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Analysis of The Influence of The Area and Amount of Tea Production on The Volume of Indonesian Tea Exports

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Abstract

This study aims to determine how much the area and amount of tea production, both partially and simultaneously, influence the volume of tea exports in Indonesia. The type of research conducted is quantitative descriptive research. The data used in this study is secondary data with a time series of 34 years, with a period of 1988 to 2021. The independent variable in this study is the area of tea plantations and the amount of tea production, while the dependent variable is the volume of tea exports in Indonesia. The data were analyzed using multiple linear regression analysis. The results showed that the area had no effect and was not significant on the volume of Indonesian tea exports, while the amount of production had an effect and was significant on the volume of Indonesian tea exports. It is simultaneously known that the area and amount of production have a significant effect on the volume of Indonesian tea exports. The ability of the estimation model to explain variations in the dependent variable (R2) is 16%, with the remaining 84% of the variation being explained or influenced by other variables, at a confidence level of 95%.

Keywords: Area; Total Production; Volume of Tea Exports

1. Introduction

One of the sub-sectors with considerable potential is the plantation sub-sector, which contributes around 3.95 percent to total GDP and 29.67 percent to the agriculture, forestry and fisheries sector or is the first in the sector. Tea is one of the plantation commodities that has great potential in economic activities in Indonesia. Demand for tea (19.5%) is higher than the growth in production (8.2%). The area that tends to decrease is also followed by the amount of tea production which also decreases and experiences fluctuations and even negative growth. This greatly affects the volume of tea exports which also tends to decline because it is caused by the area and production which together have decreased from year to year. An increase in demand that is getting higher but not matched by an increase in production will certainly have an economic impact such as price increases and even scarcity.

Table 1. Tea Contribution to the Agricultural Sector (Thousand US$)

Year	Tea Contribution	Agricultural Contribution	Percentage Contribution
2017	88,171	5,934,180	1.49
2018	78,624	5,822,944	1.35
2019	63,791	5,835,423	1.09
2020	66,850	6,192,641	1.08
2021	62,171	6,666,820	0.93

Source : Bank Indonesia

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2. Literature Review

2.1. Export

Export is an economic activity that supplies a commodity to another country and is carried out in accordance with government regulations and expects payment in foreign currency. The main objective of any business venture is to make a profit. Export volume can be defined as the quantity or amount of goods or services sold by producers or companies from one country to another. Export volume is one of the indicators of international trade to measure a country's export performance, an increasing export volume indicates that the demand for the country's products and services is also increasing in the international market.

2.2. Area

Plantation area is a quantity that expresses the two-dimensional size of a clearly demarcated part of the plantation area. Area is included in land and is one of the factors of production. The preservation and utilization of production factors will encourage the smooth production process including increasing the quality and quantity of production. The preservation and utilization of production factors will encourage a smooth production process including an increase in the quality and quantity of production.

2.3. Production

Production is an economic activity carried out for the purpose of producing goods and services that can be utilized to meet the needs of human life. In general, the factors of production are labor or human resources, capital, natural resources, entrepreneurship, and technology.

3. Research Method

Data analysis is a data processing process with the aim of obtaining information that can solve a problem and serve as a basis for decision making.

3.1. Classical Assumption Test

- Normality Test
  The normality test is used to test whether the standardized residual values in the regression model are normally distributed or not. To detect whether the residuals are normally distributed or not, it can be done with the residual histogram graph and see the Jarque-Bera (JB) value.
- Multicollinearity Test
  The multicollinearity test aims to test whether the regression model forms a high or perfect correlation between independent variables. The multicollinearity test can use the correlation matrix, the presence of multicollinearity if the correlation coefficient value between the independent variables is 0.8 or r>0.8.
- Heteroscedasticity Test
  Heteroscedasticity test is used to determine whether or not there are deviations from classical assumptions. The heteroscedasticity test is carried out by the white method or test. If the Obs * R-squared probability value is greater than $\alpha = 0.05$, the regression model does not have a heteroscedasticity problem.
- Autocorrelation Test
  Autocorrelation is a disturbance in the regression function in the form of a correlation between disturbance factors (errorterm). MAutocorrelation in eviews can be found through the Breusch-Godfrey Test, where if the prob value <0.05, there are symptoms of autocorrelation, while if the prob value> 0.05, there are no autocorrelation symptoms.

3.2. Multiple Linear Regression Analysis

Multiple linear regression analysis is performed to determine the direction and how much influence the independent variable has on the dependent variable. The type of data in this study is time series or data based on time series from 1988 to 2021 (34 years). The data in this study will be processed and analyzed using the EViews 10 software program To explain the relationship and influence between variables, we can use the following multiple linear regression model formulation.

$$Y = \beta 0 + \beta 1\, X1 + \beta 2\, X2 + e$$

Description:
Y is Indonesian Tea Export Volume (tons)
$\beta 0$ is Constant
β_1, β_2 is Variable Regression Coefficient
X_1 is Area (Ha)

X_2 is Production (tons)
e is Error Term (Confounding Coefficient)

3.3. Multiple Linear Regression Analysis

- *Coefficient of Determination (R2)*
  The Coefficient of Determination (R2) is a test conducted to see how much the model can explain the variation in the dependent variable. The coefficient of determination R2: $0 \leq R2 \leq 1$. If the coefficient of determination is small or close to 0, it means that the independent variable is limited in explaining the dependent variable. Conversely, if the coefficient of determination is large or close to 1, it means that the independent variable has the ability to explain the dependent variable.
- *Partial Significance Test (t-statistic test)*
  This test is conducted to see whether one independent variable has an effect or not on the dependent variable. If the probability value (prob) is smaller than a certain α value, rejecting the null hypothesis (H0 rejected) means significant. If the probability value (prob) is greater than a certain α value then accepting the null hypothesis (H0 accepted) means that it is not significant.
- *Simultaneous Significance Test (Statistical F Test)*
  This test is conducted to determine whether all independent variables simultaneously or together can affect the dependent variable. If the probability value (prob) is greater than a certain α value then accept the null hypothesis (H0 accepted).

4. Results and Discussion

The summary of research results regarding Analysis of The Influence of The Area and Amount of Tea Production on The Volume of Indonesian Tea Exports is as follows:

4.1. Classical Assumption Test

Table 1. Classical Assumption Test Results

Sig.	*Description*
0,123	*Normally distributed data*
0,44	*There is no multicollinearity*
0,613	*There is no heteroscedasticity*
0,125	*There is no autocorrelation*

Source: Research Processed Data

4.2. Multiple Linear Regression Analysis

Table 2. Multiple Linear Regression Analysis Results

Variable	*Coefficient*	*Sig.*
Constant	*-95507,230*	*0,133*
Area (X1)	*0,098*	*0,637*
Total Production (X2)	*1,070*	*0,024*

Source: Research Processed Data

4.3. Hypothesis Test

- *Coefficient of Determination (R^2)*

Table 3. Results of the Coefficient of Determination (R^2)

Adjusted R^2	*Description*
0,164	*Model variables in explaining variables are limited*

Source: Research Processed Data

- *Partial Significance Test (t-Statistic Test)*

Table 4. Partial Test Results (t-Statistic Test)

Variable	*Coefficient*	*Sig.*	*Description*
Area (X1)	*0,098*	*0,637*	*ot Significant*
Total Production (X2)	*1,071*	*0,024*	*Significant*

Source: Research Processed Data

- *Simultaneous Significance Test (Statistical F Test)*

Table 5. Simultaneous Significance Test Results (Statistical F Test)

F	*Sig.*	*Description*
4,231	*0,024*	*Significant*

Source: Research Processed Data

5. Conclusions

Based on the results of research and discussion conducted by researchers, the following conclusions can be drawn.

1. Area has no significant effect on the volume of Indonesian tea exports.
2. Total production has a significant effect on the volume of Indonesian tea exports.
3. Area and total production simultaneously have a significant effect on the volume of Indonesian tea exports. This shows that the rise and fall of area and total production together affect the volume of Indonesian tea exports. Adjusted R-square shows a value of 0.164, which means that the ability of the estimation model is 16% and the remaining 84% is explained or influenced by other variables, at a confidence level of 95%.

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