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Participation of Smallholders in Rubber to Oil Palm Conversion Activities at Wisma Tani KUD, Rokan Hulu Regency

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ABSTRACT

The conversion of rubber trees to oil palm is a collaborative effort by smallholders affiliated with the Wisma Tani KUD and PTPN V. The collaboration exists to help smallholders who are struggling to get funding to convert rubber plants to oil palm. The purpose of this research is to identify the characteristics of smallholders who took part in the conversion of rubber plants to oil palm at Wisma Tani KUD Rokan Hulu Regency. Understanding the extent of smallholder engagement in the implementation of rubber to oil palm conversion activities at Wisma Tani KUD Rokan Hulu Regency. Understanding the impact of smallholder characteristics on smallholder participation in the implementation of rubber to oil palm conversion operations at Wisma Tani Hulu Regency KUD Rokan. This study used cluster random sampling and was done in Hot Water Village, Pendalian IV Koto District, Rokan Hulu Regency, with a sample of 40 respondents. Descriptive statistical analysis and multiple regression analysis were employed. According to the findings of this study, smallholder participation in the planning stage is high, medium in the execution stage, high in the evaluation stage, and high in the exploitation of results. Education and land area have a substantial effect on smallholder involvement, whereas age, experience, and income have no significant effect on smallholder participation.

Keywords: opt-in, conversion, rubber to palm oil

INTRODUCTION

Rubber is one of the important plantation commodities both as a source of income, employment opportunities and foreign exchange but Indonesia still faces several obstacles, namely low productivity, especially people's rubber which constitutes the majority (91%) of the national rubber area and a limited variety of processed products, which is dominated by crumb rubber. The low productivity of smallholder rubber plantations is caused by the large number of old, damaged and unproductive areas, the use of non-superior clone seeds and forest-like garden conditions (Directorate General of Plantations of Riau Province, 2021). The plantation commodity that is widely cultivated today is palm oil which plays an important role in the national economy. The economic view of oil palm has more advantages than rubber where palm oil income is greater than the income of rubber farmers (Zega, 2014).

The impact of all of this on the development of natural rubber has decreased as well as in terms of price. Based on data from the Directorate General of Plantations of Riau Province (2021), the area of rubber plantations has decreased, in 2017 it was 349,370 ha and in 2021 it dropped to 330,359 ha. There was a land conversion from rubber plantations to oil palm plantations. Meanwhile, oil palm plantations are growing rapidly, namely in 2017 covering an area of 2,703,199 ha to 2,895,083 ha in 2021.

The economic view of oil palm has more advantages than rubber where palm oil income is greater than the income of rubber farmers and the community's view of rubber whose price always decreases so that it reduces the income of smallholders then caused by old rubber plants so that rubber productivity decreases. In addition to oil palm, rubber plantations are also among the largest foreign exchange contributors to countries that have considerable export opportunities. In addition to export opportunities, rubber is also still very valuable domestically. Potential markets that still use rubber are the tire industry, automotive, asphalt, and others (Suhariyanto, 2019).

Conversion of agricultural land is one tangible form of impact and consequence due to increasing human needs. The increase in population and the demand for economic growth have caused the demand for land resources to continue to grow every time, this will encourage land conversion (Dinaryati, 2014). There are many smallholders who want to change their rubber plants to oil palm, so in this case the Wisma Tani KUD seeks partnership cooperation and successfully collaborates with a core company, namely PT Perkebunan

Nusantara V as a partner or core, cooperation is present to solve problems for smallholders who have difficulty finding capital in converting rubber plants to oil palm.

One of the important factors that determine the success of rubber to oil palm plantation conversion activities is the participation of smallholders who participate in the conversion activities. Participation is the involvement of an individual or group in achieving goals and the division of authority or shared responsibility (Alif, 2017). Without the participation of smallholders, conversion activities will not succeed because smallholders are the main actors in agricultural development programs. The participation of smallholders is more activated in crop conversion activities starting from the planning, implementation and evaluation stages, to enjoying the results.

Based on the description above, it is necessary to conduct research on how the characteristics of smallholders who participate in the conversion of rubber plants to oil palm, how the level of participation of smallholders in the implementation of rubber to oil palm conversion activities, how the characteristics of smallholders affect the level of participation of smallholders in the implementation of rubber to oil palm conversion activities. This study aims to analyze the characteristics of smallholders, analyze the level of participation of smallholders and analyze the influence of smallholder characteristics on the level of participation of smallholders in the conversion of rubber plants to oil palm in Wisma Tani KUD Rokan Hulu Regency.

RESEARCH METHODS

This research was conducted at Wisma Tani KUD, Hot Water Village, Rokan IV Koto District, Rokan Hulu Regency. The location selection was based on the fact that the village is one of the villages where rubber to oil palm conversion activities are carried out. The research will be conducted in April – December 2022.

The method used in this study uses the survey method. Sampling in this study is *Cluster Random Sampling*, which determines the sample based on the regional group of population members, the subject of the study will be according to the area or place of domicile. The population in this study was plasma planters totaling 375 people. Cluster *Random Sampling* respondents in this study amounted to 40 people.

The data needed in this study are primary data and secondary data. The primary data needed in this study is in the form of data on the characteristics of smallholders who participated in the conversion of rubber plants to oil palm including (age, education, land area, experience, income). Primary data were obtained through the results of interviews and filling out questionnaires by respondents. The required secondary data is obtained from government agencies or institutions such as Village Offices, Village Unit Cooperatives (KUD), Central Statistics Agency (BPS), Rokan Hulu Regency Plantation Office and other sources.

Data analysis in this study used descriptive analysis techniques, Likert scale and multiple regression analysis. Descriptive statistical analysis was used to analyze the characteristics of smallholders, the characteristics of smallholders in this study consisted of age, education, land area, experience and income. The Likert scale is used to determine the level of participation of smallholders in conversion activities, namely providing several questions based on indicators with alternative tiered answers and providing answer scores, while the multiple regression method is used to analyze factors that affect the participation rate of smallholders. The level of participation of smallholders in the implementation of rubber to oil palm conversion activities using the Likert scale and giving scores to each answer selected and analyzed. There are five answer choices on the questionnaire, namely:

Table 1. Questionnaire score weighting

Description	Value Weight
Very High (ST)	5
High (T)	4
Currently (S)	3
Low (R)	2
Very low (SR)	1

Based on the score obtained from variable Y, it can be measured how the level of participation of smallholders in the conversion of rubber plants to oil palm. To find out the level (N) can use the formula below (Riduwan and Sunarto, 2014).

N = (Total value obtained)/(Maximum value achieved) × 100%

Information:

N = participation of smallholders in the conversion of rubber plants to oil palm

Description: Score Interpretation Criteria (Riduwan and Sunarto, 2014).

Table 2. Interpretation of smallholder participation rate scores

Quisioner Score	Category
0% - 20%	Very High
21% - 40%	High
41% - 60%	Currently
61% - 80%	Low
81% - 100%	Very low

Source: Riduwan and Sunarto (2014)

This study uses ordinal data types, one of the requirements for parametric analysis is that the data used is at least interval scale, so it is necessary to transform ordinal data into interval data. This data transformation is carried out so that the data is normally distributed so that then the data can be tested for classical assumptions before being analyzed using multiple linear regression.

The method used to analyze the influence of smallholder characteristics on the level of participation of smallholders in the implementation of crop conversion programs using multiple regression analysis. With the equation of multiple regression models used in this study are as follows:

$$Y=a+ \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \varepsilon$$

Keterangan:

Y = Level of participant
a = Konstanta Coefisien
b1 - b10 = Regresi Coefisien
X_1 = Famer Age (tahun)
X_2 = Education (primary - college)
X_3 = Land area (ha)
X_4 = Experiance (tahun)
X_5 = Income (Rp)
ε = Eror

If the classical assumption test has been fulfilled and a model has been obtained from the multiple linera regression equation, the next step is to test the suitability of the multiple linear regression model, namely by using the coefficient of determination (R^2), simultaneous test (F test) and pasial test (t test).

Test Coefficient of Determination (R^2), a value close to 1 means that the independent variables provide almost all the information needed to predict the variation of the dependent variable (Ghozali, 2018). In this study, determination analysis was used to determine how much the ability of the independent variable to explain the variation of the dependent variable.

Concurrent Test (Test F), used to determine whether or not there is a joint or simultaneous influence between the independent variable and the dependent variable. With the criterion of rejecting H_0 and H_1 accepted if the Fcalculate value is > Ftable and the significance value is small from 0.05.

Partial Test (T test), used to test the effect of each independent variable used in this study on the dependent variable partially. H_0 rejected and H_1 accepted if t is calculated > t table and the significance value is small from 0.05, so that the independent variable partially has a significant influence on the dependent variable.

RESULTS AND DISCUSSION

Characteristics of planters

The characteristics of smallholders are a general description of the condition of smallholders who participate in the conversion of rubber plants to oil palm at Wisma Tani KUD. The characteristics of planters can be seen through age, education, land area, experience, income. The characteristics of smallholders who participated in the conversion of rubber plants to oil palm can be seen in Table 3.

Table 3. Characteristics of smallholders who participate in rubber to palm oil conversion activities

No	Farmer Caracteristic	Amount (Orang)	Presentase (%)
1	Age (year)		
	20 – 29	4	10%
	30 - 39	4	10%
	40 – 49	4	10%
	50 – 59	10	25%
	> 60	18	45%
2	Education		
	Primary	26	65%
	Junior High School	1	2,5%
	Senior High School	11	27,5%
	Bachelor	1	2,5%
	Magister	1	2,5%
3	Land Areal		
➢	< 2	1	2,5%
	$> 2 – \leq 4$	34	85%
	$> 4 – \leq 6$	2	5%
	$> 6 – \leq 8$	2	5%
	> 8	1	2,5%
4	Experiance		
	<10	19	47,5%
	11 – 20	16	40%
	>20	5	12,5%
5	Income		
	Low	1	2,5%
	Middle	12	30%
	High	9	22,5%
	Very High	18	45%

Source: Processed Data (2022)

Age is a factor that affects a person's physical ability to carry out activities. One indicator in determining work productivity in conducting business development is the age level, where relatively young farmers are stronger at work, dexterous, easily accepting of new innovations, responsive to the surrounding environment when compared to workers who already have a relatively old age often reject new innovations. The majority of planters are in productive age with 34 people or 85%.

Education is the main factor that plays a role in increasing one's information and knowledge and in general, the higher one's education, the easier it is to receive information. The education level aims to assess and see the ability to think and the ability to analyze the community environment in carrying out performance and participating in the implementation of rubber to oil palm conversion activities. The education level of planters who have the highest percentage is farmers with 26 elementary school graduates with a percentage of 65%.

Land area is an important factor in running a farm, the land area referred to in this study is the area of land owned by farmers who participate in the conversion of rubber plants to oil palm. The area of land of planters who have the highest percentage is the area of land in the range of > 2 – ≤ 4 hectares with a percentage of 85% (34 people).

Farming experience means that the length of time farmers carry out various agricultural activities. Farm experience also affects the success of the business. Farming experience can indirectly affect the success of farming, farming experience can also encourage and support the achievement of expected production in farming. The experience of smallholders who have the highest percentage is experience in the span of <10 years with a percentage of 47.5% (19 people).

The income referred to in this study is the income obtained by farmers both from their farming and outside their farming which is obtained every month and used to meet their living needs. If related to the conversion of rubber plants to oil palm, some smallholders will experience loss of income for the next 4 years, because their places and livelihoods will be converted so that their income levels will be reduced (Pambela, 2012). The income of smallholders who have the highest percentage is income that is in the very high range with a percentage of 45% (18 people).

The level of participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD

Participation is a form of involvement of a person or group of community members in an activity. Good participation is needed in order to achieve the objectives of the activities carried out. The level of participation of smallholders who participate in the conversion of rubber plants to oil palm will be discussed from four stages of participation, namely the planning stage, the implementation stage, the evaluation stage and the utilization stage.

The results of measuring the level of participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD as a whole are included in the high category with a percentage of 71%. Further scores and categories of smallholder participation rates can be seen in Table 4 below.

Table 4. The level of participation of smallholders in the conversion of rubber plants to oil palm

No	Participation Stages	Average Scroll	Category
1	Planing	72%	High
2	Implementation	64%	High
3	Evaluasion	77%	High
4	Utilization of results	71%	High
	Average Presentase	71%	High

Source: Processed Data (2022)

The highest-scoring recapitulation scores are seen at the evaluation stage, with 71% falling into the high group. The evaluation stage is critical for smallholders because it allows them to monitor the development of their oil palm plants, which will be their primary source of income. This is consistent with Mardikanto's (2013) research, which explains that monitoring and evaluation activities of development programs and projects are critical to ensuring that objectives are met as expected, as well as obtaining feedback on problems and constraints encountered during the development's implementation.

The lowest score is at the implementation stage with a percentage of 64% included in the high category. This demonstrates that just a few smallholders are present in the execution of conversion activities; the factor influencing this stage of implementation is that smallholders have other primary jobs that require them to engage in this stage of implementation. Work or livelihood is tied to one's free time and revenue

earned, therefore smallholders who make a living from oil palm plantations will devote more free time to activities that can supplement their source of income.

Phase of Planning

The total planning stage shows that the average participation of smallholders who engaged in the conversion of rubber plants to oil palm at the Wisma Tani KUD during the planning stage was 71%. This demonstrates that smallholder participation in the discussion forum demonstrates that farmers are interested in performing plant conversion operations, and that all information connected to conversion activities will be delivered and discussed to smallholders through this discussion forum. In terms of conversion activities, some smallholders agree that there will be conversion activities because they believe it is time to replace unproductive rubber plants with more valuable oil palm trees.

Table 5. Participation of planters at the planning stage

No	Description	Score Obtained	Maks Score	Presentase	Category
1	Planters are participating in forums to discuss the implementation of actions to convert rubber plants to oil palm..	146	200	73%	High
2	Planters participate in decision-making forums discussing activities to convert rubber plants to oil palm.	142	200	71%	High
	Amount	288	400	72%	High

Source: Processed Data (2022)

Implementation Phase

Overall, the participation rate of smallholders at the implementation stage is included in the high category with a percentage of 64%. This shows that the smallholders who are present in every process of implementing this conversion activity are smallholders whose main job is as a farmer so that every process and stage in the implementation is always present and monitored. Some smallholders involved in the technical implementation of rubber to oil palm conversion activities, farmers involved in technical implementation are farmers who participate as daily workers and become permanent jobs for smallholders. Meanwhile, smallholders who do not participate in the technical implementation hand over the management of their plantations to the core company as the implementer

Table 6. Participation of smallholders at the implementation stage

No	Description	Score Obtained	Maks Score	Presentase	Category
1	Planters were also present during the activities to transform rubber trees into oil palm.	124	200	62%	Tinggi
2	Planters help with the technical implementation of rubber plant conversion into oil palm.	132	200	66%	Tinggi
	Amount	256	400	64%	Tinggi

Source: Processed Data (2022)

Evaluation Phase

Table 7. Participation of smallholders at the evaluation stage

No	Description	Score Obtained	Maks Score	Presentase	Category
1	Planters will take the opportunity to see my rubber plant to oil palm conversion procedures.	174	200	87%	Very High
2	Planters will offer feedback on the monitoring and evaluation of rubber plant conversion efforts into oil palm.	135	200	67%	High
	Jumlah	309	400	77%	High

Source: Processed Data (2022)

Overall, the participation rate of smallholders who participated in the conversion of rubber plants to oil palm at the Wisma Tani KUD at the evaluation stage was in the high category with a percentage of 77%. This shows that most farmers take the time to see the development of their gardens, evaluation being one of the important stages in this activity. Through this evaluation, you can find out the condition of problems that occur in the field so that later input or suggestions can be given. According to Ritonga (2021), stated that the evaluation was carried out to determine the level of understanding and empowerment about the activities held, both directly and indirectly. Evaluation is carried out at the end of the activity to correct deficiencies that occur during the activity and make corrections to the results of the activity.

Yield Utilization Stage

Table 8. Participation of smallholders at the stage of yield utilization

No	Description	Score Obtained	Maks Score	Presentase	Category
1	Planters contribute to the utilization of the results of rubber plant conversion activities to oil palm by preserving the outcomes of rubber plant conversion activities to oil palm.	142	200	71%	High
2	Planters profit from good and correct rubber-to-oil-palm conversion processes.	144	200	72%	High
	Amount	286	400	71%	High

Source: Processed Data (2022)

Overall, the participation rate of smallholders who participated in the conversion of rubber plants to oil palm at the Wisma Tani KUD at the stage of yield utilization was included in the high category with a percentage of 71%. This shows that most smallholders who participate in rubber to oil palm conversion activities benefit from plantation maintenance and crop conversion techniques. Utilization of results is the final stage in the implementation of rubber to oil palm conversion activities. According to Batubara (2016), the level of participation at the stage of enjoying the results of the program and its benefits can be known from the presence or absence of economic, physical benefits obtained after all stages in the implementation of the program are implemented.

Factors Influencing the Participation of Smallholders in Rubber to Oil Palm Conversion Activities at Wisma Tani KUD

The results of this study have met the requirements of classical assumptions so that they can be analyzed using multiple regression linear to determine the factors that influence the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD. The results of multiple linear regression processing in this study resulted in regression coefficients which can be seen in Table 9 below.

Table 9. Results of regression analysis of factors affecting the participation of smallholders

Model	Unstandardized Coefficients		Standardized Coefficients	Uji F		Uji t	
	B	Std. Error	Beta	F hitung	Sig	t hitung	Sig
(Constant)	21,296	4,609		2,881	0,020	4,620	,000
Age (X1)	,089	,067	,032			,135	,153
Education (X2)	,223	,847	,066			2,263	,004
Land Areal (X3)	,250	,523	,000			2,202	,029
Experiance (X4)	,119	,133	,026			,443	,087
Income (X5)	,057	,000	-,226			1,069	,292

Konstanta : 21,296
R^2 : 0,890
F tabel : 2,64
t Tabel : 2,030

Source: Processed Data (2022)

The equation of multiple linear regression analysis in this study analyzes the influence of ageX_1 (), education (), land area (), experience (), income (), on the $X_2X_3X_4X_5$dependent variable of partial participation level (Y) in rubber to oil palm conversion activities at Wisma Tani KUD.
Farmer participation (Y) = 21.296 + 0.089 + 0.223 – 0.250 + 0.119 - $X_1X_2X_3X_4$ 0,057X_5 + ε

Significant Influential Factors

1. Education
   Education (X_2) has a value of 2.263 2.030 with a significant value of 0.004 0.05. So it can be said that education partially has a significant influence on the participation of smallholders in the conversion of rubber plants to oil palm in Wisma Tani KUD. A positive t-value indicates that the educational variable t_{hitung} >< (X_2) has a unidirectional relationship with the participation of farmers (Y).
   The results showed that the higher the education of smallholders, the higher the participation rate of smallholders. The level of education is also one of the success factors for farmers in managing their farms because it can affect the mindset and better reasoning, so that the longer someone receives education the more rational it will be. According to research by Melis et al (2016), it was concluded that people who have a high level of education usually have great attention to the activities carried out and education has a great influence on community participation in a development activity.
2. Land
   Land area (X_3) has a value of 2.202 2.030 with a significant value of 0.029 0.05. So it can be said that the partial land area has a significant influence on the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD. A positive t-value indicates that the variable land area t_{hitung} <> (X_3) has a unidirectional relationship with the participation of smallholders (Y).
   Most smallholders assume that whatever area of land is used by smallholders in participating in rubber to oil palm conversion activities can affect the participation of smallholders because most smallholders still have other land that is still producing. This is in line with Yuli's research (2019), showing that narrow or large land, smallholders can cultivate oil palm plants in the hope that economic needs can be met.

Factors that don't have a Significant Effect

1. Age
   Age (X_1) has a value of 0.135 2.030 with a significant value of 0.153 0.05. So it can be said that partial age does not have a significant effect on the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD. A positive t-value indicates that the age variable t_{hitung} << (X_1) has a unidirectional relationship with the participation of planters (Y). Age will affect physical ability and response to new things in farming. There is a tendency that young farmers adopt an innovation faster because young farmers have the spirit to know and find out what they don't know yet.

2. Experience
   Experience (X_4) has a value of 0.443 2.030 with a significant value of 0.087 0.05. So it can be said that partial experience does not have a significant effect on the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD. A positive t-value indicates that the experience variable t_{hitung} <> (X_5) has a unidirectional relationship with smallholder participation (Y). Most smallholders who participate in the conversion of rubber plants to oil palm tend to have less experience, this condition occurs because previously farmers managed their farming on rubber plants so that farmers who have long experience in rubber farming compared to oil palm.

3. Income
   Revenue (X_4) has a value of 1.069 2.030 with a significant value of 0.292 0.05. So it can be said that partially income does not have a significant effect on the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD. A positive t-value indicates that the income variable t_{hitung} >> (X_4) has a unidirectional relationship with smallholder participation (Y). Most of the income of smallholders does not come from land that participates in conversion activities, but other land that is already producing or other income from the planter's side business. Thus, the large income of smallholders does not have a significant effect on the level of participation of smallholders in the conversion of rubber plants to oil palm. This is in line with the research of Arman and Sembiring (2018), that income has no real effect on farmers' decisions in implementing replanting.

Hypothesis testing is carried out after performing multiple linear regression analysis. Some of the hypothesis tests include the following:

1. Test F shows that all independent variables, namely the characteristics of smallholders that affect participation, have a joint influence on the dependent variable (participation) of smallholders in the conversion of rubber plants to oil palm in the Wisnma Tani KUD. Based on the results obtained in table 35 shows that the value $F_{hitung} > F_{tabel}$ is 2.881 2.64 >and when viewed from the results the value of significance is 0.020. Thus, simultaneously the independent variable (characteristics of smallholders) has a significant effect on the dependent variable (participation of smallholders) in the implementation of rubber to oil palm conversion activities in Wisma Tani KUD. $< 0{,}05$
2. The t test aims to determine the independent variable has a partial significant effect on the dependent variable. The significance value used in this study is 95 percent or with an error rate of 5 percent. The independent variable can be said to have a significant influence on the dependent variable if the result of the significance value is smaller than the error rate value of 5 percent (0.05). The results of the t test show that the variables of education and land area have a significant influence on the participation of smallholders.
3. The coefficient of determination (R^2) is needed to measure the model's ability to explain how much influence the independent variable has on the dependent variable. The value of the coefficient of determination can be measured by R square and if the value of the coefficient of determination approaches one then there is a strong relationship, indicating that the independent variable in the study provides almost all the information needed to predict the variation of the variable level of participation of smallholders. Table data shows an R *square* value of 0.890, meaning that 89.0% of the variable level of participation of farmers (Y) is explained by variable (X), which is the characteristic of planters, while 11.0% is explained by other variables that are not included in this research model.

CONCLUSION

It can be deduced from the participation of smallholders in the conversion of rubber plants to oil palm at Wisma Tani KUD that the general level of participation of smallholders is in the high category following the conversion of rubber plants to oil palm. Smallholder participation at the stages of planning, execution, assessment, and utilization of findings is classified as high. Education variables and land area have a significant effect on smallholder participation in rubber to oil palm conversion activities at Wisma Tani KUD, whereas age, experience, and income variables have a significant effect on smallholder participation in rubber to oil palm conversion activities.

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