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ANALYSIS OF DETERMINANTS OF COFFE GROWER'S DECISIONS TO PARTICIPATE IN FORES AND LAND REHABILITATION PROGRAMS IN LENGKITI SUB DISTRICT, OGAN KOMERING ULU DISTRICT

Cynthia Karlina[1], Fachrurrozie Sjarkowie[2], Amruzi Minha[3]
Universitas Sriwijaya, Palembang, Indonesia[1,2,3]

cynthiakarlina090895@gmail.com[1], fsjarkowi13@gmail.com[2], aminhajunior@yahoo.com[3]

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ABSTRACT
This study analyzes internal factors (income, expenditure, land area, education, availability of labor, age and location) and external factors (transportation, communication, market, capital). Where internal and external factors can affect the participation of farmers in forest and land rehabilitation programs in Lengkiti District, Ogan Komering Ulu Regency. The approach model in this research is statistical analysis. The data processing in this research uses SPSS 26 with binary logistic regression analysis. The results showed that 120 coffee farmers from the selected sample, it was known that 53 coffee farmers participated in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency, as many as 67 coffee farmers who did not participate in the Forest and Land Rehabilitation Program in Lengkiti District. Ogan Komering Ulu Regency classified by the model is 55.8%. The variables that affect the participation of farmers in the forest and land rehabilitation program are the income variable (X1) with a sig value of .025, the land area variable (X3) with a sig value. .026, and the location variable with a value of sig. .014.

Keywords: *Participation, Forest and Land Rehabilitation, Internal Factors, External Factors.*

Corresponding Author: Cynthia Karlina
E-mail: cynthiakarlina090895@gmail.com

INTRODUCTION

The area of degraded forest land in Indonesia has reached an alarming condition, covering 48.5 million hectares consisting of 26.6 million hectares of land inside the forest, 21.9 million hectares of land outside the forest, and 11.40 million hectares of land as mining concessions (Pudjiharta et al., 2007); (Nirawati & Putranto, 2013). Meanwhile, in 2018, the area of critical land in Indonesia reached 14,006,450 hectares and the area of critical land in South Sumatra Province reached 733,756 hectares (LHK, 2018).

Forest damage also occurred in South Sumatra Province, especially in Ogan Komering Ulu Regency in the KPH XV Bukit Nanti area. The total critical land in the KPHL Unit XV Bukit later area is 43,745 ha with a criticality level of 28,554 moderately critical and 15,190 ha critical. The damage that occurred in the Bukit later area was caused by forest encroachment in the form of cultivating protected forest areas into coffee plantations, where the activity was only armed with a permit from the local village head so that farmers could plant coffee in protected forest areas. This is a serious concern because new land clearing activities are still ongoing. Communities plant coffee in protected forest areas because the location has relevant conditions for planting coffee because according to

the Plantation Service (2018), the conditions for growing coffee plants generally can grow well at an altitude above 500 meters above sea level with an amount of rainfall of 1,500 – 2,500 mm. /year, dry months 1-3 months, and the average air temperature is 17-210C for arabica and 21-240C for robusta.

The forest and land rehabilitation program aims to restore critical forest and land conditions with a focus on planting by involving community participation in its implementation (Agustinus & Mujahiddin, 2013). The RHL management process has undergone good changes with the development of capacity in terms of planning, human resources, technology and supervision. Currently, according to the regulations, rehabilitation activities are carried out with community involvement. Community empowerment in Forest and Land Rehabilitation (RHL) activities according to P.9/Menhut-II/2013 aims to increase community independence in implementing RHL on their land, both individually and in groups.

Based on the description of the background above, the forest and land rehabilitation program is an effort to restore, maintain and improve the functions of forests and land so that their carrying capacity, productivity and role in supporting life support systems are maintained (Pertiwi & Marta, 2016). The Forest and Land Rehabilitation Program was carried out on crisis lands in the Bukit Nanti Protection Forest. Given that Forest and Land Rehabilitation activities are a priority activity by involving various related parties, not only the government and the private sector but also the community, especially the community around the Forest and Land Rehabilitation location. This is what prompted researchers to be interested in conducting a study entitled "Analysis of Determinants of Coffee Farmers' Decisions to Participate in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency".

The formulation of the problem in this study is what factors influence the coffee farmers' decisions to be involved in forest and land rehabilitation programs in which there are internal and external factors which are then analyzed what variables are in these factors that influence the coffee farmers' decisions to participate in forest and land rehabilitation programs with the aim of being able to analyze what factors influence the farmers' decisions.

METHOD

This research was conducted in Lengkiti Subdistrict, in Ogan Komering Ulu Regency, precisely in Bunga Tanjung Village and Gedung Pakuan Village. The location of this research was chosen purposively with the consideration that Bunga Tanjung Village and Gedung Pakuan Village are villages that have forest and land rehabilitation programs. The method used in this study is a survey method with 120 sample farmers from 2266 farmer populations. Determination of the sample in this study using convenience sampling where the samples of farmers who have been taken are farmers who can be found consisting of farmers who are in protected forest areas and farmers outside protected forest areas. For more details, the population sample can be seen in table 1.

Table 1. Sample population in Bunga Tanjung Village and Gedunga Pakuan Village

Research sites	Farmer Characteristics	Total Population	Number of Samples (n)	Percentage (%)
Desa Bunga Tanjung	Farmers in HL. Area	740	30	25
	Farmers outside the HL. Area	691	30	25
Desa Gedung Pakuan	Farmers in HL. Area	284	30	30
	Farmers outside the HL. Area	551	30	30
		2266	120	100

To answer the problem formulation regarding what factors influence coffee farmers' decisions to be involved in forest and land rehabilitation programs in this study, a regression model was used which in this study used a binary logistic regression model. The binary logistic regression model is a data analysis method used to find the relationship between the response variable (y) which is binary (Khairunnisa et al., 2022), namely in this study y1 = participation and y2 = not participating with predictor variable X (Khotimah & Sutiono, 2014). To find out to what extent these factors influence farmers' decisions to participate in forest and land rehabilitation programs mathematically:

$$P_i = F(Z_i) = (\beta^0 + a + \beta_1 X_i) = \frac{1}{1+e^{-z}} = \frac{1}{1+e^{-1}(\beta^0+\beta^1 X)} \quad \text{..... (1)}$$

Information:
Pi = Individual Opportunity in Making Decisions
B_0 = Intercept
B_1 = Regression Coefficient
X_i = Independent Variable

The first estimate is obtained by multiplying both sides of equation (1) with 1+e-zi to get (1+e-zi) Pi = 1.....(2) Equation (2) divided by Pi then subtracting 1 will give equality:

$$e^{-z} = \frac{1}{P_i} - 1 = \frac{1-P_i}{P_i}$$

Or it can be expressed in the form of an equation:

$$e^{z}{}_i = \frac{P_i}{(1-P_i)} \quad \text{..... (3)}$$

Equation (3) is then transformed into a natural logarithm model so as to produce the following equation:

$$e^{z}i = In\ \frac{P_i}{(1-P_i)} \quad \text{..... (4)}$$

With In ezi = Zi , then equation (4) can be written as follows:

$$Z_i = In\ \frac{P_i}{(1-P_i)} = \beta_0\ \beta_1 X_i \quad \text{..... (5)}$$

Equation (5) above is known as the logit model or logistic regression model. So if written in the logit model it becomes:

In = Zi = Yi = 0 + 1X1 + 2X2 + 3X3 + 4X4 + 5 D1 + 6 D2 + 7D3

Where:
P_i = probability of RHL program by farmer
$1\text{-}P_i$ = probability that farmers are not involved in RHL
Z_i = farmer's decision to engage in RHL
Y_i = choice of RHL involvement
β_0 = Intercept
Internal
X1 = Revenue
X2 = Expenditure
X3 = Land Area
X4 = Education
X5 = Labor Availability
X6 = Age
X7 = Location
External
X8 = Transportation Availability
X9 = Communication Availability
X10 = Market Availability
X11 = Capital Availability

RESULTS AND DISCUSSION

1. Characteristics of Coffee Farmers in Lengkiti District

The characteristics of coffee farmers in Lengkiti District, Ogan Komering Ulu Regency can be seen in Table 1. Below. There are several socio-economic characteristics such as income, expenditure, land area, education, availability of labor, age.

Table 2. Characteristics of Coffee Farmers in Lengkiti District

Component	Number of Farmers		Persentase (%)	
	GP farmer	BT farmer	GP farmer	BT farmer
Lokasi				
Protected Forest Area	30	30	25	25
Non Protected Forest Area	30	30	25	25
Income (Rp/Year)				
10.000.000 - 19.999.999	16	34	13,33	28,33
20.000.000 – 29.999.999	21	4	17,50	3,33
30.000.000 – 39.999.999	15	6	12,50	5,00
>40.000.000	8	16	6,67	13,33
Expenditure (Rp/year)				
10.000.000 - 19.999.999	6	6	5,00	5,00
20.000.000 – 29.999.999	34	38	28,33	31,67
30.000.000 – 39.999.999	19	12	15,83	10,00
>40.000.000	1	4	0,83	3,33
Land area (ha)				
1	13	7	10,83	5,83
2	19	24	15,83	20,00
3	21	22	17,50	18,33
>4	7	7	5,83	5,83
Education				
No school	4	9	3,33	7,50
Primary school	38	31	31,67	25,83
Junior high school	14	18	11,67	15,00
Senior High School	4	2	3,33	1,67
Availability T.K (org)				
3-4	10	9	8,33	7,50
5-6	24	21	20,00	17,50
7-8	24	22	20,00	18,33

>9	2	8	1,67	6,67
Age (years)				
20-29	3	3	2,50	2,50
30-39	13	11	10,83	9,17
40-49	20	13	16,67	10,83
>50	24	33	20,00	27,50

GP farmers are farmers from Gedung Pakuan Village and BT farmers are farmers from Bunga Tanjung Village, Lengkiti District who are included in the villages in the target of implementing forest and land rehabilitation programs in 2019 this is because in this area there are protected forest area which is included in the working area of KPH Bukit later. In addition to being the target village of the forest and land rehabilitation program in this sub-district, there is also the opening of protected forest land by the community which is intended for coffee plantations.

From Table 2. It can be seen that the level of education in Gedung Pakuon Village can be said to be low at 3.33% or as many as 4 people who graduated from high school, this also applies in Bunga Tanjung Village which has a percentage of high school graduates of 1.67 or as many as 2 person. This can be influenced by the absence of SMA in the two villages so that if they want to continue their education, they must go to another village.

Farmers' income is one of the factors that can influence coffee farmers' decisions to participate in forest and land rehabilitation programs. This is because income will affect the welfare of coffee farmers, with coffee farmers participating in forest and land rehabilitation programs, they will get additional income from activities carried out by forest and land rehabilitation programs such as receiving wages for transportation services (both goods/people), farmers who participate in the rehabilitation program will also receive assistance in the form of plant seeds, and other activities that will increase farmers' income. Farmers' income can also be seen in Table 2.

The next thing that can be a determining factor for coffee farmers' decisions to participate in forest and land rehabilitation programs is land area. From Table 2. it can be seen that the land area of the majority of farmers is in the range of 2-3 ha. This is also in line with the habit of the community where the wider the land, the more likely they are to clear land in the protected forest area. So that later it will be in line with the location, where the location of the protected forest area will be a priority target in the forest and land rehabilitation program.

2. Analysis of Determinants of Coffee Farmers' Decisions to Participate in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency

Based on primary data processing, to determine the factors of income (X1), expenditure (X2), land area (X3), education (X4), labor availability (X5), age (X6), location (X7), transportation (X8), Communication (X9), market (X10), and Capital (X11) on the decision makers of coffee farmers to participate in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Regency. The results of calculations using SPSS 26 with binary logistic regression analysis can be seen in the following sub-chapter.

a. Logistics Regression Interpretation with SPSS

In this study, the sample used was 120 samples, it can be seen from table 3. Case Processing Summary. Where in this table it is known that there is no miss in the data entered.

Table 3. Case Processing Summary

Unweighted Cases [a]		**N**	**Percent**
Selected Cases	Include in Analysis	120,0	100,0
	Missing Cases	0	.0
	Total	120,0	100.0
Unselected Ceses		0	.0
Total		**120**	**100.0**

b. Odds Ratio

The following is the interpretation of the odds ratio in this case, it can be seen from the variable in Equition of each predictor variable that is included in the model of factors that influence coffee's decision to participate in forest and land rehabilitation programs.

Table 4. Odds Ratio

Variables in the Equation

		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I.for EXP(B)**	
								Lower	**Upper**
Step 1[a]	Income	.000	.000	4.993	1	.025	1.000	1.000	1.000
	Expenditure	.000	.000	.017	1	.897	1.000	1.000	1.000
	Land area	-2.853	1.278	4.982	1	.026	.058	.005	.706
	Education	-.766	1.057	.526	1	.468	.465	.059	3.689
	Kindergarten Availability	.041	.351	.014	1	.907	1.042	.524	2.071
	Age	.114	.081	1.991	1	.158	1.120	.957	1.312
	Location	15.137	6.157	6.045	1	.014	3750204.202	21.551	652595802150.573
	Transportation	-2.280	1.883	1.466	1	.226	.102	.003	4.100
	Communication	.161	1.254	.016	1	.898	1.175	.101	13.712
	Market	-1.410	4.019	.123	1	.726	.244	.000	643.219
	Capital	-4.149	2.659	2.435	1	.119	.016	.000	2.894
	Constant	-8.729	9.482	.847	1	.357	.000		

a. Variable(s) entered on step 1: Income, Expenditure, Land area, Education, Kindergarten Availability, Age, Location, Transportation, Communication, Market, Capital.

The independent variables that significantly influence the farmer's decision to participate in the forest and land rehabilitation program are the income variable, land area,

and location variable. The real level used in this study is 5% so that the independent variable is declared to have a significant effect if it has an error value of less than 5%. Other variables, namely expenditure, education, availability of labor, age, transportation, communication, market, and capital have no significant effect on farmers' decisions to participate in forest and land rehabilitation programs. The model obtained from the results of the logistic regression analysis with the coefficient values in Table 5. is as follows:

$$Y = \ln\left(\frac{p}{1-p}\right) = -8.729 + 0.0001X_1 + 0.0001X_2 - 2.853X_3 - 0.766X_4 + 0.041X_5 + 0.114X_6 + 15.137X_7 - 2.280X_8 + 0.161X_9 - 1.410X_{10} - 4.149X_{11}$$

From Table 4. It is known that the significant variable is the income variable (X1) with a significant value of .025 which can be interpreted that a decrease or increase in farmers' income can affect the coffee farmers' decision to participate in forest and land rehabilitation programs, this is in line with the research. conducted by Yohan Putirulan (2017) where the lower the income, the higher the participation. The land area variable (X3) with a significant value of .026, and the location variable with a significant value of .014.

In logistic regression analysis, it is necessary to test the classical assumption in the form of a multicollinearity test. If among the independent variables there are no independent variables that have a high correlation with each other, it can be concluded that there is no multicollinearity disorder in the research model.

Table 5. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.086	.201		.427	.670		
	Income	5.391E-9	.000	.170	3.053	.003	.630	1.587
	Expenditure	-9.687E-11	.000	-.001	-.025	.980	.737	1.357
	Land area	-.075	.025	-.162	-3.034	.003	.682	1.466
	Education	-.013	.032	-.019	-.401	.689	.907	1.102
	Kindergarten Availability	.001	.014	.004	.080	.936	.936	1.068
	Age	.001	.002	.024	.514	.608	.880	1.136
	Location	.844	.046	.850	18.247	.000	.899	1.113
	Transportation	-.023	.059	-.018	-.387	.700	.910	1.098
	Communication	.033	.047	.033	.704	.483	.880	1.137
	Market	-.057	.064	-.041	-.889	.376	.913	1.096
	Capital	-.016	.056	-.013	-.293	.770	.964	1.037

a. Dependent Variable: Opt-in

The basis for taking the multicollinearity test can be seen from the tolerance value which if it is greater than > 0.10 then it means that multicollinearity does not occur, apart from the multicollinearity tolerance value can also be seen from the VIF value which if the VIF value is less than <10.00 then it means that there is no multicollinearity .

From Table 5. It is known that the entire tolerance value of the independent variable is greater than > 0.10 and the VIF value is < 10.00 it can be said that the independent variable does not occur multicollinearity.

The significant influence of each independent variable on the coffee farmer's decision to participate in the forest and land rehabilitation program in Lengkiti District, Ogan Komering Ulu Regency can be explained in detail as follows:

1) Income (X1)

   Income is a conjecture variable where income shows the amount of coffee farmers' income per year. Based on the results of the logistic regression analysis, the income variable (X1) has a sig value. of 0.025 or an error value of 2.5%. This value indicates that at the 95% confidence level, the income variable has a significant effect on the coffee farmers' decision to participate in the forest and land rehabilitation program. The coefficient of the results obtained is positive (+0.0001) and the value of the ood ratio or Exp (β) is 1,000. This means that if income increases by Rp. 1, it will increase farmers' opportunities to participate in forest and land rehabilitation programs. In other words, the chances of farmers participating in the forest and land rehabilitation program are 1 times higher than not participating in the forest and land rehabilitation program assuming other variables are held constant.

2) Land Area (X3)

   Land area is one of the factors that are thought to influence coffee farmers' decisions to participate in forest and land rehabilitation programs. Based on the results of the logit regression analysis, the variable land area (X3) has a sig value. of 0.026 or an error value of 2.6%. This value indicates that at the 95% confidence level, the variable area of land has a significant effect on the coffee farmer's decision to participate in the forest and land rehabilitation program. The coefficient of the results obtained is negative (-2.853) and the odd ratio or Exp (β) value is 0.058. This means that if the land area is reduced by 2 ha, the opportunity for coffee farmers to participate in forest and land rehabilitation programs will increase by 58 times. In other words, the chance of farmers participating in the forest and land rehabilitation program is 58 times higher than not participating in the forest and land rehabilitation program assuming other variables are held constant.

3) Location (X7)

   Location is one of the factors thought to influence coffee farmers' decisions to participate in forest and land rehabilitation programs. Based on the results of the logit regression analysis, the location variable (X7) has a sig value. of 0.014 or an error value of 1.4%. This value indicates that at the 95% confidence level, the location variable has a

significant effect on the coffee farmer's decision to participate in the forest and land rehabilitation program. The coefficient of the results obtained is positive (+15,137) and the odd ratio or Exp (β) value is 3750204,202. This means that if the location increases by 15,137, the opportunity for coffee farmers to participate in forest and land rehabilitation programs will increase by 3750204 times. In other words, the chance of farmers participating in the forest and land rehabilitation program is 3750204 times higher than not participating in the forest and land rehabilitation program assuming other variables are held constant.

CONCLUSION

Based on the results of research and discussion of the analysis of the determinants of coffee farmers' decisions to participate in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency, it can be concluded that as many as 120 coffee farmers from the selected sample, it is known that 53 coffee farmers participated in the Forest Rehabilitation Program and Land In Lengkiti Subdistrict, Ogan Komering Ulu Regency, as many as 67 coffee farmers who did not participate in the Forest and Land Rehabilitation Program in Lengkiti Subdistrict, Ogan Komering Ulu Regency, were classified by the model by 55.8%. The variables that influence the coffee farmers' decision-making factors to take part in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency, are income variable (X1) with a sig value of .025, land area variable (X3) with a sig value of .0.26, location variable (X7) with a sig value of .014. Variables that do not affect the determinants of coffee farmers' decisions to take part in the Forest and Land Rehabilitation Program in Lengkiti District, Ogan Komering Ulu Regency, namely the expenditure variable (X2), education variable (X4), labor availability variable (X5), age variable (X6), transportation variable (X8), communication variable (X9), market variable (X10) and capital variable (X11).

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