

The Effect of Oil Palm Farming Production on the Provision of People's Business Credit, Land Area, and Fertilizers in Langkat Regency

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Abstract The development of oil palm farming will be seen from the People's Business Credit given to farmers with the aim of increasing farmers' capital in developing oil palm farming and increasing their income by maximizing the use of land and fertilizer in oil palm farming so as to increase the production of oil palm farming in Langkat Regency. This study aims to analyze the effect of oil palm farming production on people's business credit, land area, and fertilizer in Langkat Regency. Respondents were interviewed directly as many as 50 coconut farmers. The data analysis used was multiple linear regression with E-Views 10. The results showed that people's business credit, land area, and fertilizer simultaneously (together) influence the production of oil palm farming. People's business credit has a positive effect on increasing the production of oil palm farming, people's business credit which is used for production activities can directly increase the production of oil palm farming. Oil palm land area has a positive effect on increasing oil palm farming production, the area of oil palm farming land, the higher the yield of palm oil production. Fertilizer has a positive effect on increasing the production of oil palm farming.

Keywords: Fertilizer, Land area Production, Palm oil, people's business credit

INTRODUCTION

The rapid growth of oil palm plantations in Indonesia is also driven by the continued increase in global demand for vegetable oils and animal fats as a result of population growth and an increase in gross domestic product. The increase in consumption of vegetable oils and animal fats has an impact on increasing demand for palm oil (crude palm oil, CPO) which in turn has contributed to the growth of oil palm plantation areas in Indonesia (Saragih & Nasution, 2013). Oil palm is a plant that produces palm oil and coconut kernel. Oil palm is one of the *prima donna* of plantation crops as a source non-oil and gas foreign exchange earner for Indonesia. The outlook for oil commodities is bright palm oil and its derivative products in the world has pushed the government Indonesia to increase its productivity (Hakim, 2018).

The area of oil palm plantations in North Sumatra also increases every year. This increase in area occurred due to the conversion of agricultural land, especially paddy fields, especially in the Langkat, Serdang Bedagai and Labuhanbatu areas. North Sumatra Province with a total area of 72,981 km² with a population of 13,937,797 million people (BPS, 2015). The problems that are often faced by oil palm farmers in Langkat Regency are related to procuring capital to carry out the production process of oil palm farming. High fluctuations in the price of palm oil make farmers confused about obtaining capital to develop oil palm farming. Sources of capital for oil palm farmers in Langkat Regency usually come from their own capital and loan capital. Loan capital obtained by farmers is usually obtained by farmers from *toke* or from people's business credit loans to banks. As you all know, capital has a very important role in increasing farmers' income. Capital is used not only for the purposes of providing land, fertilizer and labor but also in an effort to increase farmers' knowledge in obtaining farming income. The large area of oil palm farming land in Langkat district makes farmers have to maximize the use of oil palm farming land and also the use of fertilizer and minimal fertilizer costs will make farmers more able to manage oil palm farming properly. There are capital problems and the existence of a People's Business Credit (KUR) institution in Langkat Regency, as well as differences of opinion regarding the effect of oil palm farming production on people's business credit, land area and use of fertilizers, further research is needed on the effect of oil palm farming production on people's business credit, land area and fertilizer use in Langkat Regency.

LITERATURE REVIEW

Production

The production function is the functional or causal relationship between input and output. In this case the input is the cause, and the output is the effect. Or input as independent variable and output as dependent variable. Production inputs are also known as factors of production, and production outputs are also known as production quantities. The production function is a function or equation that states the relationship between the level of output and the level of use of inputs (Arifin, 2015). Growth in economic activity is in line with population growth and the need for land for housing and supporting infrastructure (Harini et al., 2012). The large or small amount of production in an agricultural business will affect the income of farmers, where farmers who have a large area of land will get a lot of production so that they get a lot of income too, while farmers who have a small area of land will also produce less and will also earn a little income (Riyono & Juliansyah, 2018).

People's Business Credit

Sources of agricultural credit can be obtained from formal credit institutions and non-formal credit institutions. Formal credit institutions, among others, consist of Rural Banks, Cooperatives, Conventional Banks or Credit Institutions which have a legal and regulatory basis and whose financial activities are supervised by special banking authorities. Non-formal credit institutions include mobile banks, traders of agricultural products, moneylenders, and so on (Nugraha, 2014). People's Business Credit is a government effort to reduce poverty by encouraging banks to extend credit to MSMEs (Putra & Saskara, 2013). KUR distribution as regulated by the government through Minister of Finance Regulation No. 135/ PMK.05/2008 concerning People's Business Credit Guarantee Facility which has been amended by Minister of Finance Regulation No. 10/ PMK.05/2009 in which there are several provisions required by the government, namely micro businesses that can receive guarantee facilities are productive businesses that are feasible to obtain credit facilities from banks. The KUR program is considered capable of having a positive impact on empowering MSMEs so that it can be used as a vehicle to increase employment opportunities, income for MSME entrepreneurs, and reduce poverty (Iztihar & Ashar, 2018). This KUR policy is only one part of the

government's efforts to control the number of poor people. In principle, business development towards poverty alleviation will be effective because this business is in direct contact with the lower middle class. However, the most important thing is the identification of market potential, because the failure of developing micro-enterprises is mostly due to incompatibility with market demand. (Ulfa & Mulyadi, 2020). Variable People's business credit has a positive and significant effect on production (Sakti, 2016).

Land area

Land area for farmers is one of the factors that influence the increase in yield income. Villagers whose main activities are farming depend on their land for life. Thus the area of land owned is one indicator of the amount of income received. If the area of land increases, the income of farmers will also increase and vice versa if the area of land used is small or narrow, the income earned by farmers will also decrease because the rice planted is small. So, the relationship between land area and farmer income has a positive relationship (Isfrizal & Rahman, 2018). In agriculture, land tenure for the community is the most important element to improve their welfare. In agriculture the production factor of land has the most important position. This is evident from the amount of compensation received by the land compared to other factors. The area of land planted will affect the amount plants that can be planted which in turn can affect the amount of vegetable production produced (Astari & Setiawina, 2016).

Fertilizer

Giving the right dose of fertilizer will produce a quality product. Fertilizers that are often used are organic and inorganic fertilizers. Organic fertilizers come from the decomposition of plant and animal parts or remains, such as manure, green manure and compost. Meanwhile, inorganic fertilizers are fertilizers that have undergone processing in factories, for example urea, TSP and KCL

RESEARCH METHOD(S)

In this study, there are three factors that influence the production of oil palm farming in Langkat Regency, namely people's business credit (KUR), land area, and fertilizer. Multiple linear regression testing in this study uses the Eviews 10 program, and uses the classic assumption test consisting of normality, heteroscedasticity and multicollinearity tests.

FINDINGS AND DUSCUSSION

Model Testing with Classical Assumptions

Normality test

For testing the data normality test in this study using the EViews 10 program. The significance level used in this study is $\alpha=0.05$. Following are the results of the normality test in Figure 1.

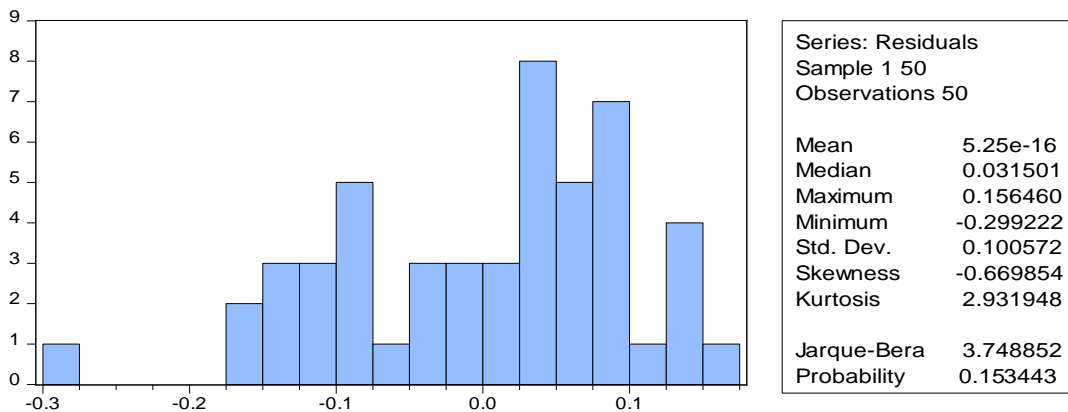


Figure 1. Normality Test with the Jarque-Bera Test

Source: The results of the EViews10 program

Based on the picture above, the output results show a probability value of 0.153443 which is greater than the significance level of 0.05, so the results of the normality test can be concluded that the data is normally distributed.

Multicollinearity Test

For testing the multicollinearity data test in this study, one way to detect the presence of multicollinearity is to look at the inflation factor (VIF) variant. If the VIF value is > 10 , multicollinearity occurs (Ghozali & Ratmono, 2017). The following are the results of the multicollinearity test in Table 1

Tabel 1. Multicollinearity Test with VIF

Variable	Centered VIF
People's Business Credit $_X_1$	3.097135
Land area $_X_2$	3.138923
Fertilizer $_X_3$	3.068551

Source: The results of the EViews10 program

Based on the table above, the output of the multicollinearity test shows that the value of each independent variable shows a VIF value <10 . So it can be stated that there is no multicollinearity between the independent variables.

Heteroscedasticity Test

To test the heteroscedasticity test of the data in this study using the Breusch-Pagan-Godfrey test in the Eviews 10 program. Where the heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. A good regression model is one that is homoscedasticity or does not have heteroscedasticity (Ghozali & Ratmono, 2017). Decision making with the Breusch-Pagan-Godfrey test is seen through the Obs*Rsquared value which has a Chi-square probability value greater than 0.05. Thus, the alternative hypothesis H_0 is accepted or heteroscedasticity does not occur. Following are the results of the heteroscedasticity test in Table 2.

Tabel 2. Heteroscedasticity Test with Breusch-Pagan-Godfrey

F-statistic	1.840372	Prob. F(3,46)	0.1531
Obs*R-squared	5.358111	Prob. Chi-Square(3)	0.1474

Source: The results of the EViews10 program

Based on the table above, the results of the heteroscedasticity test output with the Breusch-Pagan-Godfrey test show that the Chi-Square Obs*Rsquared probability value is $0.1474 > 0.05$, so it can be concluded that there was no heteroscedasticity in this study.

Model Fit Test and Hypothesis Test

To see the results of the influence of smallholder business credit, land area, and fertilizer, on the production of oil palm farming in Langkat Regency using the multiple linear regression analysis method which was processed using the EViews10 program. In testing the hypothesis, an analysis of the coefficient of determination (R^2), F-test, and T-test will be carried out. Following are the results of statistical values in Table 3.

Table 3. Estimation Results of Multiple Linear Regression Analysis

Variable	Coefficient	Prob.
Constant	-3.03	0.05
People's Business Credit _X ₁	0.29	0.00
Land area _X ₂	0.23	0.03
Fertilizer _X ₃	0.27	0.01
R-squared	0.76	
Prob(F-statistic)	0.00	

Source: The results of the EViews10 program

Coefficient of Determination (R²)

From the table above the coefficient of determination (R²) is obtained by a value of 0.76 or 76%. This shows that the independent variables include people's business credit, land area, and fertilizer can explain the dependent variable, namely the production of oil palm farming by 76%. While the remaining 24% is influenced by other variables not included in this study.

F test

From the table above the prob value (F-statistic) is 0.00. This shows that the probability <0.05 means that H₀ is rejected and H₁ is accepted. It can be concluded that people's business credit, land area, and fertilizer have an effect simultaneously. From the table above the coefficient of determination (R²) is obtained by a value of 0.76 or 76%. This shows that the independent variables include people's business credit, land area, and fertilizer can explain the dependent variable, namely the production of oil palm farming by 76%. While the remaining 24% is influenced by other variables not included in this study. oil palm farming.

Test T-test

From the table above, it can be interpreted that the variable influence of people's business credit, land area, and fertilizer partially has on the variable production of oil palm farming. The results of the multiple linear regression equation are obtained as follows:

$$Y = -3.031 + 0.29 X_1 + 0.23 X_2 + 0.27 X_3 + e$$

The influence of people's business credit on the production of oil palm farming

From the results of the multiple linear regression equation, it can be seen that the people's business credit variable has a regression coefficient of 0.29, which means that for every 1% increase in people's business credit there is an increase in oil palm farming production by 0.29% with the other assumption variables being constant. This shows that there is a positive and significant influence on the production of oil palm farming with a prob value. a statistic of $0.00 < 0.05$ which means that the variable of people's business credit has a significant effect on the production of oil palm farming in the study area.

In this study, business loans from people used for manufacturing activities can directly increase oil palm yields. The higher the loan amount, the greater the production capacity of palm oil farmers. An increase in palm oil production means an increase in income from palm oil cultivation, which ultimately leads to an increase in income, assuming costs and prices are fixed. According to (Marfuah & Hartiyah, 2019) the greater the people's business loans that can be used to increase business capital and aim to develop their business, the business income earned will increase. These results are in line with research (Iski et al., 2016) which states that the people's business credit variable has a positive and significant effect on production.

The effect of land area on oil palm farming production

From the results of the multiple linear regression equation, it can be seen that the land area variable has a regression coefficient value of 0.23 which means that every 1% increase in land area there is an increase in oil palm farming production by 0.23% with the assumption that other variables are constant. This shows that there is a positive and significant influence on oil palm farming production with a prob. statistic value of $0.03 < 0.05$ which means that the land area variable has a real effect on oil palm farming production in the study area. The more extensive the oil palm farmland, the higher the yield of oil palm production produced, but if the extensive land is not maximally utilized, it will have an impact on the level of efficiency, and then will reduce the amount of oil palm production from agricultural products produced. Land area affects the production and income of farmers, in accordance with the opinion (Soekartawi, 2007) that the more extensive the land cultivated by farmers, the greater the production produced and the

income that will be obtained if accompanied by good land management. This is in accordance with the theory that land is one of the factors of production which is the factory of agricultural products that have a considerable contribution to the farming business. The size of the production of farming is influenced by the size of the land used. This result is in line with research conducted (Alkamalia et al., 2017) and (Aswarman, 2018) which states that the land area variable has a positive and significant effect on production.

The effect of fertilizer on oil palm farming production

From the results of the multiple linear regression equation, it can be seen that the fertilizer variable has a regression coefficient value of 0.27 which means that every 1% increase in fertilizer increases oil palm farming production by 0.27% assuming other variables are constant. This shows that there is a positive and significant influence on oil palm farming production with a prob. sthatic value of $0.01 < 0.05$ which means that the fertilizer variable has a real effect on oil palm farming production in the study area.

The results showed that the fertilizer variable had a significant effect in increasing oil palm production. Where fertilization activities become one of the main sources of nutrients that are very important to determine the production of oil palm. Each nutrient has its own role and can describe certain symptoms in oil palm plants when the availability of fertilizers in the soil is greatly reduced. The provision of nutrients in the soil through fertilization must be balanced, which is adjusted to the needs of oil palm plants. The availability of nutrient needs for plants is the goal of fertilization, so that plants will grow well and will be able to have maximum potential. Weather factors, especially rainfall, are a determining factor in the success of the fertilization process to avoid nutrient loss.

The level of productivity of farming is basically influenced by the level of technology application, and one of them is fertilization. Fertilizer is one of the production materials or means of production that is the most important factor in agriculture and becomes capital. In other words, the existence of capital determines the level of fertilizer applied. Lack of capital leads to a lack of input provided, causing the risk of failure or low yields to be received (Daniel, 2004). These results are in line with research conducted

by (Gunawan, 2018) and (Purwanto et al., 2015) which states that the fertilizer variable has a positive and significant effect on production.

CONCLUSION AND RECOMMENDATION

The results showed that people's business credit, land area, and fertilizer simultaneously (together) affect the production of oil palm farming. People's business credit has a positive effect on increasing oil palm farming production, people's business credit used for production activities can directly increase oil palm farming production. Oil palm land area has a positive effect on increasing oil palm farming production, the more extensive the oil palm farming land, the higher the oil palm production will be. Fertilizer has a positive effect on increasing oil palm farming production.

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