

ANALYSIS OF SUBSIDY FERTILIZER POLICY ON FARMERS SATISFACTION IN DELI SERDANG DISTRICT

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Abstract

This study aims to find out how subsidized fertilizer policy on farmer satisfaction in Deli Serdang Regency, this study took place in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang Regency. The form of this research was descriptive quantitative research. The population in this study were all rice farmers in Tanjung Rejo District of Percut Sei Tuan, Deli Serdang Regency as many as 2288 farmers, the sample used was the slovin technique with a total sample of 100 people, the data analysis technique used in this study was multiple linear regression analysis, while the results of this study were, A constant value of 30,074 indicates a positive constant value, meaning that if the Subsidized Fertilizer Price, Fertilizer Distribution Time, Distribution Place and Fertilizer Amount do not change or equal to 0 then it will increase farmer satisfaction by 30,074%, Partial test shows that Fertilizer Amount, Price Subsidized Fertilizers, and Fertilizer Distribution Time have an influence on farmer satisfaction, this is because the sig value < 0.05 , Place of Distribution has no effect on farmer satisfaction, this shows that if farmers do not get subsidized fertilizer they will look for other alternatives, R Square value of 0.543 or 54.3 % means that in this study the amount of fertilizer, the price of subsidized fertilizer, the place of distribution, the time of distribution of fertilizer contributed 54.3% to farmer satisfaction, while the remaining 45.7% is influenced by other factors not examined in this study such as government assistance, grain prices and yields

Keywords: *Fertilizers, Farmers, Subsidies and Satisfaction.*

1. INTRODUCTION

Fertilizer subsidies aim to improve the performance of the agricultural sector, particularly the food crops sub-sector. This policy is based on the premise that fertilizer is a key factor in increasing productivity besides that, with cheaper fertilizer prices, it will encourage an increase in the use of these inputs. Fertilizer subsidies are also intended to respond to the trend of increasing fertilizer prices in the international market and decreasing farm profits (Tiyastuti et al., 2019). The fertilizer subsidy policy aims to support the agricultural sector by providing input subsidies through the establishment of subsidized fertilizer HET. Subsidized fertilizer policies have proven to be able to increase the harvested area and national rice production (Hey & Gunawan in Kholis & Setiaji, 2020). This fertilizer subsidy policy is expected to protect farmers, increase productivity and increase the economic level of farmers. However, the problem of fertilizers in Indonesia has always been an issue that directly touches on the needs and sustainability of farmers in managing their land or rice fields. Therefore, when there is a scarcity of fertilizer and the price is expensive, they will be disadvantaged (Ragimun et al., 2020).

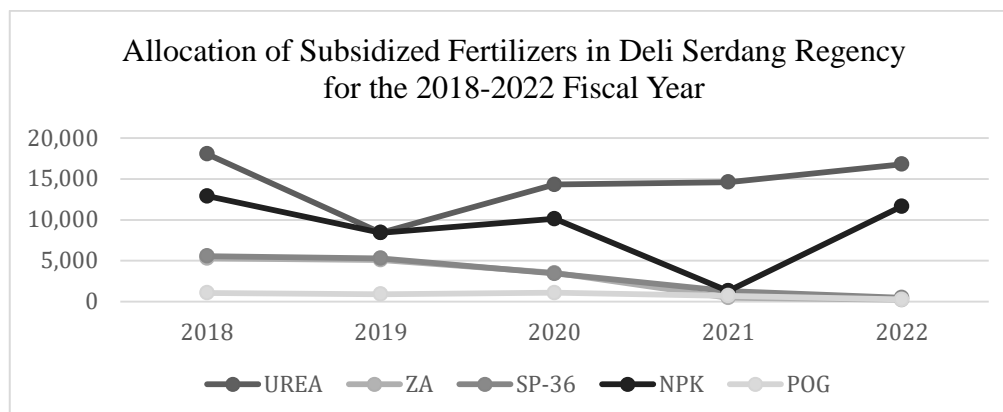


Figure 1 Graph of Subsidized Fertilizer Allocation

Farmer satisfaction will grow when the agricultural extension services that have been received are in accordance with what farmers expect. The growth of farmer satisfaction will form a loyal attitude of farmers in accepting and making changes to the business (Trisnaningtyas et al., 2020). Satisfaction with farmers increases farmer awareness and a high will to make changes in conducting farming to achieve a level of welfare. Farmer satisfaction can be interpreted as satisfaction that arises because of the compatibility between existing expectations and real conditions that exist in extension activities (Widyastuti and Widiastuti in (Nurmayasari et al., 2020).

Table 1 Data on Distribution of Subsidized Fertilizers in Percut Sei Tuan District

| Village | Land Area (Ha) | Urea (Kg) | NPK (Kg) |
|-------------------|----------------|------------------|---------------|
| Overnight | 340,12 | 85030.00 | 102036 |
| Eastern Samborejo | 244.71 | 61177.50 | 73413 |
| Pool | 422.18 | 105545.00 | 126654 |
| Percut | 418.6 | 104650.00 | 125580 |
| Dendang Sea | 10.83 | 2707.50 | 3249 |
| Tembung | 5,3 | 1325.00 | 1590 |
| People's Love | 17.94 | 4485.00 | 5382 |
| Sandpaper | 504.78 | 126195.00 | 151434 |
| Saentis | 431.45 | 107862.50 | 129435 |
| Samali | 93.5 | 23375.00 | 28050 |
| Klippa City | 161.38 | 40345.00 | 48414 |
| Merry Cape | 224.04 | 56010.00 | 67212 |
| Cape Rejo | 714,17 | 178542.50 | 214251 |
| Love peace | 385.78 | 96445.00 | 115734 |
| Faithful City | 94.7 | 23675.00 | 28410 |
| Sei Rattan | 165.52 | 41380.00 | 49656 |

Table 1 shows that the village with the highest distribution of subsidized fertilizers in Percut Sei Tuan District is Tanjung Rejo Village, this can be seen from the high number of land areas, the use of urea fertilizer and NPK fertilizer owned by the village, based on the background The problem in this study is that researchers want to know the relationship between fertilizer prices,



fertilizer distribution time, fertilizer distribution locations, and the use of the amount of fertilizer on satisfaction with subsidized fertilizer policies.

2. IMPLEMENTATION METHOD

This research will be conducted in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang Regency. This research started from April to May 2023. The population in this study were all rice farmers in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang Regency, totaling 2288 farmers. The sampling technique used the slovin method with a total of 100 samples. , the data analysis technique used is multiple linear regression analysis with SPSS version 23.0The multiple linear regression analysis model in this study is as follows:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Information

- a = constant
- $\beta_1 - \beta_4$ = Regression coefficient
- X1 = Price of subsidized fertilizer
- X2 = Fertilizer distribution time
- X3 = Fertilizer distribution channel
- X4 = Use of amount of fertilizer
- e = standard error

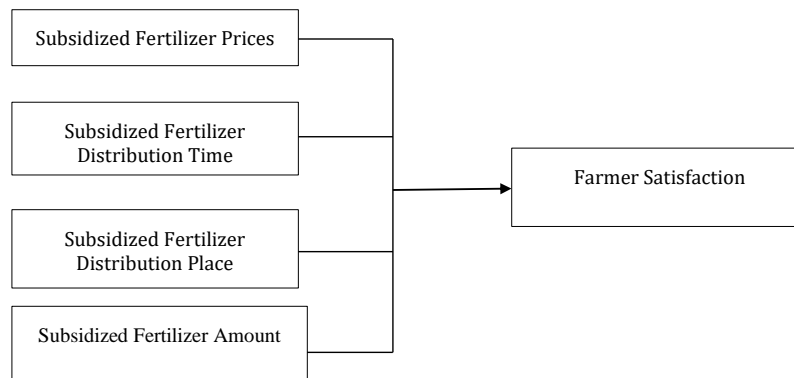


Figure 2 Conceptual Framework

Based on the background of the problem and the opinion of the experts, the hypotheses in this study are:

1. There is a relationship between the subsidized fertilizer price policy and farmer satisfaction in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang.
2. There is a policy relationship between the distribution of subsidized fertilizer and the satisfaction of farmers in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang.
3. There is a relationship between the policy of Subsidized Fertilizer Distribution Places and farmer satisfaction in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang.
4. There is a policy relationship between the use of subsidized fertilizers and farmer satisfaction in Tanjung Rejo Village, Percut Sei Tuan District, Deli Serdang

3. RESULTS AND DISCUSSION

3.1 Classic assumption test

1. Normality test

To test whether the data were normally distributed or not, the Kolmogorov-Smirnov statistical test was carried out with a significance level of 5%. The decision-making criteria on the normality test are as follows:

- a. If the sig value > 0.05, it can be concluded that the data is normally distributed.
- b. If the sig value < 0.05, it can be concluded that the data is not normally distributed.

Table 2 One-Sample Kolmogorov-Smirnov Test

| | | Unstandardized Residuals |
|---------------------------------|----------------|--------------------------|
| N | | 100 |
| Normal Parameters | Means | .0000000 |
| | std. Deviation | 3.00959620 |
| Most Extreme Differences | absolute | .057 |
| | Positive | .057 |
| | Negative | -.047 |
| Kolmogorov-Smirnov Z | | .568 |
| asympt. Sig. (2-tailed) | | .904 |
| a. Test distribution is Normal. | | |

In table 2. it can be seen that in this study the value asympt. Sig. (2-tailed) is 0.904 worth above 0.05 (0.904 > 0.05) this indicates that the data distribution is running normally

2. Multicollinearity test

The decision-making criteria on the multicollinearity test are as follows:

- a. Tolerance value ≤ 0.10 and VIF ≥ 10, then there are symptoms of multicollinearity
- b. Tolerance value ≥ 0.10 and VIF ≤ 10, then there are no symptoms of multicollinearity

Table 3 Coefficientsa

| Model | | Collinearity Statistics | |
|-------|------------------------------|-------------------------|-------|
| | | tolerance | VIF |
| 1 | (Constant) | | |
| | Subsidized Fertilizer Prices | .580 | 1,724 |
| | Fertilizer Distribution Time | .515 | 1,943 |
| | Distribution Place | .779 | 1,284 |
| | Fertilizer Amount | .633 | 1,580 |

a. Dependent Variable: Farmer Satisfaction

Table 3 shows the values used in the multicollinearity test, in this study it can be seen that the Subsidized Fertilizer Price variable has a tolerance value of 0.580 > 0.10 and a VIF value of 1.724 < 10, the Fertilizer Distribution Time variable has a tolerance value of 0.515 > 0.10 and a VOF value of 1.943 < 10, the Distribution Place variable has a tolerance value of 0.779 > 0.10 and a VIF value of 1.284 < 10 and the Fertilizer Amount variable has a tolerance value of 0.633 > 0.10

and a VIF value of $1.580 < 10$, the results show that all distributions are normal and no multicollinearity occurs because all variables have tolerance values above 0.10 and VIF below 10.

3. Heteroscedasticity test

To detect whether there is heteroscedasticity is done by looking at whether there is a certain pattern on the graph plot between the prediction values of the dependent variable atau dependent, namely ZPRED with the residual SRESID. With the basis of analysis as follows:

- If there is a certain pattern, such as the dots forming a certain regular pattern (wavy, widens and then narrows), then it indicates that heteroscedasticity has occurred.
- If there is no clear pattern, and the points spread above and below the number 0 on the Y axis, then there is no heteroscedasticity.

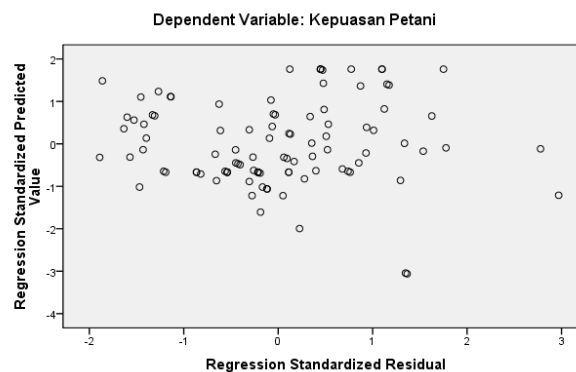


Figure 2 Scatterplots

Figure 2 shows that the dots spread irregularly at line coordinates 0, meaning that in this study there was no heteroscedasticity and the data were normally distributed.

3.2 Multiple Linear Regression Analysis

Multiple linear regression analysis in this study aims to determine the effect of the price of subsidized fertilizer, the timing of distribution of fertilizer, the place of distribution of fertilizer and the use of the amount of subsidized fertilizer on farmer satisfaction. The multiple linear regression analysis model in this study is as follows:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Table 3 Coefficientsa

| Model | Unstandardized Coefficients | | Standardized Coefficients | Q | Sig |
|------------------------------|-----------------------------|------------|---------------------------|-------|-----|
| | B | std. Error | Betas | | |
| (Constant) | 30,074 | 3,875 | | 7,761 | 000 |
| Subsidized Fertilizer Prices | .904 | .243 | .339 | 3,718 | 000 |
| Fertilizer Distribution Time | 1.147 | .314 | .353 | 3,653 | 000 |
| Distribution Place | .069 | .280 | .019 | 1,248 | 803 |
| Fertilizer Amount | .651 | .288 | .197 | 2,262 | 026 |

a. Dependent Variable: Farmer Satisfaction

From table 3 above, the equation can be taken:

$$Y = 30.074 + 0.904X_1 + 1.147X_2 + 0.069X_3 + 0.651 X_4 + \varepsilon$$

The explanation of the above equation is

1. A constant value of 30,074 indicates a positive constant value, meaning that if the Subsidized Fertilizer Price, Fertilizer Distribution Time, Distribution Place and Fertilizer Amount do not change or equal to 0 then it will increase farmer satisfaction by 30,074%
2. The fertilizer price regression coefficient of 0.904 indicates that if the subsidized fertilizer price variable can be adjusted, it will increase farmer satisfaction by 9.04%.
3. The regression coefficient for fertilizer distribution time is 1.147 indicating that if the fertilizer distribution time variable increases, it will increase farmer satisfaction by 11.47%.
4. The regression coefficient for the place where the fertilizer is distributed is 0.069 indicating that if the variable Place where the fertilizer is distributed increases, it will increase farmer satisfaction by 0.69%.
5. The regression coefficient for the amount of fertilizer is 0.651 indicating that if the variable amount of fertilizer increases, it will increase farmer satisfaction by 65.1%.

3.3 Hypothesis testing

1. t test

Partial test (t-test) is used to determine the effect of each independent variable on the dependent variable (Ghozali, 2018). The partial test in this research data uses a significance level of 0.05 and compares tcount with ttable. The decision making criteria are as follows:

- a. If the significant value is < 0.05 and $t \text{ count} > t \text{ table}$, it means that there is a significant influence between the independent variables on the dependent variable.
- b. If the significance value is > 0.05 and $t \text{ count} < t \text{ table}$, it means that there is no significant effect between the independent variables on the dependent variable.
- c. With a sample size of 100 and $df = n - 4$ and a level of 0.05, the calculated t value is 1.984

Table 4 Coefficientsa

| Model | Unstandardized Coefficients | | Standardized Coefficients | Q | Sig |
|------------------------------|-----------------------------|------------|---------------------------|-------|-----|
| | B | std. Error | Betas | | |
| (Constant) | 30,074 | 3,875 | | 7,761 | 000 |
| Subsidized Fertilizer Prices | .904 | .243 | .339 | 3,718 | 000 |
| Fertilizer Distribution Time | 1.147 | .314 | .353 | 3,653 | 000 |
| Distribution Place | .069 | .280 | .019 | .248 | 805 |
| Fertilizer Amount | .651 | .288 | .197 | 2,262 | 026 |

a. Dependent Variable: Farmer Satisfaction

1. The Effect of Subsidized Fertilizer Prices on Farmer Satisfaction

It can be seen in table 4. It shows that the t count of the variable Subsidized Fertilizer Price (X1) is 3,718 and a significant level of 0,000. significant by $0.000 < 0.05$ means that the price of subsidized fertilizer (X1) has a significant effect on farmer satisfaction

2. Effect of Fertilizer Distribution Time Against Farmer Satisfaction

It can be seen in table 4. It shows that the time variable for distributing subsidized fertilizer (X2) is 3,653 and a significant level is 0,000. Partially, the time for distributing subsidized fertilizer (X2) has an influence on farmer satisfaction because $t \text{ count} > t \text{ table}$ ($3,653 > 1,984$) and a

significant level of $0.000 < 0.05$ means that the distribution time of subsidized fertilizer (X2) has a significant effect on farmer satisfaction

3. Influence Place of distribution of fertilizer to Against Farmer Satisfaction

It can be seen in Table 4. It shows that the t variable where the distribution of subsidized fertilizer (X3) is 0.248 and a significant level is 0.805 in a partial time study. The place for distributing subsidized fertilizer (X3) has no effect on farmer satisfaction because t count $>$ t table ($0.248 < 1.984$) and a significant level of $0.805 > 0.05$ means that the place where the subsidized fertilizer is distributed (X3) has no significant effect on farmer satisfaction

4. Influence The amount of fertilizer on farmer satisfaction

It can be seen in table 4. It shows that the t count of the time variable, the amount of subsidized fertilizer (X4) is 2,262 and a significant level of 0,026 in partial research, the time the amount of subsidized fertilizer (X4) has an influence on farmer satisfaction because t count $>$ t table ($2,262 > 1,984$) and a significant level of $0.026 < 0.05$ means that when the amount of subsidized fertilizer (X4) has a significant effect on farmer satisfaction.

2. F test

Simultaneous test (f-test) is used to determine whether the independent variables jointly affect the dependent variable (Ghozali, 2018). The partial test in this research data uses a significance level of 0.05 and compares fcount with ftable. The decision making criteria are as follows:

- If the significant value is < 0.05 and f count $>$ f table, it means that there is a significant influence between the independent variables simultaneously on the dependent variable.
- If the significance value is > 0.05 and f count $<$ f table, it means that there is no significant effect between the independent variables simultaneously on the dependent variable.
- With a sample size of 100 and $df = n-2$ and a significant level of 0.05, an f count of 2.47 is obtained.

Table 5 ANOVAb

| | Model | Sum of Squares | df | MeanSquare | F | Sig. |
|---|------------|----------------|----|------------|--------|-------|
| 1 | Regression | 1066041 | 4 | 266,510 | 28,235 | .000a |
| | residual | 896,709 | 95 | 9,439 | | |
| | Total | 1962.750 | 99 | | | |

a. Predictors: (Constant), Fertilizer Amount, Subsidized Fertilizer Price, Distribution Place, Fertilizer Distribution Time

b. Dependent Variable: Farmer Satisfaction

Table 5 shows a calculated score of 28,235 and a significant level of 0,000. In this study, the independent variables consisted of Fertilizer Amount, Subsidized Fertilizer Price, Distribution Place, Fertilizer Distribution Time have a simultaneous influence on farmer satisfaction because the value of f count $>$ f table ($28.235 > 2.47$) and a significance level of $0.000 < 0.05$.

3.4 Determination Coefficient Test

The coefficient of determination test aims to measure the extent to which the independent variables can explain variations in the dependent variable, either partially or

simultaneously(Ghozali, 2018). The value of the coefficient of determination is between zero to one ($0 < R^2 < 1$). The small value of R^2 means that the ability of the independent variables to explain the variation in the dependent variable is very limited. However, if the value is close to one, then the independent variables provide almost all the information needed to predict the variation in the dependent variable.

Table 6. Model Summary^b

| Model | R | R Square | Adjusted R Square | std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | .737a | .543 | .524 | 3.07230 |

a. Predictors: (Constant), Fertilizer Amount, Subsidized Fertilizer Price, Distribution Place, Fertilizer Distribution Time

b. Dependent Variable: Farmer Satisfaction

Table 6. shows the value R^2 of 0.543 or 54.3% means that in this study the amount of fertilizer, the price of subsidized fertilizer, the place of distribution, the time of distribution of fertilizer contributed 54.3% to farmer satisfaction, while the remaining 45.7% was influenced by other factors not examined in this study such as assistance government, grain prices and yields. This section presents the results with clear descriptions. Results can be supplemented with tables, graphs (pictures), and/or charts. The discussion section describes the results of processing data or information, interpreting the findings logically, linking them to relevant reference sources, and the implications of the findings.

4. DISCUSSION

Farmer satisfaction is one of the main objectives of holding extension activities, because by creating farmer satisfaction it is hoped that these farmers will be loyal in using the recommended product or technological innovation, while the results of this study are:

4.1 The Effect of Subsidized Fertilizer Prices on Farmer Satisfaction

As seen in table 4.11, it shows that the t count of the variable Subsidized Fertilizer Price (X1) is 3,718 and a significant level of 0,000. of $0.000 < 0.05$ means that the price of subsidized fertilizer (X1) has a significant effect on farmer satisfaction. The significant effect of fertilizer prices on farmer satisfaction is due Fertilizer subsidy policy is one of the government's fiscal policies aimed at farmers. Fertilizer subsidies are one of the government's efforts so that farmers can access fertilizer needs for their farming businesses at more affordable prices, so that it is expected to encourage increased agricultural production in order to achieve food security while increasing farmers' income.(Kholis & Setiaji, 2020). The results of research conducted by(Sincerely, 2022), shows that subsidized fertilizers have the potential for effectiveness in improving the community's economy. As long as the indicators used in the research are all met. in one year on average every Muslim farmer in Jetak Kidul village can save costs of up to IDR by buying subsidized UREA fertilizer and IDR 5,240,860 by buying subsidized NPK fertilizer. From this analysis the authors conclude that subsidized fertilizer policies can be very helpful in improving the economy of Muslim farmers in Jetak Kidul village, therefore adjusting fertilizer prices will increase farmer satisfaction.



4.2 Effect of Fertilizer Distribution Time Against Farmer Satisfaction

As seen in Table 4.11, it can be seen that the time variable for distributing subsidized fertilizer (X2) is 3,653 and a significant level is 0,000. Partially, the time for distributing subsidized fertilizer (X2) has an influence on farmer satisfaction because $t \text{ count} > t \text{ table}$ ($3,653 > 1,984$) and a significant level of $0.000 < 0.05$ means that the distribution time of subsidized fertilizer (X2) has a significant effect on farmer satisfaction. The results of this study show the fertilizer subsidy policy is aimed at achieving an intermediate goal, namely increasing the ability of farmers to buy fertilizer in the appropriate amount with the recommended dose of balanced fertilization according to location, with the distribution of fertilizer subsidies by the government, farmers are not worried about using new technology (type and dose of fertilizer) because the price subsidized fertilizer (Rais et al., 2021). The results of this study are in line with research conducted by (Darmawanto Uria, 2021) The results showed that post-harvest technology, market access, competitive prices and premiums were all in the main priority areas, counseling and training, flexibility were in conditions that needed to be maintained while input assistance was a low priority.

4.3 Influence Place of distribution of fertilizer to Against Farmer Satisfaction

Table 4.11 shows that the t variable where the distribution of subsidized fertilizer (X3) is 0.248 and a significant level is 0.805 in a partial time study. The place for distributing subsidized fertilizer (X3) has no effect on farmer satisfaction because $t \text{ count} > t \text{ table}$ ($0.248 < 1.984$) and a significant level of $0.805 > 0.05$ means that the distribution of subsidized fertilizer (X3) has no significant effect on farmer satisfaction. Subsidized fertilizer policies must be effective and efficient with the aim of helping farmers. In the distribution of subsidized fertilizer policies, there are six components of the fertilizer subsidy model currently applied, namely the type of fertilizer being subsidized, submission of fertilizer needs by farmers, fertilizer allocation by the government, but sometimes the place is not the right place so farmers often look for other information about the availability of information. cheap fertilizer. The research results are not in line with those conducted by (Adiraputra & Supyandi, 2021) The implementation of the fertilizer subsidy policy in Sukaasih Village was not effective. Therefore, the government needs to ensure that acceleration and mitigation of obstacles to the implementation of farmer cards in the regions can be a solution so that fertilizer subsidies can be effective. The fertilizer subsidy policy in Sukaasih Village, Sukatani District, Bekasi Regency, when viewed from the four indicators, it can be concluded that it is not effective because farmers buy subsidized fertilizer according to higher prices

4.4 Influence The amount of fertilizer on farmer satisfaction

Table 4.11 shows that the t count of the time variable the amount of subsidized fertilizer (X4) is 2,262 and a significant level of 0.026 in partial time research, the amount of subsidized fertilizer (X4) has an influence on farmer satisfaction because $t \text{ count} > t \text{ table}$ ($2,262 > 1,984$) and a significant level of $0.026 < 0.05$ means that the time the amount of subsidized fertilizer (X4) has a significant effect on farmer satisfaction. The amount of subsidized fertilizer allocation distributed in Deli Serdang Regency has fluctuated increases and decreases in the 2018-2022 period. The amount of subsidized fertilizer distributed greatly affects the budget allocation for fertilizer in the following year, which if we look at Figure 1.1 and Figure 1.2, the budget allocation for UREA NPK fertilizer and POG has decreased in 2019 due to the distribution of subsidized fertilizer in 2018 in Deli Regency. Serdang has experienced a decline so that the budget allocation was reduced in 2019. And the budget allocation for ZA and SP-36 fertilizers has also decreased every year.

therefore the amount of subsidized fertilizer provided will affect farmer satisfaction. The results of research conducted by (Merliana Aryanti Soi Mau et al., 2022) The choice of the type of fertilizer has a significant effect on increasing the opportunity to buy subsidized fertilizer. Knowledge has a significant effect on reducing the opportunity to buy fertilizer and increasing the opportunity to use subsidized fertilizer. Income significantly reduces the opportunity to buy subsidized fertilizers. Perception has a significant effect and increases opportunities to use subsidized fertilizers. The results of the CSI analysis stated that farmers' satisfaction with subsidized fertilizers that were frequently used was included in the satisfied category. markR Square of 0.543 or 54.3% means that in this study the amount of fertilizer, the price of subsidized fertilizer, the place of distribution, the time of distribution of fertilizer contributed 54.3% to farmer satisfaction, while the remaining 45.7% was influenced by other factors not examined in this study such as assistance government, grain prices and yields.

5. CONCLUSION

1. A constant value of 30,074 indicates a positive constant value, meaning that if the Subsidized Fertilizer Price, Fertilizer Distribution Time, Distribution Place and Fertilizer Amount do not change or equal to 0 then it will increase farmer satisfaction by 30,074%
2. Partial test shows that The amount of fertilizer, the price of subsidized fertilizer, and the distribution time of fertilizer have an influence on farmer satisfaction, this is because the sig value <0.05
3. Place of distribution has no effect on farmer satisfaction, this shows that if farmers do not get subsidized fertilizer they will look for other alternatives
4. MarkR Square of 0.543 or 54.3% means that in this study the amount of fertilizer, the price of subsidized fertilizer, the place of distribution, the time of distribution of fertilizer contributed 54.3% to farmer satisfaction, while the remaining 45.7% was influenced by other factors not examined in this study such as assistance government, grain prices and yields.

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