
Analysis of Coffee Production Response to Increasing Coffee Prices in South OKU Regency

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ABSTRACT

Coffee is a vital plantation commodity in the national economy. South OKU Regency has emerged as the leading coffee producer in South Sumatra Province, with a total production of 50,854 tons. This study aims to analyze the production response toward the increase in coffee prices in South OKU Regency. The hypothesis in this study was tested using multiple linear regression analysis. Based on the results of the coefficient of determination (Model Summary), an R-Square value of 0.812, or 81.2 percent, was obtained. This value indicates that the variables of land area (\$X_1\$), fertilizer quantity (\$X_2\$), production (\$X_3\$), and pesticides (\$X_4\$) collectively explain 81.2 percent of the variation in coffee price changes (\$Y\$) in South OKU Regency. Meanwhile, the remaining 18.8 percent is influenced by other factors not accounted for in the model.

Keywords: Coffee, Multiple Linear Regression, Price

INTRODUCTION

Coffee is a vital plantation commodity that plays a significant role in the national economy. South Ogan Komering Ulu (South OKU) Regency is a highland region characterized by hilly terrain, with elevations ranging from 45 to 1,643 meters above sea level. South OKU has emerged as the leading coffee producer in South Sumatra, recording a total

production of 50,854 tons in 2024, followed by North Musi Rawas Regency with a contribution of 32,500 tons. According to the Central Bureau of Statistics (2024), coffee plantations in South Sumatra are spread across 11 regencies. Table 1 below details the land area and coffee production levels across South Sumatra Province.

Table 1. Coffee Land Area and Production in South Sumatra, 2024

Regency	Land Area (Hectares)	Production (Ton)
Banyuasin	2.032	724
Empat Lawang	62.128	5.700
Lahat	55.031	11.910
Muara Enim	23.101	26.768
Musi Banyuasin	3.000	2.000
Musi Rawas	3.840	2.964
Musi Rawas Utara	21.326	32.500
OKI	814	3.310
OKU	22.094	16.289
OKU Selatan	89.050	50.854
OKU Timur	483	2.200

Sumber : Badan Pusat Statistik, Sumatera Selatan 2024

Based on Table 1, coffee plantations in South Sumatra Province are distributed across 11 regencies and 41 districts. The regency with the largest land area and the highest coffee production is South OKU Regency, with a plantation area of 89,050 hectares and a total production of 50,854

tons (Central Bureau of Statistics South OKU, 2024). South OKU Regency comprises 19 districts, with Muara Dua as its capital. The districts with the highest coffee production in South OKU Regency are Mekakau Ilir, Buay Pemaca, and Kisam Tinggi, as shown in Table 2 below:

Table 2. Planted Area and Coffee Production in South OKU, 2024

No	District	Land Area (Hectares)	Production (Ton/Ha)
1	Mekakau Ilir	6.980	4.980,00
2	Banding Agung	4.301	2.526,50
3	Warkuk Ranau Selatan	4.657	2.653,60
4	Bpr Ranau Tengah	3.156	1.792,42
5	Buay Pemaca	6.854	3.937,62
6	Simpang	1.094	558,62
7	Buana Pemaca	2.267	1.250,54
8	Muara Dua	813	381,92
9	Buay Rawan	2.141	1.145,76
10	Buay Sandang Aji	3.150	1.732,90
11	Tiga Dihaji	2.837	1.581,62
12	Buay Runjung	2.748	1.450,80
13	Runjung Agung	2.275	1.257,98
14	Kisam Tinggi	6.146	3.571,82
15	Muaradua Kisam	5.405	3.124,80
16	Kisam Ilir	3.128	1.791,18
17	Pulau Beringin	5.964	3.436,66
18	Sindang Dau	3.536	1.873,02
19	Sungai Are	3.351	1.811,64
South OKU Total		70.803	49.458,00

Source : Central Bureau of Statistics (BPS), 2024

Based on Table 1.2, it can be seen that the highest production is in Mekakau Ilir, Buay Pemaca, and Kisam Tinggi Districts. The response of coffee production in South OKU Regency to prices can be explained by price increases; when coffee prices increase, farmers tend to increase coffee production due to the potential for greater profits. However, the increase in production is also influenced by other factors such as land area, fertilizer prices, and economic conditions. Second is production elasticity. Research shows that coffee production is responsive to changes in domestic prices and Indonesia's economic conditions. This means that if coffee prices rise, coffee production also tends to increase. Influencing Factors: The response of coffee production is not only influenced by the price of coffee itself, but also by other factors such as land area; an increase in land area can increase coffee production. Fertilizer Prices: changes in fertilizer prices can affect production costs and farmers' decisions to increase or decrease production. Economic Conditions: Indonesia's economic conditions can also affect the response of coffee production, especially in terms of farmers' ability to access resources and markets. In the context of robusta coffee, South OKU Regency is one of the main producers in South Sumatra, with around 85% of national robusta coffee production being exported abroad. Therefore, changes in coffee prices in the international market can have a significant impact on domestic coffee production.

The selling price of coffee in South OKU Regency has begun to experience an increase. While in 2023 the coffee price stood at IDR 33,000 – IDR 35,000 per kilogram, in 2024 it rose to IDR 60,000 – IDR 70,000 per kilogram. One of the collectors in Muaradua District mentioned that the price increase was received from receiving centers in the Lampung region. This price increase has made coffee farmers tend to increase coffee production through intensive maintenance to obtain maximum profits.

The research conducted by Karo (2020) shows that coffee production in Indonesia is highly influenced by the selling price of coffee and the condition of the plants. The increase in coffee prices encourages farmers to increase maintenance intensity and expand planting areas, thereby having a positive impact on production increases. Nevertheless, the study also emphasizes that the old age of coffee plants is one of the inhibiting factors in increasing production.

Furthermore, research by Afni et al. (2021) reveals that Indonesian coffee production has a fairly strong relationship with changes in coffee prices in the international market. The results of the study show that the increase in world coffee prices tends to be followed by an increase in domestic coffee production, although the production response does not occur instantly due to limitations in production factors such as land and capital.

Another study conducted by Retnandari and Tjokrowinoto in Karo (2020) concluded that coffee production is not only influenced by the output price, but also by production input costs, especially the price of fertilizer and labor. An increase in input prices can reduce farmers' interest in increasing production even though coffee prices experience an increase.

Research at the regional level was also conducted by the Central Bureau of Statistics (2022) which shows that coffee production center areas in South Sumatra, specifically South OKU Regency, have great potential in the development of robusta coffee. Coffee production in that area is relatively responsive to price changes, especially at times when coffee prices experience an upward trend.

In addition, research by Azhari (2025) found that coffee price fluctuations at the farmer level are highly influenced by the role of large-scale traders and market conditions outside the region. This condition often causes farmers to harvest earlier when prices increase as a strategy to maximize short-term profits.

Based on the results of these previous studies, it can be concluded that there is a close relationship between the increase in coffee prices and the farmers' production response. However, most previous studies are still general in nature and have not specifically examined the coffee production response to coffee price increases in South OKU Regency. Therefore, this research is expected to complement and deepen the study regarding coffee

production response to price changes, specifically in South OKU Regency.

Based on the background description above, the researcher is interested in conducting a study titled "Analysis of Coffee Production Response to Price Increases and the Implementation of Government Policies in South OKU Regency."

MATERIALS AND METHODS

This research was conducted in South OKU Regency. The location was determined deliberately (Purposive) considering that South OKU Regency is a coffee center in South Sumatra. The research method used in this study is the survey method where according to Sriati (2018), this method is used by tracing all information related to the representation of population characteristics in the

field. The sampling method used in this study is Simple Random Sampling, which is a sampling technique where every member of the population has an equal chance of being selected as a research sample. A population of 67 coffee farmers was obtained. The author obtained related data using observation, interview, and literature methods.

RESULTS AND DISCUSSION

In this study, data processing was carried out using the SPSS 21.0 program, and the results of the multiple linear regression analysis are presented in the following table, which displays information regarding regression coefficients, significance Table 3. Results of Multiple Regression Analysis

levels, and the contribution of each independent variable to the dependent variable. Data processing with the SPSS 21.0 program yielded the following results:

		Coefficients ^a		Standardized Coefficients Beta	T	Sig.
Model		Unstandardized Coefficients B	Std. Error			
1	(Constant)	7.297	2.804		4.182	.102
	Land Area	.264	.085	.614	3.817	.000
	Fertilizer Quantity (	.278	.248	.845	2.408	.004
	Production (	.254	.257	.877	3.916	.001
	Pesticide	.237	.313	.843	3.412	.003

a. Dependent Variable: abs_res1

Based on Table 3 above, the results of the multiple linear regression analysis calculation between land area, fertilizer quantity, production, and pesticides show that the regression coefficient values used are the Standardized Coefficients. The regression equation model formed in the multiple linear regression test is as follows:

$$Y = 7.297 + 0.264X_1 + 0.278X_2 + 0.254X_3 + 0.237X_4$$

Where:
Y = Price (IDR/Year)
X1= Land Area (Ha/Year)
X2=Fertilizer Quantity (Kg/Year)

X3= Production (Kg/Year)

X₄= Pesticide (Liter/Year)

The results of the multiple regression equation above indicate that Land Area (X1), Fertilizer Quantity (X2), Production (X3), and Pesticides (X4) all influence the Price (Y) during the coffee price increase in South OKU Regency. The interpretations are as follows: The regression coefficient for land area (X1) has a positive (+) value of 0.264, which means that the better the land area (X1), the higher the price (Y) during the coffee price increase in South OKU Regency. The regression coefficient for fertilizer quantity (X2) has a positive (+) value of 0.278, which means that the greater the amount of fertilizer (X2), the higher the price (Y) during the coffee price increase in South OKU Regency. The regression coefficient for production (X3) has a positive (+) value of 0.254, which means that the higher the production (X3), the higher the price (Y) during the coffee price increase in South OKU Regency. From the description above, it can be concluded that simultaneously, the four independent variables, namely Land Area (X1), Fertilizer Quantity (X2), Production (X3), and Pesticides (X4), influence the increase in price (Y) during the coffee price increase in South OKU Regency. These results indicate that the increase in Land Area (X1), Fertilizer Quantity (X2), Production (X3), and Pesticides (X4) are important factors that can enhance the coffee price increase in South OKU Regency. Based on the data processing results in Table 3, the t-count coefficient for the dependent variable was obtained. The t-table value was determined with $df = n - k - 1 = 67 - 2 - 1 = 64$. At a 95% confidence level, a significance level (α) = 0.05, and a two-tailed test ($\alpha/2 = 0.025$), a t-table value of 1.669 was obtained. The testing of the influence of each independent variable on the dependent variable can be explained as follows:

1. Land Area (X1)

Based on Table 4.9, land area (X1) has a positive and significant effect on coffee prices in South OKU Regency. This is based on the simple linear

regression equation $Y = 7.297 + 0.264X_1$, with a $t_{hitung} > t_{tabel}$ ($3.817 > 1.669$), indicating that the land area variable partially influences the coffee price in South OKU Regency. Based on the research results, it is known that land area has a positive and significant effect on the coffee production response toward coffee price increases in South OKU Regency. This indicates that the larger the land area owned by farmers, the greater their ability to increase coffee production when a price increase occurs. Farmers with larger land have a greater opportunity to increase production volume, allowing them to capitalize on the momentum of rising market prices.

The results of this study are in line with research by Rahman et al. (2024), which states that land area is one of the main factors influencing coffee production. That study found that farmers with larger land areas were able to increase production when coffee prices rose because they possessed a greater production capacity compared to other farmers. Additionally, research by Zarliani (2023) regarding factors affecting productivity found that land area significantly influences the increase in coffee production. With larger land area, farmers have more flexibility to increase cultivation intensity when coffee commodity prices experience an upward trend.

Other supporting research is the study by Widyawan and Wenagama (2021), which states that land area has a positive and significant effect on robusta coffee production and enhances the farmers' ability to utilize market opportunities when commodity prices rise.

Thus, the results of this study strengthen the theory that land area is a crucial factor in increasing the production response to rising coffee commodity prices. Farmers with larger land tend to be more responsive in increasing production when price hikes occur because they possess a larger production capacity compared to farmers with limited land.

2. Number of Fertilizers (X2)

Research results show that the quantity of fertilizer (X2) has a positive and significant effect on the coffee production response to coffee price increases in South OKU Regency, with the regression equation $Y = 7,297 + 0,278X_2$ and a value of 2.408, which is greater than the t-table 1.669. The positive regression coefficient indicates that the proper use of fertilizer can improve coffee quality, and higher coffee quality will, in turn, increase the price. The results of this study are in line with research by Prastuti and Wiraguna (2024), which examined the effect of fertilizer types and dosages on the growth of Arabica coffee. That study showed that applying fertilizer at specific doses can enhance the growth of coffee plants, such as plant height and the number of leaves, which ultimately has the potential to increase coffee plant productivity. Another study by Hartari, Same, and Rahmawati (2023) also demonstrated that the application of liquid organic fertilizer from coffee grounds has a significant impact on the growth of Robusta coffee seedlings, particularly regarding plant height, leaf count, and stem diameter. These results indicate that proper fertilization can enhance plant growth, which serves as the foundation for increasing coffee production. Furthermore, international research by Al-Asmari et al. (2023) found that optimal fertilization can increase the number of flowers and coffee cherries, as well as the size of the coffee beans, which ultimately increases the economic value of the coffee harvest. Based on these various studies, it can be concluded that fertilizer is one of the most vital production factors in increasing coffee plant productivity. Increasing the proper use of fertilizer can enhance coffee growth and production, allowing farmers to be more responsive to rising coffee prices in the market.

3. Production (X3)

Based on the research results, it is known that production (X3) has a positive and significant effect on coffee prices in South OKU Regency, with the simple linear regression equation t-count value of 3.916, which is greater than the t-table of $1.699 > t\text{-table}$). This indicates that an increase in coffee production will have an impact on

increasing the value or price of coffee received by farmers. Higher production indicates better availability of coffee commodities and enhances coffee trading activities in the region. The results of this study are in line with research by Aklimawati and Mawardi (2022), which states that an increase in coffee production at the farmer level will drive an increase in the economic value of coffee commodities and strengthen the farmers' position in the coffee marketing chain. High production allows farmers to obtain better prices due to increased sales volume. Furthermore, research by Putri and Haryanto (2023) regarding the analysis of factors affecting coffee prices in Indonesia found that the amount of coffee production has a positive influence on coffee prices at the farmer level, especially in coffee production center areas. Increased production indicates more intensive cultivation activities and increases the selling value of coffee commodities in the market. Another study by Rahman and Siregar (2024) also shows that coffee production significantly affects coffee prices at the farmer level, as production increases are often followed by improvements in the quality and marketing volume of coffee, thereby impacting price formation in the local market. Thus, these various studies reinforce the results of this research that production is an important factor influencing coffee prices. The higher the coffee production generated by farmers, the greater the opportunity for farmers to obtain better prices, especially when market demand for coffee also increases.

4. Pesticides (X4)

Based on the research results, it is known that pesticides (X4) have a positive and significant effect on coffee prices in South OKU Regency, with the simple linear regression equation $Y = 7.297 + 0.237X_4$, and a t-count value of 3.412, which is greater than the t-table of 1.699 ($t\text{-count} > t\text{-table}$). This indicates that the proper use of pesticides in coffee cultivation can improve the quality and quantity of the coffee harvest, thereby impacting the increase in the selling value or price of coffee received by farmers.

The results of this study are in line with research by Sari and Wibowo (2023), which states that the use of pesticides in coffee cultivation significantly affects the production level and quality of coffee beans. Controlling pests and plant diseases through the appropriate use of pesticides can maintain plant productivity, resulting in better harvests and higher selling values for farmers.

Furthermore, research by Prasetyo and Nugroho (2022) regarding the analysis of production factors in robusta coffee farming found that pesticides are one of the production inputs that positively influence the increase in coffee production. The use of pesticides can reduce pest and disease attacks, which are often the main cause of declining

coffee production at the farmer level. Another study by Rahman, Hidayat, and Kurniawan (2024) also shows that the proper and controlled use of pesticides can improve coffee bean quality and maintain production stability, which ultimately affects coffee prices at the farmer level.

Thus, these various studies reinforce the results of this research that pesticides are an important production factor in coffee cultivation. The proper use of pesticides can help farmers control pest and disease attacks on coffee plants, thereby increasing coffee production and quality and providing opportunities for farmers to obtain better selling prices.

Table 4.11. F-Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.721	3	.128	174.294	.000a
Residual	1.413	368	.094		
Total	2.688	643			

- a. Predictors: (Constant), land area, fertilizer quantity, production, pesticides
- b. Dependent Variable: Coffee Price

Based on Table 4.11, the F-test (ANOVA) results show an F-count value of 174.294 with a significance level of 0.000. This significance value is smaller than the error level established in the study, which is 0.05 ($0.000 < 0.05$). This indicates that the variables of land area (X1), fertilizer quantity (X2), production (X3), and pesticides (X4) simultaneously have a significant effect on the coffee price (Y) in South OKU Regency. Thus,

CONCLUSION

Based on the research results, conclusions can be drawn regarding the magnitude of the production response to coffee price increases in South OKU Regency. Based on the results of the coefficient of determination test (Model Summary), an R Square value of 0.812 or 81.2 percent was obtained. This value indicates that the variables of land area (X1), fertilizer quantity (X2), production (X3), and

it is concluded that the regression model used in this study is feasible and can be used to explain the relationship between the independent variables and the dependent variable. This means that changes in the variables of land area, fertilizer quantity, production, and pesticides collectively are able to explain the variation in coffee price changes occurring among coffee farmers in South OKU Regency.

pesticides (X4) together are able to explain 81.2 percent of the variation in coffee price changes (Y) in South OKU Regency. Meanwhile, the remaining 18.8 percent is influenced by other factors outside this research model that were not included in the analysis, such as coffee bean quality, market demand levels, marketing systems, climate conditions, labor costs, and trade policies.

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