmer groups has not been able to solve problems in paddy field agricultural technology and livelihood vulnerabilities due to uncontrolled irrigation water in rice fields (AgoesThony AK et al, 2020).

Based on the background that has been stated that the current working time is not optimal. The amount of free time that farmers have has an impact on the farms managed by

the farmers. Farmers' free time can be more effective and efficient if used properly. An opinion from Rahman A et al (2017), that the livelihood activities of farmer households are not entirely dependent on one farm, but come from other businesses as well. In the activities of labor groups, most of the farmers choose to work in the community and in the core company. In the self-employed group, farmers appear in a variety of business activities which include cultivating oil palm in plasma, animal husbandry, fisheries, trade and services. Therefore, researchers are interested in examining the effect of labor allocation on the welfare of farmer households in rice-based farming in tidal fields.

## 2. Literature Review

Farmers and their families need a number of funds to pay for their daily needs (living expenses). The cost of living is obtained from various sources, including from own farming sources, other sources of business in the agricultural sector, such as wages for labor on other farms and income from outside of farming. (Hernanto, 1996).

Becker (1965) using the term household income or full income, that is, if the time available is measured by the wage rate plus the income obtained from non-work activities. The concept of full income allows substitution between consumption of goods and use of time, including time for household activities. In addition, the full income concept also allows substitution between income according to economic concepts and income according to non-economic concepts. Household units can choose to work for income or not work by doing household activities or even choose to take breaks, with the aim of maximizing utility.

## 3. Research Methodology

### 3.1 Time and place of research

The research was conducted in Banyuasin Regency, South Sumatra Province. From Banyuasin Regency, one sub-

district was taken, namely TanjungLgo District, to be precise in Banyu Urip and Telang Sari Villages. To get to the location, you can use land and water transportation which is about 60 km from Palembang City with a travel time of about 2 to 4 hours.

**3.2 Research methods**

This research was conducted using a survey method with primary data collection at tidal locations, namely Banyu Urip and Telang Sari villages. The use of this method is intended to conduct comprehensive observations to obtain existing data or facts and seek factual information from the area under study and by going directly to the field, visiting and interviewing farmers in the research location.

**3.3 Withdrawal Method Example**

The sampling method was carried out using a survey method with primary data collection in two villages, and in each village 50 sampling farmers were randomly selected because the average population of each village in South Sumatra was around 500 households, meaning that each village was taken on average. 10% of the total population. Thus the number of respondents was selected as many as 100 respondents in two villages, and the sampling technique used Disproportionate Stratified Random Sampling.

**Table 1:** Withdrawal of sample samples

Business Pattern	Number of Samples n = 100	Sub-district
Rice - Monoculture	50	Telang Sari
Rice - Corn	50	Banyu Urip

**3.4 Data collection methods**

Judging from the type and source of data, the data collected in this study consisted of primary data and secondary data. Primary data obtained by observation and direct interviews in the field with sample farmers, using a list of questions. Primary data consists of quantitative and qualitative data. Qualitative data is data that is not in the form of numbers, but is extrapolated using a scoring technique. Secondary data were obtained through records or reports from the Agricultural Extension Agency, the Central Bureau of Statistics, Tanjung Lago District, Telang Sari Village and Banyu Urip Village or other reliable sources and other supporting publications related to this research.

**3.5 Data Processing Methods**

The independent variables (independent variables) are working hours, age, education, land area, number of dependents, and rice-corn dummy. Then for the dependent variable (dependent variable), namely Welfare. If Y is Welfare then it can be formulated using the following regression equation:

$$Y = f(\text{WORKING HOURS, AGE, EDUCATION, AREA LAND, AMOUNT OF LIABILITY, DUMMY RICE - CORN})$$

$$Y = \alpha + \beta_1 WH + \beta_2 A + \beta_3 I + \beta_4 AL + \beta_5 AOL + \beta_6 D_1 + e$$

Explanation:

- Y = Prosperity
- A = Intercept or Constant
- $\beta_1 \dots \beta_6$  = Estimator Parameters or Coefficients
- WH = Working Hours
- A = Age
- E = Education
- AL = Area Land (Ha)
- AOL = Amount Of Liability (HOK)
- $D_1$  = Dummy Sector (Corn = 1, Other = 0)
- e = Residual Value

The WH variable is the working hour which is the time used by the farmer to carry out farming activities. The variable A is the farmer's productive age. Variable E is education which is the level of the school level carried out by farmers which includes kindergarten, elementary school, junior high school, senior high school, diploma 3, undergraduate, postgraduate, doctoral. AL variable is the area of land used by farmers for farming, land area is included in the variable to see whether the farmer's land area decreases or increases when the farmer allocates rice-based farming labor. The AOL variable is the number of dependents of the farmer (HOK / Th). Dummy variable 1 is farmers who carry out farming activities based on rice - maize, where  $D_1 = \text{corn}, 0 = \text{others}$ . The variable e is the residual term which is expected to be zero and the "β" parameter estimate obtained via Ordinary Least Squares (OLS).

**4. Results and discussion**

To determine the effect of labor allocation on the welfare of farmer households, multiple linear regression analysis was carried out using the enter method where the variables consist of the value of welfare as the dependent variable and the independent variable consisting of 6 variables of working hours, age, education, land area, total dependents, and rice-corn dummy. The regression model used is a multiple linear regression model according to the data pattern where the linear condition can be seen from the partial plot of each factor that affects farmer welfare can be seen in Table 4 below:

**Table 4:** The results of multiple linear regression analysis

Variable	Regression Coefficient	Hope Sign	t-hit	Sig.
(Constant)	-3.610E6	-	-3.827	0,000*
Working hours (X1)	4757.650	+	3.373	0,001*
Age (X2)	10347.185	+	1.309	0,194
Education (X3)	107226.476	+	3.039	0,003*
Area Land (X4)	1.143E6	+	4.150	0,000*
Amount Of Liability (X5)	-795399.228	-	-7.624	0,000*
Dummy Rice – Corn (D1)	395237.103	+	2.135	0,035**
$R^2 = 0,630$				
F Statistic = 26,448/sig 0,000				

Explanation:

- \* =Significance 1% (0,01)
- \*\* =Significance 5% (0,05)

Based on the calculation of regression analysis using SSS 16.0, the results obtained from the effect of labor allocation on the welfare of farmer households. From the regression results, there are 2 insignificant variables, namely the welfare (constant) which is negative. This is because the

total income of the farmer family is smaller than the value of the farmer's proper living needs. A constant of -3,610,000 means that if working time (X1), age (X2), education (X3), land area (X4), number of dependents (X5), rice - maize (D1) the value is 0, then welfare (Y) the value is reduced by Rp. 3,610,000. Then the number of dependents who are also negative and insignificant, this is because the more the number of members of the farmer's family, the more food the farmer's household needs to live and it will affect the welfare of the farmer's household.

Based on multiple linear regression analysis, the estimator equation can be formulated as follows.

Estimator Equation Formulas:

$Y = f(\text{WORKING HOURS, AGE, EDUCATION, AREA LAND, AMOUNT OF LIABILITY, DUMMY RICE - CORN})$

$$Y = \alpha + \beta_1 WH + \beta_2 A + \beta_3 E + \beta_4 AL + \beta_5 AOL + \beta_6 D_1 + e$$

Estimating Equations for SPSS Regression Results 23:

$$Y = -3,610,000 + 4,757 X_1 + 10,347 X_2 + 107,226 X_3 + 1,143 X_4 - 795,399 X_5 + 395,237 D_1 + e$$

Explanation:

Y	= Prosperity
A	= Intercept or Constant
WH	= Working Hours
A	= Age
E	= Education
AL	= Area Land (Ha)
AOL	= Amount Of Liability (HOK)
D <sub>1</sub>	= Dummy Sector (Corn = 1, Other = 0)
e	= Residual Value

The regression equation above can be explained as follows:

A constant of -3,610,000: means that if JK (X1), U (X2), P (X3), LL (X4), JT (X5), Dummy Paddy - Corn (D1) is 0, then welfare (Y) is the value will be reduced by Rp. 3,610,000.

The regression output results obtained by an estimator equation that shows a negative effect on welfare, this is because the more the number of members of the farmer family, the more the needs of the farmer household will increase and will affect the welfare of the farmer household. After doing the f test and the classical assumption test on the multiple linear regression model. Then the t test was carried out to see the effect of each independent variable on the dependent variable, namely welfare. The t test aims to see whether the independent variables partially have a positive or negative effect on welfare.

#### 4.1 Working time (X1)

The working time variable has a significant effect on welfare. The results of the analysis show that the working time variable has a positive coefficient value of 4.757 with a significance value of 0.001. This shows that each additional work time unit will increase the welfare of Rp. 4,757. Working time affects welfare because the more optimal working time is used by farmers for rice-based farming

activities, it will increase farm production and will affect the welfare of farmer households.

#### 4.2. Age (X2)

The age variable has no effect on welfare. The results of the analysis show that the age variable has a coefficient value of 10,347 with a significance value of 0.194. This shows that the older a farmer is, or in other words, the older he is, the more welfare affects Rp. 10,347. This is because the productive age of farmers to carry out farming activities is between 30 and 45 years.

#### 4.3. Education (X3)

The education variable has an influence on welfare. The results of the analysis show that the education variable has a positive coefficient value of 107,226 with a significance value of 0.003. This shows that each additional education unit will increase the welfare of Rp. 107,226. Education has an effect on welfare because the higher the farmer's education, the more knowledge, expertise, and experience the farmer gets to carry out farming activities. Low education causes the limitations of farmers to gain broader knowledge, this is also supported by increasingly modern developments.

#### 4.4. Land area (X4)

Land area variable has an influence on welfare. The results of the analysis show that the variable land area has a positive coefficient value of 1.143 with a significance value of 0.000. This shows that each addition of one unit of land area will increase the welfare of Rp. 1,143. The land area has an effect on welfare because the optimal land area of 2 Ha can produce optimal production, the larger the area of land cultivated by farmers to eat, will not be optimal for farmers to do their farming activities.

#### 4.5. The number of dependents (X5)

The variable number of dependents has an influence on welfare. The analysis results show that the variable number of dependents has a negative coefficient value of -795.399 with a significance value of 0.000. This shows that each additional unit of the number of dependents will reduce the farmer household welfare by Rp. 795,399. The number of dependents has a negative effect on welfare because the increasing number of dependents of the farmer family will have an effect on the welfare of the farmer household, the amount of expenditure for consumption or education of the farmer family will be more and more spent by the farmer to meet these needs.

#### 4.6. Rice - corn (D1)

The rice-corn variable has a positive effect on the welfare of the farmer household, from the results of the regression analysis, the coefficient value is 395,237 with a significance level of 0.035. This shows that every farmer who does rice-corn-based farming will increase his welfare of Rp. 395,237. Farmers who do not do rice-corn based farming have lower welfare than farmers who do rice-corn based farming.

## 5. Conclusion

Labor allocation affects the welfare of farmers, the more optimal farmers use their spare time for other activities, the more farmers' income will increase and will affect the farmers' need for decent living. From the effect of labor allocation on the welfare of farmer households. From the regression results, there are 2 insignificant variables, namely the welfare (constant) which is negative. This is because the total income of the farmer family is smaller than the value of the farmer's proper living needs.

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