

ANALYSIS OF PRODUCTION FACTORS AREN GENJAH (Arenga Pinnata) IN DELI SERDANG DISTRICT

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Abstract

This research aims to analyze the factors that influence production (capital, labor, product quality and land area) on the production volume of early maturing sugar palm farmers in Deli Serdang. This research was conducted using a survey method and determining the research location purposively. The sample selection method uses the Slovin formula by taking samples from farmers so that the sample used is 102 respondents. The analysis used is the Cobb-Douglas production function. The research results show that the production factor that has a real influence on the production of early maturing sugar palm is labor.

Keywords: *early maturing palm, production factors, production*

INTRODUCTION

Indonesia is an agricultural country with its economy heavily supported by the agricultural, plantation and agribusiness sectors. One sector that needs to be strengthened to strengthen Indonesia's economic structure is the agribusiness sector because it has a strong economic structure (Elvitriadi, 2020). Indonesia is the main exporting country of palm sugar in the world. Based on the latest data we have, the export performance of products made from coconut sap or palm sugar or siwalan sugar reached 36.5 thousand tons with a value of USD 49.3 million in 2019, which increased to 39.4 thousand tons with a value of USD 63 million. .5 million in 2020 (Kemenprin, 2023).

Deliserdang Regency is one of the sugar palm centers with a total production of 1,806.00 tonnes and a planting area of 1,619 Ha over a period of 3 years, namely from 2019 to 2021. In connection with the above, it can be said that in Deliserdang Regency many sugar palm farmers have emerged. . (BPS, 2022). In developing the palm sugar business, obstacles are often encountered due to the absence of groups of palm sugar farmers and the lack of empowerment of palm sugar entrepreneurs, which means that the palm sugar business does not experience progress that can provide benefits to farmers or entrepreneurs from an economic perspective. Apart from that, there are several things that can reduce palm sugar production which of course affect the income of palm sugar farmers, such as crop failure is the biggest risk to palm sugar production. Summers that are too long make palm flowers dry, fail to become sugar due to lack of quality sap, and lack of knowledge in the production and printing of palm sugar. (Princess, 2022)

Based on the background of this problem, the author wants to see how the business activities carried out by residents in Sibolangit and Hamparan Perak are because the palm sugar production business is one of the businesses of choice for the community and the author wants to know to what extent the influence of capital, labor, quality product and land area on the production of sugar palm farmers by conducting research entitled "Analysis of Production Factors of Palm Sugar Palm (Arenga Pinnata) in Deliserdang Regency"

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METHOD

Research Location and Time

This research will be carried out in Sibolangit District and Hamparan Perak District, Deli Serdang Regency, North Sumatra. The location selection was carried out purposively because in Kutalimbaru District there are sugar palm plantations that grow naturally in the forest. However, in this area sugar palm is cultivated according to research needs.

Method of collecting data

The data obtained in this research includes primary and secondary data, which were collected through questionnaires and interviews as additional data. This research is focused on a specific subject (Adiyanta, 2019). The variables that will be observed in this research include Capital (X1), Labor (X2), Product Quality (X3), Land Area (X4), and Production Results (Y) of early growing sugar palm in Sibolangit and Hamparan Perak Districts, Deli Serdang Regency.

Data Analysis

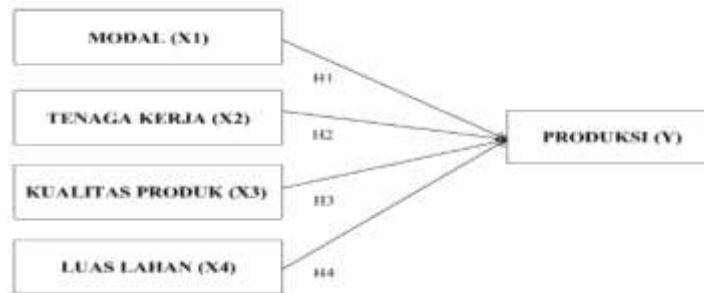
The data analysis technique applied is multiple linear regression with the help of SPSS version 26 software. Multiple linear regression is an analysis method used to evaluate the influence of independent variables on the dependent variable simultaneously (Ghozali, 2016).

Cobb-Douglas production function:

$$Y = \beta_0 X_1^{\beta_1} X_2^{\beta_2} \dots X_i^{\beta_i} \dots X_n^{\beta_n} e^{\epsilon}$$

After being transformed into double natural logarithm (ln):

$$\ln Y = \ln \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \dots + \beta_i \ln X_i + \dots + \beta_n \ln X_n + \epsilon$$



RESULTS AND DISCUSSION

A. Linear Regression Analysis

Table 1. Adjusted R Square Results in the Regression Model Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,456	2,707		,538	,592
	X1	,189	,358	,210	,528	,599
	X2	,197	,100	,342	1,961	,053
	X3	,033	,145	,052	,227	,821
	X4	,010	,185	,016	,055	,956

a. Dependent Variable: Y

Source: Processed data, 2024

With the Cobb-Douglas production function.

$$Y = 1.456 + 0.189X_1 + 0.197X_2 + 0.033X_3 + 0.010X_4$$

The magnitude of the elasticity of each independent variable can be seen from the magnitude of the rank coefficient for each independent variable. Capital elasticity (X_1) is 0.189, labor elasticity (X_2) is 0.197, product quality elasticity (X_3) is 0.033, and land area elasticity (X_4) is 0.010. These results show that the elasticity for each input variable is <1 (smaller than one), which means that the variables capital, labor, product quality and land area are inelastic. If by 1%, then Y will increase by 0.033% ceteris paribus, and if X_4 (land area) increases by 1%, then Y will increase by 0.010%.

B. Adjusted Determinant Coefficient Test (R^2)

Table 2. Adjusted R Square Results in the Regression Model
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598a	.357	.331	.09432

a. Predictors: (Constant), X_4 , X_2 , X_3 , X_1

Source: Processed data, 2024

In table 2, the Adjusted R Square value of 0.357 shows that 35.7% of early maturing sugar palm production can be explained by the variables capital, labor, product quality and land area. Meanwhile, the remaining 64.3% is explained by confounding variables, namely variables outside the model that are not included in the model. Based on the explanation of statistical tests, it can be seen that the coefficient of determination (R^2) in this study is 0.357, which means that 35.7% of sugar palm production can be explained by the production factors in this study.

C. F test

Table 3. F Test Results on Regression Model
ANOVAa

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.479	4	.120	13,470	.000b
1 Residual	.863	97	.009		
Total	1,342	101			

a. Dependent Variable: Y

b. Predictors: (Constant), X_4 , X_2 , X_3 , X_1

Source: Processed data, 2024

Based on table 5, looking at the probability level, it shows that the probability value of 0.000 is smaller than the significance level of 0.05 (α), it can be concluded that the independent variables (capital, labor, product quality and land area) together have a significant influence. significant simultaneously or jointly on the dependent variable (maturing sugar palm production) in Deli Serdang Regency.

D. T test

Table 4. Results of the t test on the regression model
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1,456	2,707		,538	,592
X1	,189	,358	,210	,528	,599
X2	,197	,100	,342	1,961	,053
X3	,033	,145	,052	,227	,821
X4	,010	,185	,016	,055	,956

a. Dependent Variable: Y

Source: Processed data, 2024

1. Modal hypothesis (X1)

The calculation results from using SPSS 26 above are the values t_{Hitung} of variable X1 is 0.937. Because the value $0.528 < t_{Hitung} t_{tabel} 1.66071$ So it can be concluded that this hypothesis is rejected, meaning that the modal variable has a positive effect on the production of early maturing sugar palm in Deli Serdang Regency. The capital variable is a variable that has a positive and insignificant effect on the production of early maturing sugar palm production in Deli Serdang Regency. This is aimed at a regression coefficient of 0.599 but the probability value is greater than 0.05

2. Labor hypothesis (X2)

The calculation results from using SPSS 26 above are the values t_{Hitung} from with a B value of 0.197. This shows that 1% change in variable Y affects 0.19% of variable X2 with a standard error value of 0.100 (smaller than 0.197) which indicates that there is no statistical violation. The Standardized Coefficients Beta value of 0.342 indicates a large tolerance for change. The t value (elasticity coefficient) of 1.961 gives the impression that this variable is elastic, where the calculated T value > T Table (5.490 > 1.66071). A sigma value of $0.000 < 0.05$ (α) explains that this variable does not indicate a violation of classical statistical assumptions. It can be concluded that variable

3. Product quality hypothesis (X3)

The calculation results using SPSS 26 above show that the t-count value of variable X3 is 0.937. Because of value $t_{Hitung} 0.227 < t_{tabel} 1.66071$ So it can be concluded that this hypothesis is rejected, meaning that the technological variable has a positive effect on the production of early maturing sugar palm in Deli Serdang Regency. The product quality variable is a variable that has a positive and insignificant effect on the production of mature sugar palm production in Deli Serdang Regency. This is aimed at a regression coefficient of 0.821 but the probability value is greater than 0.05

4. Land area hypothesis (X4)

The calculation results using SPSS 26 above show that the t-count value of the variable X4 is 0.937. Because of value $t_{Hitung} 0.055 < t_{tabel} 1.66071$ So it can be concluded that this hypothesis is rejected, meaning that the technological variable has a positive effect on the production of early maturing sugar palm in Deli Serdang Regency. The land area variable is a variable that has a positive and insignificant effect on the production of early maturing sugar palm in Deli Serdang Regency. This is aimed at a regression coefficient of 0.956 but the probability value is greater than 0.05

Conclusion

Based on the research results and discussions that have been described previously it can be concluded as follows:

1. Capital has no significant effect on the production of Gaenjah sugar palm in Deli Serdang Regency
2. Labor has a positive and significant effect on early maturing sugar palm production in Deli Serdang Regency
3. Product quality has no significant effect on the production of Gaenjah sugar palm in Deli Serdang Regency
4. Land area has no significant effect on the production of Gaenjah sugar palm in Deli Serdang Regency

Recommendation

The government is advised to make a policy related to developing the feasibility of goldfish business in Simalungun Regency in the form of capital assistance, seeds, feed (carp pellets), so that it is provided sustainably and evenly to all farmers and the government is also expected to provide development, empowerment and institutional guidance for fish cultivator groups. through agricultural extension officers in an effort to increase productivity and income.

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