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# THE EFFECT OF OIL PALM FARMERS' PARTNERSHIP WITH PT. TUNGGAL YUNUS ESTATE ON FARM INCOME IN TAPUNG SUB-DISTRICT, KAMPAR DISTRICT

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***ABSTRACT***

Partnerships in oil palm plantations aim to increase production through assistance provided by the company, so that farmers' income increases. PT Tunggal Yunus Estate is one of the companies engaged in oil palm plantations and processing in Tapung District, Kampar Regency. This study aims to: (1) determine the partnership pattern between partner farmers and PT Tunggal Yunus Estate; (2) compare farm income between partner farmers and non-partner farmers; (3) determine the factors that influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate. The number of samples used was 30 respondents consisting of 15 partner farmers and 15 non-partner farmers. Sampling on partner farmers using *simple random sampling* method, while sampling on non-partner farmers using *purposive sampling* method. The data analysis method used was descriptive analysis, *independent sample t-test,* and binary logistic regression analysis. The results showed that the partnership pattern uses the core plasma pattern, but not pure. The difference with plasma core partnerships in general is in land and farming costs. Oil palm farming income of partner farmers amounting to Rp 44,712,326.51/ha/year is higher than oil palm farming income of non-partner farmers amounting to Rp 29,036,170.93/ha/year. The difference in income is due to differences in production levels and FFB prices. Factors that positively influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate are land area and income, while age, education level, number of family dependents, and farming experience have no significant effect.

**Keywords:** Partnership, income, partner farmers, non-partner farmers

## INTRODUCTION

Oil palm is one of the plantation sub-sector commodities that has a strategic role in the national economy. Oil palm is Indonesia's main export commodity and a contributor to the country's foreign exchange (Bintariningtyas and Juwita, 2021). Palm oil is able to produce vegetable oil with the highest productivity per hectare compared to other vegetable oil-producing plants such as sunflower (*Helianthus annuus*), soybean (*Glycine max*), and raps (*Brassica napus L.*) (Gapki, 2018). The demand for palm oil continues to increase over time, along with the increasing world population and the development of palm oil-derived products. The higher market demand for palm oil is responded through an increase in land area and palm oil production.

The increase in land area and oil palm production in Indonesia is inseparable from the existence of large state, private and smallholder plantations. However, the facts in the field show that there is a productivity gap between large plantations and smallholder plantations, which has an impact on the low income of farmers. In 2021, the productivity of smallholder plantations was only 3,339 kg/Ha. In contrast, the productivity of large state plantations reached 4,661 kg/Ha and large private plantations amounted to 3,954 kg/Ha (BPS, 2022). Munirudin *et al*. (2020) stated that the low productivity of smallholder oil palm plantations is caused by farmers' low knowledge of oil palm plantation management and the use of production facilities such as seeds, fertilizers, and pesticides. Suharno *et al*. (2020) also mentioned that smallholder plantations do not apply *good agricultural* practices (*GAP*) in managing oil palm plantations, resulting in low productivity levels of oil palm plantations. In addition, smallholder oil palm plantations are faced with various problems such as difficulties in accessing information and technology related to oil palm cultivation, limited capital while the price of production facilities is expensive, and the low purchase price of fresh fruit bunches (FFB) (Nasution *et al*., 2023).

In overcoming these problems, the government cooperates with large state and private plantations to assist and guide smallholder plantations in increasing their plantation yields through a mutually beneficial, intact, and

sustainable cooperation system, namely through partnerships. Partnerships between oil palm farmers and companies basically aim to increase the productivity of farming, which in turn will increase farmers' income. Supriadi *et al*. (2012) stated that the presence of companies has succeeded in increasing the income of coconut farmers through increased productivity, selling prices, and good road access. Increased productivity is due to differences in cultivation techniques used by farmers ranging from the type and dose of fertilizer, how to fertilize, how to apply pesticides, and how to harvest properly. The higher selling price of FFB is due to the better yield of palm oil produced by plasma farmers than independent farmers.

PT Tunggal Yunus Estate is one of Asian Agri's subsidiaries engaged in oil palm nurseries, plantations and processing located in Tapung District, Kampar Regency. PT Tunggal Yunus Estate is one of the companies that partner with independent smallholders in Tapung District. In implementing the partnership, the company assists partner smallholders in increasing productivity, income, and the ability to manage oil palm farming businesses through coaching, production facilities assistance, and marketing access (Asian Agri, 2023). The presence of the company is expected to be one of the supporting factors in achieving a better standard of living for farmers, namely through increased income.

The objectives of this study are (1) to determine the partnership pattern that exists between partner farmers and PT Tunggal Yunus Estate; (2) to compare farm income between partner farmers and non-partner farmers in Tapung District; (3) to determine the factors that influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

## METHODS

This research was conducted at PT Tunggal Yunus Estate located in Tapung District, Kampar Regency, Riau Province. The research location was chosen *purposively* with the consideration that PT Tunggal Yunus Estate is a private company engaged in oil palm plantations located in Tapung District and establishes partnerships with oil palm farmers around the company. In addition, Tapung District is one of the centers of oil palm production in Kampar Regency.

The number of samples used in this study were 30 respondents consisting of 15 partner farmers and 15 non-partner farmers. Partner farmers of PT Tunggal Yunus Estate amounted to 156 farmers. Sampling for partner farmers used *simple random sampling* method while sampling for non-partner farmers was done by *purposive sampling* method. Consideration in the selection of the sample is the land area. Non-partner farmers selected as samples are oil palm farmers with a land area of less than 10 ha. Farmers whose incomes will be compared are expected to have relatively the same land area.

The first objective of this study was to determine the pattern of partnership between PT Tunggal Yunus Estate and partner smallholders in Tapung District. The pattern and implementation of oil palm partnerships between PT Tunggal Yunus Estate and partner smallholders were examined using descriptive analysis.

The second objective of this study is to determine the effect of partnerships on the income of partner farmers and non-partner farmers by comparing the income of both. However, before analyzing the income comparison between the two farmers, first analyze the farm income of partner and non-partner farmers.

1. Farm Income Analysis

The calculation of farm income is done using the following formula (Suratiyah, 2015):

a. Total Cost of Production

Total cost is the sum of fixed costs and variable costs. Total cost can be calculated with the following formula:

$$TC = FC + VC \quad \text{.....(1)}$$

b. Farm Revenue

Farm income is the result of multiplying the amount of production by the selling price of the product. Revenue can be calculated using the following formula:

$$TR = P \times Q \quad \text{.....(2)}$$

c. Farm Income

Income is the result of reducing revenue by total production costs. The income calculated in this study is the net income in farming. The formula for calculating income is as follows:

$$I = TR - TC \quad \text{.....(3)}$$

Description:
TC = *Total* cost (Rp)
FC = *Fixed* cost (Rp)
VC = *Variable cost* (Rp)
TR = *Total revenue / revenue* (Rp)
P = *Price /* selling *price* (Rp)
Q = *Quantity/amount of* FFB production (kg)
I = *Income* (IDR)

2. *T-Test*

In order to determine statistically whether there is a real difference between the income of partner oil palm farmers and non-partner oil palm farmers, an *independent sample t-test was*

conducted using SPSS. *Independent sample t-test* is a statistical test used to determine the average comparison of two groups of unpaired or unrelated samples (Palupi *et al.*, 2021). The hypothesis used is:

$H_0 : \bar{X}1 \leq \bar{X}2$, the income of partner oil palm farms is lower than the farm income of non-partner farmers.

$H_1 : \bar{X}1 > \bar{X}2$, the income of partner oil palm farms is higher than the farm income of non-partner farmers

Decision-making criteria using α (5%) is as follows:

a. If the significance value is <0.05 then $H_0$ is rejected. This means that the income of partner farmers is higher than the income of non-partner farmers.
b. If the significance value > 0.05 then $H_0$ fails to be rejected. This means that the income of partner farmers is lower than the income of non-partner farmers.

3. Logistic Regression Analysis

The third objective of this study was to determine the factors that influence oil palm farmers' decision to partner with PT Tunggal Yunus Estate. The analysis used is binary logistic regression analysis. Binary logistic regression analysis is a statistical method used to analyze the relationship between independent variables and dependent variables that are binary or dichotomous (Nisva and Ratnasari, 2020). The dependent variable *is* dichotomous qualitative data, namely Y = 0 for oil palm farmers who do not partner with PT Tunggal Yunus Estate and Y = 1 for oil palm farmers who partner with PT Tunggal Yunus Estate.

The binary logistic regression model equation formed is:

$$Y = ln\frac{p(xi)}{1-p(xi)} = \beta_0 + \beta X + \beta X + \beta X_{11\ 22\ 33\ 44}\ X + \beta + \beta X + \beta_{55\ 66} + Xe \quad \text{.....(3)}$$

Description:

Y = Decision of oil palm smallholders partner with PT Tunggal Yunus Estate.
$\beta_0$ Constant
$\beta i$ = Regression coefficient
$X_1$ = Farmer age (years)
$X_2$ = Education level (years)
$X_3$ = Number of family dependents (people)
$X_4$ = Farming experience (years)
$X_5$ = Land area (ha)
$X_6$ = Revenue (million/ha/year)
e *Error*

a. *Goodness of Fit Test*

In logistic regression analysis, the model fit test is carried out using the *Hosmer and Lemeshow Goodness of Fit Test* (Safitri *et al.*, 2022). *The* model fit test is conducted to determine whether the model used in the study is appropriate in explaining the factors that influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate or there is no difference between the observations and the model predictions. The hypotheses used are:

$H_0$ : The model formed is fit (There is no difference between the observations and the predictions of the model)

$H_1$ : The model formed does not fit (There is a difference between the observations and the predictions of the model)

The basis for decision making on the *Hosmer and Lemeshow Goodness of Fit Test* using α (5%) is as follows:

1. If the value of the test statistic $C\hat{} > X^2_{(\alpha; df)}$ or *p-value* < 0.05 then $H_0$ is rejected. That means there is a significant difference between the model and the observation value, so the *Goodness of Fit Test* cannot predict the observation value.
2. If the value of the $C\hat{}$ statistic $< X^2_{(\alpha; df)}$ or *p-value* > 0.05 then $H_0$ fails to be rejected. That means the model fits the observation value, so the *Goodness of Fit Test* can predict the observation value.

b. Coefficient of Determination (*Nagelkerke R Square*)

*Nagelkerke R Square* is a measure used to determine how much the ability of the independent variable is in explaining the dependent variable (Kustiyaningrum *et al*., 2016). *Nagelkerker R Square* is a modification of *Cox & Snell R Square* because the maximum value of *Cox & Snell R Square is* less than one, making it difficult to interpret.

c. Simultaneous Parameter Testing (G Test)

The simultaneous test is used to determine the effect of the independent variables on the dependent variable together. The statistical test used is the *Likelihood Ratio Test* or known as the G test (Agustina *et al*., 2017). The hypotheses tested are:

$H_0 : \beta_1 = \beta_2 = ..... = \beta_6 = 0$ (There is no simultaneous influence of independent variables on the decision of oil palm farmers to partner with PT. Tunggal Yunus Estate)

$H_1$ : There is at least one $\beta i \neq 0$ (There is at least one independent variable that affects the decision of oil palm farmers to partner with PT. Tunggal Yunus Estate)

The decision-making criteria using α (5%) are as follows:

1. If the value of the test statistic $G > X^2_{(\alpha; df)}$ or *p-value* < 0.05 then $H_0$ is rejected. This means that there is at least one independent variable that affects the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.
2. If the value of the test statistic $G \leq X^2_{(\alpha; df)}$ or *p-value* > 0.05 then $H_0$ fails to be rejected. This means that the independent variables do not simultaneously affect the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

d. Partial Parameter Testing (*Wald* Test)

*The Wald* test is used to test the effect of the independent variable on the dependent variable partially (Salsabyla and Wulandari, 2023). The hypothesis tested is as follows:

$H_0 : \beta i = 0$; The i-th independent variable has no significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

$H_1 : \beta i \neq 0$; The i-th independent variable has a significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

The decision-making criteria are as follows:

1. If the test statistic value $Wi > X^2_{(\alpha; df)}$ or *p-value* < α (1%, 5%, and 10%); then $H_0$ is rejected. This means that the *i-th* independent variable partially influences the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.
2. If the test statistic value $Wi \leq X^2_{(\alpha; df)}$ or *p-value* > α (1%, 5%, and 10%); then $H_0$ fails to be rejected. This means that there is no influence of the *i-th* independent variable on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

## RESULTS AND DISCUSSION

### Partnership Pattern

PT Tunggal Yunus Estate's partnership with oil palm farmers around the company is known as the independent smallholder assistance program. The partnership between the company and oil palm smallholders uses a nucleus plasma pattern, but it is not pure . The company acts as a nucleus that guides farmers in managing the farmers' oil palm plantations and receives the farmers' production, while the farmers act as plasma that supplies FFB to the company. Partner smallholders are required to provide land and use seeds from the company, namely Topaz seeds. The development of smallholder plantations is not financed by the company but by the smallholders themselves.

PT Tunggal Yunus Esatate's partnership program aims to foster farmers in developing the ability to manage oil palm plantations, so as to achieve optimal FFB production with good quality and meet company standards. The management of oil palm plantations of partner farmers is directed to start paying attention to aspects of sustainability. The form of partnership implementation is that the company provides guidance and counseling both technical and non-technical needed by partner farmers in managing oil palm plantations. The guidance and counseling provided by the company includes land clearing and management, oil palm maintenance, fertilization, harvesting, and crop sales. Technical guidance is carried out through joint counseling held at least twice a year and direct guidance when CSV assistants or foremen visit partner smallholders' land to conduct technical supervision. Technical supervision is usually conducted during harvest time or when farmers are in need of specific assistance.

The company also provides other assistance such as fertilizer procurement, owl cages, construction and repair of infrastructure, such as roads and bridges. Through the partnership, the company is guaranteed a FFB supply chain that is in accordance with the standards and quality set by the company. The company is required to accept all FFB sent by farmers as long as it meets the company's standards. Partnering farmers are required to send all FFBs from the land that is cooperated with the company.

Farmers who become partners of the company must fulfill two main requirements, namely using the company's seedlings (Topaz seedlings) and oil palm plantation land located in APL areas. These requirements are imposed in order to direct smallholders to start implementing a sustainable oil palm plantation management system. Topaz seedlings are developed at the Asian Agri *Oil Palm Research Station* (OPRZ) Topaz through PT Tunggal Yunus Estate. Topaz seedlings were developed to obtain oil palm plants with high productivity, ability to thrive in marginal soils, and vertical growth that is not too fast so as to facilitate the process of harvesting FFB. In general, partner farmers use Topaz 4 (D x P Yangambi) seedlings.

In addition to the requirement to use seedlings, partner smallholders' oil palm plantation areas must be located in APL areas. Based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.38/Menlhk/Setjen/Kum.1/4/2016, what is meant by other use area (APL) is an area outside the state forest area designated for development outside the forestry sector. Oil palm plantations developed in Non-Forestry Cultivation Areas (KBNK) or Other Use Areas (APL) are declared legal under forestry

law because they are in accordance with the principles of sustainable plantation practices (Dharmawan *et al*., 2019). Oil palm plantations developed in *forest conservation land* or production forest areas are illegal. Oil palm plantation land owned by partner smallholders that are declared eligible, will be mapped. Land area mapping is carried out with GPS *(Global Positioning System*) by company assistants and witnessed by partner smallholders, village officials, and witnesses.

In implementing the partnership, the company does not deal directly with farmers, but through the Petapahan Maju Bersama (PMB) association. The PMB Association is an organization that accommodates independent oil palm farmers who are fostered by PT Tunggal Yunus Estate. The PMB Association was formed in 2014 along with the start of the independent smallholder empowerment program carried out by the company. Currently, the PMB Association consists of 156 independent smallholders with a total plantation area of 1,017 ha divided into 9 farmer groups. The PMB Association has four roles, namely (1) assisting the company in fostering partner farmers; (2) facilitating partner farmers in the fertilizer procurement program held by the company; (3) holder of SPB (Fruit Introduction Letter); (4) paying for partner farmers' FFB.

The PMB Association has proven its success as a company-assisted smallholder. The PMB Association received an award in the category of farmer groups with the highest plantation productivity at the 14th$^{th}$ *Indonesian Palm Oil Conference* in Bali. The award was given directly by the President of the Republic of Indonesia Joko Widodo to the PMB association representative, Afrizal Koto, who also serves as the treasurer of the PMB association. During the January to September 2018 assessment period, the PMB association's plantation productivity reached 22.16 tons/ha/year. By the end of the year, the productivity of the PMB association's plantations is expected to reach 30/ha/year.

**Farm Income Analysis**

Table 1. Average Income of Oil Palm Farming Businesses of Partner and Non-Partner Farmers in Tapung Sub-district

| Description | Partner Farmers | | Non-partner farmers | |
|---|---|---|---|---|
| | Per Farm Business (IDR/Year) | Per Ha (Rp/Ha/Year) | Per Farm Business (IDR/Year) | Per Ha (Rp/Ha/Year) |
| Production (Kg) | 8.166,67 | 1.133,41 | 5.180,00 | 845,66 |
| Price (Rp/Kg) | | 2.408,00 | | 2.196,67 |
| **Acceptance (a)** | 471.968.000,00 | 65.502.186,67 | 272.696.000,00 | 44.477.600,00 |
| **Fixed Cost (b)** | | | | |
| Tool Depreciation Cost | 698.977,78 | 98.961,27 | 246.911,11 | 72.496,30 |
| **Variable Cost (c)** | | | | |
| Fertilizer Cost | 73.292.333,33 | 9.642.616,67 | 68.908.800,00 | 10.628.941,11 |
| Herbicide Cost | 3.058.666,67 | 397.739,68 | 3.084.000,00 | 507.666,67 |
| Labor Cost Work | 37.927.700,00 | 5.254.390,16 | 23.741.583,33 | 3.748.591,67 |
| Other Costs | 38.496.000,00 | 5.396.152,38 | 2.720.000,00 | 483.733,33 |
| **Total Cost (d = b+c)** | 153.473.677,78 | 20.789.860,16 | 98.701.294,44 | 15.441.429,07 |
| **Revenue (a-d)** | 318.494.322,22 | 44.712.326,51 | 173.994.705,56 | 29.036.170,93 |

Source: Primary Data Processed (2023)

Based on Table 1, it is known that the average farm income of partner farmers was Rp 44,712,326.51/ha/year is higher than the average farm income of non-partner farmers of Rp 29,036,170.93/ha/year. The difference in income is caused by differences in revenue. Partner smallholders' income is higher than non-partner smallholders due to higher production and selling price of FFB. Production of partner farmers is higher than non-partner farmers both in terms of productivity and oil yield. Partner smallholders use Topaz seedlings from PT Tunggal Yunus Estate, which have been tested for high productivity and palm oil content. In contrast, non-partner farmers use non-inferior seedlings, resulting in low oil palm productivity. In line with the research of Hadi *et al*. (2023) which states, in general, non-partner farmers use superior seeds and maintenance is not in accordance with recommendations, so that plantation productivity tends to be low, and has an impact on the low income received by farmers.

The higher oil palm productivity of partner smallholders compared to non-partner smallholders can also be influenced by the age of

the plants. The average age of oil palm plants of partner smallholders is less than 15 years, while the average age of oil palm plants of non-partner smallholders is above 15 years, and there are even some farmers with oil palms reaching 25 years of age who should have entered the replanting period. The older the economic age of oil palm, the lower the productivity level.

In addition, partner farmers receive technical guidance from the company regarding the management of oil palm plantations, so that production will increase. Fertilizer credit assistance provided by the company aims to help partner farmers to fertilize in accordance with good fertilization standards. Oil palm plants that are fertilized in accordance with fertilization recommendations have high production levels. In contrast to non-partner farmers who manage oil palm plantations based on the knowledge possessed by farmers and the management of plantations is not in accordance with oil palm plantation standards such as fertilization. This has an impact on the low level of FFB production of non-partner farmers. Ambarsari *et al*. (2022) in their research stated that oil palm maintenance activities such as fertilization, are carried out if there is residual income after being used by non-partner farmers to meet their daily needs.

The selling price of FFB is also a factor that causes the farm income of partner farmers to be higher than non-partner farmers. Karnain and Alam (2020) in their research stated that the selling price of FFB received by partner farmers is higher because the yield of palm oil produced is better than non-partner farmers. Partner smallholders use company seedlings that have been tested to have high palm oil yields. Palm oil with high oil content has a higher selling price. Partner smallholders have a cooperative relationship with PT Tunggal Yunus Estate, so the selling price received by partner smallholders is the company's FFB price. In contrast, non-partnered smallholders sell their produce to collecting traders (peron or RAM), so the price received by non-partnered smallholders is not the pure FFB selling price, but the price that has been deducted for the operational costs of collecting traders.

In general, farming costs incurred by partner farmers are higher than those of non-partner farmers. This is due to differences in the use of inputs. The cost of depreciation of agricultural equipment is higher for contracted farmers than for non-partnered farmers because the oil palm farming activities of contracted farmers all use non-family labor (TKLK). Partner farmers say that the average worker is careless when using agricultural equipment and does not take care of the equipment that has been used, so the economic life of agricultural equipment owned by partner farmers is relatively short. Agricultural equipment of non-partner farmers has a longer economic life because agricultural equipment is for personal use and is well maintained by non-partner farmers.

It is different for fertilizer costs, where non-partner farmers' fertilizer costs are higher than partner farmers. This is because the purchase price of fertilizer received by non-partner farmers is higher than that of partner farmers. Partner farmers get a lower price because they buy fertilizer from the company through the PMB association.

Labor costs on partner farmers' farms are higher than non-partner farmers. This is because all activities on oil palm farms of partner farmers use non-family labor (TKLK), while some non-partner farmers use TKDK in fertilizing and spraying activities. Spraying and fertilizing do not require much labor and time, so non-partner farmers whose main job is as an oil palm farmer usually invite their wives or children to help with fertilizing and spraying activities. Thus, labor costs incurred by non-partner farmers can be reduced.

In addition, partner farmers have to bear other costs such as transportation and loading and unloading costs, which results in higher farming costs for partner farmers compared to non-partner farmers. Non-partner farmers do not bear the costs of transportation and loading and unloading because these costs are the responsibility of the intermediary traders. However, the higher farm income of partner farmers is able to cover the farming costs of partner farmers which are also higher than non-partner farmers.

The effect of partnership on oil palm farming income is done by comparing the mean income between partner and non-partner farmers using *independent sample t-test* analysis.

Table 2. *Independent Sample T-Test* Results of Farm Business Income of Partner and Non-Partner Farmers in Kecamatan Tapung

| Criteria | | | | t | *Sig* (*one-tailed*) |
|---|---|---|---|---|---|
| Average Income of Partner Farmers | Average Income of Non-Partner Farmers | Farmer Income | *Equal variances assumed* | 4,737 | 0,001 |
| IDR 44,712,326.51 | IDR 29,036,170.93 | | *Equal variances not assumed* | 4,737 | 0,001 |

Source: Primary Data Processed (2023)

Based on table 2, a significance value of 0.001 is obtained which is smaller than the alpha value of 0.05 (5%), so $H_0$ is rejected. This means that the income of partner farmers is higher than non-partner farmers in Tapung District, Kampar Regency. The income received by farmers is related to the level of production and the selling price of FFB. This is in accordance with the research of Lestari *et al*. (2015) which states that the income of partner farmers is higher than non-partner farmers. The productivity of partner farmers is higher than non-partner farmers, and partner farmers get higher FFB prices because the yield of palm oil produced is better than non-partner farmers. With the partnership, partner smallholders receive technical guidance related to oil palm cultivation, so that the production of partner smallholders increases. Increased production will affect the income earned by farmers.

**Factors Influencing the Decision of Oil Palm Smallholders to Partner with PT. Tunggal Yunus Estate**

Table 3. Results of Logistic Regression Analysis of Factors Influencing the Decision of Oil Palm Smallholders to Partner with PT Tunggal Yunus Estate.

| Variables | sign Hope | B | S.E. | Wald | df | *Sig.* | Exp(B) |
|---|---|---|---|---|---|---|---|
| Age (X1) | + | -0,165 | 0,135 | 1,489 | 1 | 0,222 | 0,848 |
| Level Education (X2) | + | 0,112 | 0,193 | 0,336 | 1 | 0,562 | 1,118 |
| Number of Family Dependents (X3) | + | -2,025 | 1,309 | 2,391 | 1 | 0,122 | 0,132 |
| Farming Experience (X4) | - | -0,211 | 0,298 | 0,498 | 1 | 0,481 | 0,810 |
| Land Area (X5) | + | 0,885* | 0,464 | 3,639 | 1 | 0,056 | 2,424 |
| Income (X6) | + | 0,178* | 0,096 | 3,430 | 1 | 0,064 | 1,195 |
| Constant | +/- | 4,966 | 11,493 | 0,187 | 1 | 0,666 | 143,451 |
| *Hosmer and Lemeshow Goodness of Fit Test* | | | | | 8 | 0,902 | |
| *Nagelkerke R Square* | | | | | | 0,798 | |
| *Omnimbus Test* | | | | | 6 | 0,001 | |

Source: Primary Data Processed (2023)

The model fit test is used to determine whether the model formed is appropriate or there is no difference between the observation results and the model prediction results. The model suitability test results use the *Hosmer and Lemeshow Goodness of Fit Test*. Based on table 3, the *chi-square value is* 3.465 with a significance value of 0.902. The *chi-square* value of 3.465 is smaller than the *chi-square* table$_{(0,05;8)}$ of 15.50731 and the significance value of 0.902 is greater than α (5%), so $H_0$ fails to be rejected. This means that the model used is appropriate because there is no difference between the observed results and the possible predicted results of the model.

Based on table 3, the *Nagelkerke R Square* value is 0.798. This means that the independent variables (age, education level, number of family dependents, farming experience, land area, and income) are able to explain the dependent variable (the decision of oil palm farmers to partner with PT. Tunggal Yunus Estate) by 79.8%, while the remaining 20.2% is explained by other variables outside the model.

Simultaneous test is conducted to determine the effect of independent variables together on the dependent variable. The results of the simultaneous parameter test can be seen in the *Omnimbus Test of Model Coefficient* table. The *chi-square* value in the *Omnimbus Test* is the result of decreasing the -2 *log likelihood* value in the initial model with the model after adding the independent variable. Based on table 6.12, the G test value is 27.397 which is greater than the $\chi^2_{(0,05;6)}$ which is 12.591587 and a significance value of 0.001 which is smaller than α (5%), so $H_0$ is rejected. That is, there is at least one independent variable that has a significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

a. Age

Based on the results of the analysis of the factors that influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate, the significance value of the age variable is 0.222. The significance value is greater than α (10%), so $H_0$ fails to be rejected. This means that partially the age variable does not have a significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

The results of this study are not in line with the study of Munirudin *et al*. (2020) which states that age has a positive effect on oil palm farmers' decision to partner. At the research location, the average age of farmers is 55.10 years, which is classified as old even though based on the age grouping according to BPS it is included in the productive age category. Older farmers tend to be slow to embrace changes, such as partnerships. Farmers who join a partnership must follow the rules set by the company and this is considered a little difficult and burdensome for farmers.

b. Education Level

Based on the results of logistic regression analysis, the significance value of the education level variable is 0.562. The significance value is greater than α (10%), so $H_0$ fails to be rejected. This means that partially the variable level of education does not have a significant effect on the decision of oil palm farmers to partner.

Education is needed to support the ability to think and work but is not directly related to the farming business managed by the farmer and is not necessarily something that limits the farmer's resources. During their formal education, farmers did not obtain information related to oil palm cultivation and the importance of establishing partnerships with certain companies. Farmers instead obtained information about partnerships through non-formal education such as counseling and the experiences of fellow oil palm farmers. The results of this study are not in line with the study of Fitri *et al*. (2018) which states that the level of education has a significant and positive effect on farmers' decisions to partner.

c. Number of Family Dependents

The significance value on the variable number of family dependents based on the results of logistic regression analysis is 0.122. The significance value of 0.122 is greater than α (10%), so $H_0$ fails to be rejected. This means that partially the variable number of family dependents does not have a significant effect on the decision of oil palm farmers to partner. The results of this study are not in line with the study of Valentine *et al*. (2017) which states that the greater the number of family members, the greater the costs that must be borne by farmers, thus encouraging farmers to partner in the hope of increasing income.

The number of family dependents affects the level of expenditure of farm households. The greater the number of family dependents, the greater the costs required to meet the living needs of family members. In this study, the average number of family members whose living costs are borne by farmers as the head of the family is relatively small, only 2 people. The relatively small number of family dependents is because the majority of farmers have children who are of productive age. Farmers are able to finance the lives of family members with their current oil palm farming income.

d. Farming Experience

The significance value of the farming experience variable based on the results of logistic regression analysis is 0.481. This value is greater than α (10%), so $H_0$ fails to be rejected. This means that partially the farming experience variable does not have a significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

The research results are not in accordance with the study of Munirudin *et al*. (2020) which states that farming experience has a negative effect. At the research location, the average farming experience of oil palm farmers is 21.23 years. Farmers with relatively high experience gain a lot of knowledge about oil palm cultivation from their experience in farming, so that even though they do not join a partnership, they are still able to manage their own farming business. Some farmers said that the purpose of joining a partnership is no longer to obtain guidance on oil palm cultivation techniques, but rather to obtain a higher selling price for FFB, which will increase their income.

e. Land Area

Based on the results of logistic regression analysis, the significance value of the land area variable is 0.056. The significance value is smaller than α (10%), so $H_0$ is rejected. This means that partially the land area variable has a significant effect on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate. The *odds ratio* value of 2.424 indicates that oil palm farmers with larger land areas have a chance to partner with PT Tunggal Yunus Estate 2.424 times higher than oil palm farmers with smaller land areas assuming other variables are considered constant.

Farmers with larger land areas require larger agricultural inputs, such as fertilizers and seeds. Farmers who partner with PT Tunggal Yunus Estate receive fertilizer credit assistance with guaranteed quality because it is in accordance with company standards. In addition, the price of fertilizer received by farmers who partner with PT. Tunggal Yunus Estate is below the market price, which will reduce production costs per hectare. The fertilizer credit assistance provided by the company is very helpful for farmers, especially when fertilizer prices soar. The results of this study are in accordance with the study Ahmed and Mesfin (2017), which states that land area has a positive and significant effect on the decision to partner. Farmers who are members of partnerships

have benefits such as being able to access agricultural inputs easily and obtain marketing guarantees.

f. Revenue

Based on the results of logistic regression analysis, the significance value of the income variable is 0.064. This value is smaller than α (10%), so $H_0$ is rejected. This means that partially the income variable has a significant effect on the decision of oil palm farmers to partner. The *odds ratio* value of 1.195 indicates that oil palm farmers with higher income have a chance to partner with PT Tunggal Yunus Estate 1.195 times greater than oil palm farmers with oil palm farmers who have lower income assuming other variables are considered constant.

Income affects the decision of farmers to partner because farmers who are members of the partnership get technical guidance from the company, so that productivity increases and produces good quality FFB in accordance with company standards. FFB with good quality has a high yield of palm oil and has a higher selling price compared to FFB originating from the land of farmers who do not cooperate with PT Tunggal Yunus Estate. The difference in production levels and selling prices will affect the income received by farmers. In addition, oil palm farmers who become partners of the company obtain marketing guarantees. The basic discount received by partner farmers when selling FFB to the company is lower than the discount for FFB from independent farmers. The results are in line with the study of Yulistiono and Hapsari (2019) which states that an increase in income will increase the opportunity for farmers to partner.

## CONCLUSIONS

1. PT Tunggal Yunus Estate's partnership with independent smallholders is known as the independent smallholder mentoring program. The partnership uses a core plasma pattern, but is not pure . The difference with nucleus plasma partnerships in general is in the land and farming costs. The partnership focuses on empowering oil palm farmers through coaching by the company in order to increase the productivity and income of oil palm farmers. The company obtains a guaranteed FFB supply chain that is in accordance with the quality and standards set by the company through the partnership established with oil palm farmers in Tapung District, Kampar Regency.
2. The oil palm farming income of partner farmers amounted to Rp 44,712,326.51/ha/year higher than the oil palm farming income of non-partner farmers amounted to Rp 29,036,170.93/ha/year. The difference in income is due to differences in production levels and FFB prices between partner and non-partner farmers.
3. Factors that significantly influence the decision of oil palm farmers to partner with PT Tunggal Yunus Estate are land area and income, while age, education level, number of family dependents, and farming experience have no significant effect. Land size and income have a positive influence on the decision of oil palm farmers to partner with PT Tunggal Yunus Estate.

## ADVICE

1. The partnership between farmers and the company is able to increase the productivity and income of oil palm farmers through assistance provided by the company. PT Tunggal Yunus Estate is expected to further expand the reach of the partnership, so that more independent smallholders can join the company's partners and feel the benefits of the partnership both in terms of technical, economic and social.
2. The government and PT Tunggal Yunus Estate should socialize the benefits of partnerships and the importance of sustainable plantation management to oil palm smallholders. The government and companies need to increase the implementation of partnerships in areas with large areas of oil palm plantations but low levels of partnership participation. Land size is one of the factors that influence oil palm farmers' decision to partner with companies, especially in obtaining agricultural inputs. Land size will affect the amount of production and income of oil palm farmers.
3. Contracted farmers and companies maintain their commitment to cooperation by paying attention to the rights and obligations of each party, so that both parties benefit from each other and the partnership will be sustainable. In addition, good communication is needed between the company and partner farmers in resolving obstacles that occur during the implementation of the partnership.
4. Further research is recommended to use the *simple random sampling* method in the sampling method so that the residuals are normally distributed and the data used better describes the actual conditions.

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