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# The Influence Of Economic Performance On Agricultural Regeneration And Labor Absorption (Case Study Of Smallholder Coconut Plantations In Riau Province)

**Shelly Meiliza*, Rosyetti, M. Hamid**
Master's Program in Economic Science, Faculty of Economics and Business. Universitas Riau, Pekanbaru, Riau, Indonesia
*Correspondence Email: shelly.meiliza7551@grad.unri.ac.id

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## ABSTRACT

Employment issues in the agricultural sector, particularly in the smallholder coconut sub sector in Riau Province, represent a crucial concern that demands serious attention. This study aims to analyze the influence of land area, Farmers Terms of Trade (FTT), and Gross Value Added (GVA) on labor absorption using annual time series data from 2015 to 2024. The research employs a quantitative approach through multiple linear regression using the Ordinary Least Squares (OLS) method. The results indicate that, simultaneously, all three variables significantly affect labor absorption. Partially, land area and FTT exert a positive and significant influence, while GVA has a negative but statistically insignificant effect. The coefficient of determination ($R^2$) value of 0.877473 suggests that 87.75% of the variation in labor absorption is explained by the model, whereas the remaining 12.25% is attributed to other factors outside the model. These findings underscore the urgency of policy formulation to support labor regeneration in the smallholder coconut sub-sector, ensuring productivity and sustainability, especially among younger generations in the face of modernization challenges.

***Keywords:*** *Labor Absorption, land Area, FTT, NTP, GVA*

## BACKGROUND

Riau Province has the potential for land resources to be developed as an agricultural area, especially the plantation subsector, with adequate land area and very supportive natural conditions, so it is not surprising that the plantation subsector is a subsector that has a strategic role in increasing the availability of employment opportunities and meeting needs. domestic consumption, as well as optimizing sustainable management of natural resources. However, despite its advantages, there are various crucial problems with coconut plantations in Riau Province. Entering the era of the industrial revolution has caused a large shift in labor from the agricultural sector, where currently coconut plantation farmers in Riau Province are dominated by old farmers. Agriculture is managed traditionally and marketing is oligopoly and there is no standardization of coconut prices in Riau Province, which makes coconut prices low and not commensurate with the capital spent by farmers. Lack of training and guidance certainly hampers the productivity and interest of farmers or the millennial generation. The number of millennial farmers experienced a significant decline in 2023, the proportion of farmers aged 25-34 years fell from 11.97% in 2013 to 10.24% in 2023, while the

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proportion of farmers aged 35-44 years fell from 26.34% to 22 .08%. So this needs to be of concern to the government considering that the millennial generation, which is a digital native generation, has great potential to increase agricultural output with modern technology. Based on the variety, coconuts are divided into young coconuts and hybrid coconuts. The following is data on coconut production centers in Indonesia for 2015-2024:

**Table 1.** Coconut Production Centers in Indonesia 2015-2024 (Tons)

| Year | Riau | Sulawesi Utara | Jawa Timur | Maluku Utara | Sulawesi Tengah |
|---|---|---|---|---|---|
| 2015 | 401.874 | 284.118 | 241.301 | 231.911 | 190.510 |
| 2016 | 401.448 | 277.943 | 282.245 | 213.398 | 217.654 |
| 2017 | 398.034 | 260.702 | 253.904 | 234.153 | 187.435 |
| 2018 | 372.721 | 262.521 | 244.060 | 209.791 | 193.898 |
| 2019 | 374.523 | 271.808 | 240.406 | 210.946 | 195.714 |
| 2020 | 372.038 | 270.372 | 240.168 | 211.753 | 198.614 |
| 2021 | 377.808 | 271.117 | 244.491 | 211.802 | 199.154 |
| 2022 | 391.595 | 264.461 | 231.934 | 199.961 | 206.055 |
| 2023 | 378.265 | 264.461 | 231.934 | 200.086 | 206.055 |
| 2024 | 389.840 | 269.668 | 236.396 | 203.935 | 210.443 |
| Average | 397.777 | 271.057 | 249.214 | 220.679 | 198.386 |

Source: Directorate General of Indonesian Plantations, 2023

Riau Province, Despite having the highest average coconut production compared to four otherprovinces, Riau has experienced a consistent downward trend since 2015. Based on the data presented, coconut production in Riau peaked in 2012 at 456,930 tons. However, since 2015, the figure has gradually declined and never returned to its initial peak. The average production of coconut in Riau during the 2015–2024 period was 386,816 tons, which, although still the highest, shows a decline from the early-decade achievement. In comparison, North Sulawesi holds the second position with an average production of 271,057 tons. Production in North Sulawesi tends to be stable without extreme fluctuations. East Java ranks third with an average of 249,214 tons, while North Maluku and Central Sulawesi occupy the fourth and fifth positions, with average productions of 220,679 tons and 198,386 tons, respectively. Although these provinces do not show figures as high as Riau, their production appears relatively more stable over time. The decline in coconut production in Riau cannot be separated from various structural challenges faced by coconut farmers in the region. Among these challenges are the increasing attacks from pests, especially monkeys that frequently damage coconut trees and steal the coconuts (Sumanjuntak, 2023). Moreover, saltwater intrusion has caused damage to agricultural land in coastal areas of Riau, reducing land productivity (Sutrisno, 2023). Another significant issue is the presence of old coconut trees that have exceeded their productive age but have not been optimally replaced with new plants (Nurhalim, 2023).

In line with the declining trend in coconut production, labor absorption in the coconut plantation subsector appears to be under pressure, particularly in Riau. When compared to other plantation commodities such as oil palm and rubber, coconut plantations tend to engage fewer workers per hectare. Recent labor data from various provinces suggest a growing preference among

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farmers for commodities with higher economic returns. For example, in provinces like Riau, where oil palm plantations dominate, a significant proportion of agricultural workers have shifted from coconut to oil palm cultivation due to its relatively better profitability and government support. This structural transition may contribute to the declining number of coconut farmers and further exacerbate the productivity challenges facing the subsector.

**Table 2.** Number of Workers Per Head of Family (KK) for Community Plantation Commodities in Riau Province, 2015-2024

| Year | Coconut | Palm Oil | Rubber | Cacao |
|---|---|---|---|---|
| 2015 | 208.473 | 521.509 | 200.123 | 13.828 |
| 2016 | 206.986 | 524.001 | 200.743 | 13.775 |
| 2017 | 192.887 | 533.905 | 202.429 | 19.363 |
| 2018 | 192.918 | 642.412 | 206.525 | 14.038 |
| 2019 | 192.175 | 672.441 | 207.098 | 14.276 |
| 2020 | 174.039 | 678.584 | 207.621 | 14.024 |
| 2021 | 171.833 | 655.033 | 162.160 | 13.380 |
| 2022 | 167.258 | 655.033 | 169.737 | 12.140 |
| 2023 | 170.138 | 670.038 | 164.938 | 12.735 |
| 2024 | 171.557 | 889.531 | 108.823 | 12.232 |
| Average | 184.826 | 644.249 | 183.020 | 13.979 |

Source: Directorate General of Indonesian Plantations, 2023

The decline in coconut production in Riau Province over the past decade is also reflected in the downward trend in the number of workers involved in this subsector. Based on Table 2, the number of households working in coconut plantations decreased from 208,473 in 2015 to 171,557 in 2024. The average number of workers during this period was recorded at 184,826 households, indicating a significant decline in labor participation. Compared to other community plantation commodities in Riau such as palm oil, rubber, and cacao the coconut subsector demonstrates relatively lower competitiveness in terms of labor absorption. Palm oil recorded an average of 644,249 household workers, far surpassing the other commodities and highlighting its status as the region's leading commodity. Rubber followed with an average labor figure of 183,020 households, showing a relatively stable trend until 2020. Meanwhile, cacao involved the smallest number of household workers, averaging only 13,979.

In the context of smallholder coconut plantations in Riau Province, the discussion on land area is crucial because the characteristics of coconut farming tend to be labor-intensive and are still dominated by traditional management patterns. One factor that is believed to influence the amount of labor absorption is the extent of land cultivated by farmers. Land area plays an important role because plantation activities such as fertilization, pruning, harvesting, and transporting results are highly dependent on manual labor, especially on the scale of smallholder farming that has not fully implemented mechanization. In the theory of production function, land and labor are seen as complementary inputs. Thus, the larger the coconut land managed, the greater the need for labor required to maintain productivity and continuity of cultivation activities. Therefore, the variable of

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land area is an important component in analyzing the dynamics of labor absorption in the smallholder coconut plantation subsector.

Theoretically, the relationship between land area and labor absorption in the agricultural sector can be explained through the production economic approach and the use of labor input (Karmini, 2010). The larger the agricultural land owned or managed, the greater the need for labor to carry out various cultivation activities such as land cultivation, planting, maintenance, and harvesting (Andrias et al, 2017). In the context of traditional or semi-modern agriculture, increasing land area is often accompanied by an increase in demand for labor, especially if mechanization has not been fully implemented. Therefore, land area is considered one of the main determinants in creating job opportunities in the agricultural sector. This positive relationship is also supported by the theory of input demand in the production function, where land and labor act as complementary inputs to produce optimal agricultural output (Supriyono and Imran, 2022). The following is data on the area of coconut plantations in Riau Province for 2014-2024.

**Table 3.** Land Area of Smallholder Coconut Plantations in Riau Province in 2015-2024 (Ha)

| Year | Land Area (Ha) | Growth |
|---|---|---|
| 2015 | 502.967 | - |
| 2016 | 498.758 | -0,84 |
| 2017 | 409.972 | -17,80 |
| 2018 | 422.594 | 3,08 |
| 2019 | 409.909 | -3,0 |
| 2020 | 414.379 | 1,09 |
| 2021 | 419.289 | 1,18 |
| 2022 | 419.390 | 0,024 |
| 2023 | 415.005 | -1,05 |
| 2024 | 416.197 | 0,29 |

Source: Directorate General of Indonesian Plantations, 2023

Between 2015 and 2024, the land area of coconut plantations in Riau Province has shown a generally declining and fluctuating trend. In 2015, the total land area was recorded at 502,967 hectares, but experienced a significant drop in 2017 by 17.80 percent, leaving only 409,972 hectares. This sharp decline marked the lowest point in the past decade and indicates possible structural changes or external pressures that impacted the shrinking of cultivated coconut land. Although several positive growths occurred after 2017, such as in 2018 (3.08%) and 2021 (1.18%), these increases were sporadic and insufficient to restore the land area to its original state. By 2024, the land area had only reached 416,197 hectares, signifying an overall decrease of approximately 17.3 percent from 2015. These fluctuations reflect instability in the management of smallholder coconut plantations and may impact labor absorption, considering the labor-intensive nature of coconut farming. Therefore, changes in land area should be carefully considered in policy formulation to support the sustainability of the coconut subsector in Riau Province.

Apart from changes in land area, the dynamics of the Farmer's Terms of Trade (FTT) or also commonly called the farmer's exchange rate (NTP) for coconut are also an important indicator in understanding the welfare and purchasing power of coconut farmers in Riau Province. FTT

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represents the ratio between the price index received by farmers and the price index paid by farmers, which directly reflects the level of profitability or economic exchange rate in farming activities (Riyadh, 2015). The higher the NTP value, the greater the farmers purchasing power for agricultural inputs and household consumption needs, which theoretically encourages the sustainability of farming and increases work motivation (Simanjuntak et al., 2018). In the context of coconut as a labor- intensive smallholder plantation commodity, a high FTT provides economic incentives for farmers to survive and develop their farming activities, as well as opening greater opportunities for labor absorption in this sector. Conversely, a declining FTT can reduce farmers enthusiasm and productivity and potentially cause labor shifts to other sectors considered more profitable (BPS, 2024). Therefore, monitoring and strengthening FTT is a strategic aspect in efforts to maintain labor stability and productivity in the smallholder coconut plantation sub-sector. The development of the Farmer's Terms of Trade (FTT) for coconut plantations in Riau Province can be seen in the following table.

**Table 4**. Farmer's Terms of Trade (FTT) Index for the Smallholder Coconut Plantation Subsector

| Year | FTT | Growth |
|---|---|---|
| 2015 | 93,29 | - |
| 2016 | 94,09 | 0,86 |
| 2017 | 100,48 | 6,79 |
| 2018 | 100 | -0,48 |
| 2019 | 100,67 | 0,67 |
| 2020 | 99,13 | -1,53 |
| 2021 | 95,7 | -3,46 |
| 2022 | 96,63 | 0,97 |
| 2023 | 97,13 | 0,52 |
| 2024 | 97,93 | 0,82 |

Source: BPS Statistics Indonesia (*processed*), 2023

The development of the Farmer's Terms of Trade (FTT) Index for the coconut plantation subsector in Riau Province during 2015–2024 reveals noticeable fluctuations. In 2015, the FTT stood at 93.29 and increased to 100.48 in 2017, indicating a relatively favorable bargaining position for farmers. However, after peaking in 2019 at 100.67, the index dropped sharply to 95.7 in 2021. This decline reflects a situation where input prices rose faster than output prices, thus weakening farmers' real purchasing power. Although there has been a gradual recovery in subsequent years, the FTT has not returned to its peak level. These fluctuations highlight the economic vulnerability of coconut farmers, which, based on production and rural labor theories, may influence their motivation and employment participation in the sector (Todaro & Smith, 2020; Pingali, 2012).

In addition to the Farmer's Terms of Trade (FTT), another important indicator in analyzing labor absorption in the coconut plantation subsector is Gross Value Added (GVA). GVA is an economic indicator that represents the sectors contribution to the Gross Regional Domestic Product (GRDP) after subtracting intermediate input costs (BPS, 2023). It reflects the efficiency and productivity of the production process. In the context of coconut plantations, an increase in GVA

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implies an enhanced production value, which theoretically correlates with greater labor absorption, both directly and indirectly (Siregar & Baga, 2019; Soekartawi, 2003). This supports the notion that higher agricultural value-added stimulates employment, particularly in post-harvest and processing activities (Suryana, 2014). Therefore, GVA analysis provides essential insight into the sectors capacity to foster local economic growth and job creation.

**Table 5**. Gross Value Added (GVA) for the Smallholder Coconut Plantation Subsector (Rp million)

| Year | GVA | Growth |
|---|---|---|
| 2015 | 564486,07 | - |
| 2016 | 602698,11 | 6,77 |
| 2017 | 601711,46 | -0,16 |
| 2018 | 533016,45 | -11,42 |
| 2019 | 519551,07 | -2,53 |
| 2020 | 569923,37 | 9,70 |
| 2021 | 628162,84 | 10,22 |
| 2022 | 640646,09 | 1,99 |
| 2023 | 65067,53 | 1,57 |
| 2024 | 681799,20 | 4,79 |

Source: BPS Statistics Indonesia (processed), 2023

Based on Table 4, the development of gross value added (GVA) in the smallholder coconut plantation subsector in Riau Province shows significant fluctuations over the 2015–2024 period. The highest GVA was recorded in 2024, amounting to Rp681,799.20 million, while the lowest was in 2018, with a value of Rp533,016.45 million. The sharp decline in 2018 by -11.42 percent indicates a significant disruption in production processes or market conditions. In contrast, strong positive growth occurred in 2020 and 2021, at 9.70 percent and 10.22 percent, respectively.

GVA, as an indicator of the sectors contribution to the Gross Regional Domestic Product (GRDP), is crucial for reflecting the economic productivity of the sector (BPS, 2023). An increase in value added signals improved production efficiency or higher output prices relative to inputs. In this context, an increase in GVA can affect labor absorption, as higher production activity typically requires more workers, both on-farm and off-farm (Kuncoro, 2021). Therefore, GVA fluctuations should be considered in developing labor policies for the smallholder plantation sector in Riau.

## RESEARCH METHODS

This research was conducted in Pekanbaru using regional data, namely in Riau Province, in order to analyze the influence of the land area, Farmers Terms of Trade (FTT) and Gross Value Added (GVA) on labor absorption in the smallholder coconut plantation sub-sector in Riau Province over the period 2015–2024.The type of data used in this research is secondary data based on a time series for 2015-2024. This time series data is secondary data, obtained from several sources, the Secretariat of the Directorate General of Plantations, namely the variable Labor absorption in the sub-sector of provincial coconut plantations. Riau and Production Total. Meanwhile, data , Farmers Terms of Trade (FTT) and Gross Value Added (GVA) were obtained from the Riau Province Central Statistics Agency (BPS).

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The research variables that will be studied in this research are divided into two main variables, namely the dependent variable and the independent variable. The dependent variable in this research is labor. Meanwhile, the independent variable is the variable that is the cause of the occurrence or influence of the dependent variable. The independent variables in this research are land area, FTT and GVA. The operational definition of each variable indicator in this research is as follows:

1. Dependent Variable
   a. Labor (Y)
      According to Todaro and Smith (2011) labor absorption is the demand for labor to do work, or the availability of jobs to be filled by those seeking workers. It can be said that labor absorption shows how much a company absorbs labor to produce goods and services. The data used in this research was taken from data published by the Indonesian Directorate General of Plantations in the 2015 to 2025 financial reports which are expressed in units (KK).
2. Independent Variable
   a. Land Area ($X_1$)
      According to Sukirno (2016), land is an original factor of production available in nature and not created by humans, which is used in production activities. In the context of agriculture, land area determines the production capacity and becomes an important element in absorbing labor. The data used were obtained from the publications of the Directorate General of Plantations of Indonesia from 2015 to 2024, measured in hectare area (Ha).
   b. Farmers Terms of Trade (FTT) ($X_2$)
      In this study, the calculation of the Farmers Terms of Trade (FTT) or (NTP) is conducted by first calculating the farmers output value. Output is obtained by multiplying the total coconut production with the producer price per ton at the farmer level. The formula used to calculate output is:
      Output = Production Quantity (tons) × Producer Price per ton
      The data on production quantity and producer price are obtained from the official publications of the Directorate General of Plantations and the Central Bureau of Statistics (BPS) for the period 2015 to 2024. However, due to limited availability of detailed and complete quantitative Data particularly on production cost components at the farmer level an estimated approach is applied in calculating intermediate costs. Detailed data such as expenditure on seeds, fertilizers, labor, and equipment are not consistently available annually or per commodity at the provincial level. Therefore, an estimated percentage of the output is used to represent intermediate costs. Although this approach is estimative in nature, it can still be used to provide a general overview of farmers' economic conditions in the context of NTP calculation. To obtain the intermediate cost or Index of Prices Paid by Farmers ($I_b$), a conversion rate of 30% of the output value is used. This represents both production and household consumption costs incurred by the farmers. The formula is as follows:
      Ib= 0.30 × Output
      This assumption is based on previous research which suggests that intermediate costs in the agricultural subsector generally range between 20% and 40% of total output (Purnamasari, 2009; Susilowati, 2014).

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Meanwhile, the Index of Prices Received by Farmers (It) is estimated based on the producer price and production quantity. Thus, the NTP is calculated using the formula:

$$FTT = \frac{It}{Ib} \times 100\%$$

Information:
FTT = Farmers Terms of Trade
It = index of value received by farmers
Ib = index of value paid by farmers

c. Gross Value Added (GVA) ($X_3$)

The calculation of Gross Value Added (GVA) for the coconut subsector in this study refers to the definition of GVA in the System of National Accounts (SNA), which states that GVA is the difference between gross output value and intermediate consumption (United Nations, 2009). The gross output value is calculated as the result of multiplying the total coconut production in tons by the producer price per ton at the farmer level, according to FAO guidelines (2020). In this study, the calculation of Gross Value Added (GVA) is conducted to determine the gross added value from coconut production activities by smallholder farmers. GVA is obtained by subtracting intermediate costs from the total output. Output is calculated by multiplying coconut production volume with the producer price per ton at the farmer level. The output formula is as follows:

Output = Production Quantity (tons) × Producer Price per ton

Due to the limited availability of detailed production cost data at the farmer level, the intermediate cost is calculated using a conversion rate of 30% of the output value, following previous studies that indicate intermediate costs in the agricultural sector range between 20% and 40% of output (Purnamasari, 2009; Susilowati, 2014). The intermediate cost formula is:

Intermediate Cost = 0.30 × Output

Thereafter, GVA is calculated using the following formula:

GVA = Output - Intermediate Cost

GVA reflects the added value obtained by farmers from coconut production after deducting all intermediate costs incurred during the production process.

The analytical method used in this research is a quantitative data analysis method, namely where the data used is time series data from 2015 to 2024. The model used is multiple linear regression analysis with the Ordinary Least Square (OLS) estimation method, namely a method of finding values residual is as small as possible by adding the squares. The analytical tool used in this research is the Eviews 13 program.

Multiple regression analysis is used to measure the extent of the influence of the dependent variable using the independent variable. Gujarati (2012:115) defines multiple regression analysis as the study of the relationship between one dependent variable or the variable being explained and one

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or more other variables called the independent variable or explanatory variable. The multiple regression equation in Gujarati (2012:163) can be formulated as follows:

$Y_i = \beta_0 + \beta_1 X_{1i} + u_i$ .....(3.1)

The general form of multiple linear regression is:

$Y_i = \beta_0 + \beta_1 X_{1i} + +\beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_k X_{ki} + u_i$ .....(3.2)

Information :

| | |
|---|---|
| $Y_i$ | = dependent variable |
| $\beta_0$ | = *intercept*/ regression constant |
| $\beta_1, \beta_2, \beta_3$ | = Regression coefficient of each independent variable |
| $X_{1i}, X_{2i}, X_{3i}$ | = independent variables |
| $u$ | = interference factor |
| $i$ | = i-th observation |

The independent variables in this research are land area, Farmers Terms of Trade Index (NTT) and Gross Value Added (GVA). Meanwhile, the dependent variable is labor, so the research model is obtained as follows:

$Labor\ absorption = \beta_0 + \beta_1 land\ area + \beta_2 FTT + \beta_3 GVA + u$ ..... (3.2)

Information:

| | |
|---|---|
| Labor | = Number of workers in the family (KK) |
| $\beta_0$ | = *intercept*/ regression constant |
| $\beta_1, \beta_2, \beta_3$ | = Regression coefficient of each independent variable |
| Land Area | = Land Area (Ha) |
| FTT | = Farmers Terms of Trade Index |
| GVA | = Gross Value Added in billions of Rupiah |
| $u$ | = Interference factor |

## RESULT AND DISCUSSION

The regression results indicate that the Adjusted R-squared is 87.75%, meaning that the variation in labor absorption can be explained by the three independent variables by 87.75%. Simultaneously, the model is statistically significant, as indicated by the F-statistic value of 22.48 with a probability of 0.001, which is below the 5% significance level. This implies that the independent variables collectively have a significant effect on labor absorption. Partially, the variable land area (LAND AREA) has a positive and statistically significant effect (p = 0.0023), and the coconut production (FTT) variable also shows a positive and significant influence (p = 0.0261). However, the variable Gross Value Added (GVA) has a negative coefficient and is statistically insignificant (p = 0.4862), suggesting that GVA does not have a significant partial effect on labor absorption in this model.

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**The Influence of Land Area on Labor Absorption**

Based on the results of multiple linear regression, the variable land area shows a coefficient value of 0.611028 with a probability (significance) value of 0.0023. This value is below the 5% significance level (0.05), indicating that land area has a positive and significant effect on labor absorption in the smallholder coconut plantation sub-sector in Riau Province. This means that every additional hectare of coconut plantation increases labor absorption by approximately 0.611 units, assuming other variables remain constant. Theoretically, this result aligns with labor economics theory in labor-intensive agricultural sectors, where an increase in cultivated land area leads to a higher demand for labor inputs, since most of the work processes are still manually operated and labor-intensive (Todaro & Smith, 2015). In the context of smallholder plantations that typically use traditional technology, expansion of land directly increases labor demand in various activities, such as planting, maintenance, harvesting, and post-harvest handling. This finding is consistent with the study by Yulius and Hermawan (2018), which concluded that land area is positively associated with the number of laborers in the agricultural sector, especially in labor-intensive production systems like smallholder plantations. Furthermore, a study by Ramadan, Zamzami, and Rosmeli (2022) found that the greater the land area owned by farmers, the higher the income and labor requirements involved in managing commodity crops. Practically, this result is beneficial for the formulation of labor and regional development policies. Local governments can use these findings as a basis to encourage programs of land intensification and extensification to create new employment opportunities. One example is the replanting program of more than 1,400 hectares of coconut plantations in Indragiri Hilir and Pelalawan Regencies in 2024, funded by the regional and national budgets. This program aims not only to boost productivity but also to generate employment opportunities and improve the welfare of coconut farmers (Media Center Riau, 2024).

**The Influence of The Farmers Term of Trade (FTT) on Labor Absorption**

Based on the results of multiple linear regression analysis, the variable FTT (Farmers Term of Trade/NTP) shows a coefficient value of 0.385417 with a significance value (probability) of 0.0093. Since the probability value is less than the 5% significance level (0.05), it can be concluded that FTT has a positive and statistically significant effect on labor absorption. This implies that an increase in farmers' purchasing power, as reflected by a higher FTT, tends to increase employment in the peoples coconut plantation subsector This finding aligns with the research conducted by Rachmawati and Rachmawati (2023), who found that FTT has a positive and significant effect on labor absorption in the agricultural sector in West Java. Theoretically, as explained by Sadono Sukirno (2006), an improvement in farmers terms of trade indicates an increase in real income, which can stimulate production activities and lead to a higher demand for labor in rural agricultural systems. In the case of coconut plantations, where production systems are labor-intensive, improvements in income directly affect the capacity to maintain and expand plantation operations, thus increasing the need for labor. However, several structural constraints still pose a challenge in maximizing labor absorption in the coconut subsector. Issues such as pest attacks, saltwater intrusion in coastal areas like Indragiri Hilir, and land conversion from coconut to other commodities (especially oil palm) reduce the productivity and sustainability of coconut farming. These constraints have been acknowledged in various policy forums, and efforts are being made to address them. In response, the government has launched replanting and revitalization programs,

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such as the planting of 1,000 hectares of peoples coconut plantations in Indragiri Hilir, which aim to rejuvenate unproductive coconut trees. According to the Riau Plantation Office (2024), this program also includes institutional strengthening and farmer empowerment efforts to enhance productivity and sustainability.

Furthermore, the potential of integrating technology such as drones for plantation monitoring, pest control, and precision farming tools presents a transformative opportunity to increase efficiency and productivity in the coconut sector. These findings and developments suggest that policies aimed at improving NTP through price stabilization, production incentives, and technological support can contribute significantly to labor absorption. The benefits are twofold: enhancing rural livelihoods and sustaining the growth of the coconut plantation sector in Riau Province.

**The Influence of The Farmers Term of Trade (FTT) on Labor Absorption**

The regression results indicate that the Gross Value Added (GVA) variable has a negative coefficient of -0.038736 with a significance level of 0.4882. This value is higher than the 5% significance threshold, indicating that GVA does not have a significant effect on labor absorption in the smallholder coconut plantation subsector in Riau Province. The negative coefficient suggests that an increase in GVA tends to be followed by a decrease in labor absorption, although this relationship is not statistically significant. Theoretically, GVA is generally positively correlated with labor absorption because increasing productivity and economic activities in a sector are expected to boost labor demand. Mankiw (2006:45) emphasizes that "an increase in national output or sectoral value added will encourage the creation of more employment opportunities as a derivative effect of increased economic activity." However, in the context of smallholder coconut plantations in Riau, this phenomenon is not reflected in the data. This finding is in line with a study conducted by Ani and Hidayah (2022), which found that the Gross Regional Domestic Product (GRDP) of the agricultural sector did not have a significant effect on labor absorption in Indonesians agricultural sector. It was noted that an increase in agricultural output does not always coincide with increased labor absorption, especially when the growth is driven more by technological efficiency than by labor expansion. Theoretically, GVA reflects a sector's net contribution to the Gross Domestic Product after deducting intermediate inputs. An increase in GVA often reflects greater efficiency or the use of more advanced technology, which can reduce the need for manual labor. Sukirno (2004) stresses that modernization in agriculture tends to replace human labor with machinery, thus reducing labor demand despite higher production value. Todaro and Smith (2012) also emphasize that the transition from an agricultural to an industrial economy causes labor migration from rural to urban areas, especially among young people, due to better income prospects and career opportunities.

This condition is exacerbated by the shift in young labor preferences toward the industrial and service sectors, which are perceived as more economically promising than traditional agricultural sectors like coconut. In a broader context, Nurkhasanah and Sugiarto (2021) show that agricultural GRDP growth does not always lead to increased labor, particularly if growth is driven by technological efficiency rather than land expansion or labor-intensive activity. In addition, a comparison with the oil palm subsector reveals a stark contrast. Oil palm is the main contributor to the plantation sector GRDP in Riau, with a much larger contribution than smallholder coconut. This

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is due to larger business scales, more modern technologies, and more intensive policy support for oil palm. Oil palm's comparative and competitive advantages have made it more attractive to most workers, including the younger generation, compared to smallholder coconut plantations. Based on these findings, a more balanced policy is needed to stimulate value-added growth in the coconut sector, including the use of modern technologies such as drones for fertilization and land monitoring, the provision of subsidized fertilizers, and farmer capacity-building training. These efforts aim to increase the GVA of the coconut subsector so that it can contribute more significantly to labor absorption.

## CONCLUSION AND SUGGESTION

Based on the various findings analyzed, it can be concluded that the smallholder coconut subsector in Riau Province requires special attention to enhance its capacity in absorbing labor optimally. The regression results showing a negative and statistically insignificant influence of Gross Value Added (GVA) on labor absorption indicate that increases in productivity or economic output have not directly translated into job growth in this subsector. This reflects that the added value generated tends not to come from labor- intensive expansion but rather from efficiencies that do not require additional labor. Compared to the oil palm subsector, the disparity becomes more apparent. Palm oil benefits from strong policy support, modern technology, and better access to financing, allowing its contribution to the plantation sector's Gross Regional Domestic Product (GRDP) to far surpass that of smallholder coconut farming. Similarly, the industrial and service sectors offer more promising employment opportunities for young people in terms of income and career prospects. As a result, there is a migration of young labor from agriculture to modern sectors, further reducing the regeneration of labor in the coconut subsector. Moreover, smallholder coconut farming faces serious challenges such as land conversion, seawater intrusion damaging crops, and pest attacks that are not met with adequate technological responses. Research and development support remains minimal compared to other leading commodities like palm oil, hindering innovation in processing, productivity enhancement, and product diversification. Given this situation, more balanced and inclusive policies are needed to support the coconut subsector in becoming more productive and appealing. The government needs to facilitate the use of modern technologies such as agricultural drones and automated fertilization systems, expand access to subsidized fertilizers, and organize training for farmers. Furthermore, innovative agribusiness schemes and partnership models that attract younger generations must be introduced. With a holistic approach that considers economic structure, social aspects, and environmental sustainability, the smallholder coconut subsector can be transformed into a source of inclusive growth and significant labor absorption.

## REFERENCES

Andrias, A. A., Darusman, Y., & Ramdan, M. (2017). Pengaruh luas lahan terhadap produksi dan pendapatan usahatani padi sawah (Studi kasus di Desa Jelat Kecamatan Baregbeg Kabupaten Ciamis). "Jurnal Ilmiah Mahasiswa Agroinfo Galuh, 4"(1).

Ani, Y., & Hidayah, N. (2022). The effect of gross regional domestic product (GRDP) on employment absorption in the agricultural sector in Indonesia. "Journal of Economics and Public Policy, 13"(1), 45–58.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (2): 484- 497, June 2025

Badan Pusat Statistik. (2023). "Produk domestik regional bruto menurut lapangan usaha". https://www.bps.go.id

Badan Pusat Statistik. (2023). "Statistik Indonesia 2023". Jakarta: BPS.

Badan Pusat Statistik. (2024). "Nilai tukar petani (NTP) nasional September 2024". https://www.bps.go.id

Badan Pusat Statistik. (2025). "Survei Ekonomi Pertanian (SEP) 2024". Jakarta: BPS.

BPS. (2023). "Statistik upah buruh pedesaan 2023 (2012–2023)". https://www.bps.go.id/id/publication/2023/04/10/73675ac4b55e1da9ba012401

BPS Statistics Indonesia. (2023). "Statistik Perkebunan Indonesia: Kelapa 2023".

BPS Provinsi Riau. (2024). "Provinsi Riau dalam angka 2024 (2011–2023)". https://riau.bps.go.id/publication/2024/02/28/b75ed69ddf689a2e23f46207

Direktorat Jenderal Perkebunan. (2023). "Buku publikasi statistik (2011–2023)". https://ditjenbun.pertanian.go.id

FAO. (2020). "Handbook on agricultural cost of production statistics". Food and Agriculture Organization of the United Nations.

Gujarati, D. N. (2012). "Basic econometrics" (5th ed.). McGraw-Hill Education.

Karmini. (2010). "Ekonomi produksi". Jakarta: Universitas Terbuka.

Kuncoro, M. (2021). "Ekonomi pembangunan: Teori, masalah, dan kebijakan". Jakarta: UPP STIM YKPN.

Mankiw, N. G. (2006). "Makroekonomi" (Edisi ke-4, terj. R. E. Suganda). Jakarta: Erlangga.

Nurhalim, R. (2023, August 20). Tanaman kelapa tua jadi tantangan produksi di Riau. "Republika.co.id". https://www.republika.co.id/berita/rzklpq383

Nurkhasanah, & Sugiarto, D. (2021). Analysis of the effect of agricultural GRDP on employment absorption in Central Java Province. "Journal of Economics and Development Studies, 21"(2), 112–122.

Pingali, P. (2012). Green revolution: Impacts, limits, and the path ahead. "Proceedings of the National Academy of Sciences, 109"(31), 12302–12308.

Purnamasari, D. D. (2009). "Analisis biaya antara pada usahatani kelapa rakyat di Indonesia". Jakarta: Pusat Penelitian dan Pengembangan Sosial Ekonomi Pertanian, Badan Penelitian dan Pengembangan Pertanian, Kementerian Pertanian.

Purnamasari, R. S. (2009). Dampak aksesibilitas terhadap pendapatan rumah tangga petani di pedesaan Indonesia. "Jurnal Ekonomi dan Pembangunan Indonesia, 10"(1), 1–15.

Ramadan, S., Zamzami, Z., & Rosmeli, R. (2022). The effect of land area, capital, and labor on the

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (2): 484- 497, June 2025

income of areca nut farmers in Sungai Beras Village, Mendahara Ulu District. “E-Jurnal Ekonomi Sumberdaya dan Lingkungan, 12”(2), 108–118.

Riyadh, M. (2015). Nilai tukar petani: Konsep dan implikasinya terhadap kesejahteraan petani. “Agrisciance: Jurnal Ilmiah Universitas Trunojoyo Madura, 1”(1), 1–10.

Simanjuntak, D. (2023, April 4). Hama monyet serang perkebunan kelapa Riau, petani keluhkan kerugian. “Kompas.com”. https://www.kompas.com/regional/read/2023/04/04/121502678

Simanjuntak, M., Yulmardi, & Bhakti, A. (2018). Pengaruh PDRB sektor pertanian, nilai tukar petani dan investasi sektor pertanian terhadap penyerapan tenaga kerja sektor pertanian Provinsi Jambi. “E-Jurnal Ekonomi Sumberdaya dan Lingkungan, 7”(1), 1–12.

Siregar, H., & Baga, L. M. (2019). “Ekonomi pertanian dan agribisnis”. Bogor: IPB Press.

Soekartawi. (2003). “Teori ekonomi produksi dengan pokok bahasan analisis fungsi Cobb-Douglas”. Jakarta: RajaGrafindo Persada.

Sukirno, S. (2004). “Introduction to microeconomic theory” (3rd ed.). Jakarta: RajaGrafindo Persada.

Susilowati, S. H. (2014). Karakteristik dan strategi petani kecil dalam menghadapi perubahan iklim. “Forum Penelitian Agro Ekonomi, 32”(1), 25–42.

Susilowati, S. H. (2014). Kebijakan pembangunan pertanian dalam mendorong transformasi struktural ekonomi pedesaan. “Forum Penelitian Agro Ekonomi, 32”(2), 91–108.

Suryana, A. (2014). “Kebijakan pembangunan pertanian: Pendekatan sistem dan kelembagaan”. Bogor: IPB Press.

Sutrisno, A. (2023, July 13). Intrusi air laut rusak lahan kelapa di pesisir Riau. “Bisnis.com”. https://sumatra.bisnis.com/read/20230713

Tanaman Perkebunan Rakyat 2023. (2024). https://www.bps.go.id/id/publication/2024/04/23/b5d2c832a10378d91b96dfd

Todaro, M. P., & Smith, S. C. (2012). “Economic development” (11th ed.). Boston: Addison-Wesley.

Todaro, M. P., & Smith, S. C. (2015). “Economic development” (12th ed.). Pearson Education.

Todaro, M. P., & Smith, S. C. (2020). “Economic development” (13th ed.). Pearson Education.

United Nations. (2009). “System of national accounts 2008”. New York: United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, World Bank.

Yulius, Y., & Hermawan, H. (2018). The effect of land area on labor absorption in the agricultural sector. “Jurnal Ekonomi dan Pembangunan Indonesia, 19”(1), 41–52.