

Study Of Rice Credit Access In Tidal Land And Irrigation Land In Banjar Regency

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Abstract

Background: Up to nowadays, agriculture is still closely related to poverty and rural areas, it is affected by many factors including farmer's capital. Sufficient capital will make farming work well and support farmers' income, it is can be fulfilled by utilizing both formal and informal credit. Banjar Regency is one of the largest rice-producing regencies in South Kalimantan, in 2017 there was a large decline in the use of paddy fields for rice plants. This decrease can be caused by various factors such as the change of land use, natural conditions, capital, etc. Based on these problems, the writer believe that a research is needed regarding farmer capital, especially in terms of credit for rice farming. The objectives of this research are as follows: (1) To analyze the costs incurred by farmers from rice farming in Banjar Regency; (2) Analyzing the contribution of own capital and the contribution of farming credit utilization to the total costs incurred by rice farmers in Banjar Regency; (3) Analyzing existing sources of capital or access to credit and at what stage rice farming requires such access in Banjar Regency; (4) Analyzing the factors that influence farmers in making decisions on the use of credit for their farming in Banjar Regency.

Material and methods: with simple random sampling method, Aluh-Aluh and Beruntung Baru sub-districts represent tidal land with all farmers working on local rice, then Sungai Tabuk and Matapura Barat sub-districts represent irrigated rice fields with high yield rice cultivation. The study was conducted on 120 rice farmers. In this study, a descriptive analysis was carried out with the help of a questionnaire, then using a formula to calculate explicit cost, implicit cost and total cost. The regression results are used in logit model regression analysis using SPSS 26.

Results: The results showed that in terms of costs, there was not too much difference between farmers who used their own capital and those who used credit in both tidal and irrigation land. This is because there are various types of credit and the nominal also varies so that it affects the amount of loan interest. Furthermore, the contribution of credit in the research area is more than 75% or 9 farmers who got the contribution from credit, it while the contribution of own capital is only 2 farmers, this value shows that credit is sufficient to provide an important role to farmers and the sustainability of their business. The formal credit institution in the research area is KUR which is Kredit Usaha Rakyat or credit from bank, while the non-formal institution includes agricultural shop, agricultural product traders, moneylenders and relatives. The most frequently used stages of credit for rice farming are during the planting season and harvest season. Lastly, the factors that influence farmers' decision making in the use of credit are the number of family members, side jobs, previous farm income and land area, while those that do not affect are age, education and land type.

Keyword: Credit, rice farming, irrigated land, tidal land, contribution

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I. Introduction

Indonesia is known as an agricultural country, where most of the people's livelihood comes from the agricultural sector. In the agricultural sector, one of major crops is rice. South Kalimantan, in 2018, according to the Ministry of Agriculture and the Central Statistics Agency, stated that it succeeded in entering the top 10 most rice-producing provinces in Indonesia, specifically in 10th position. South Kalimantan Province has placed agricultural development as a top priority, this can be seen from the contribution of the sector agriculture to GRDP in 2016 of 15.78 percent of the total GRDP of South Kalimantan.

Regarding the financing of the agricultural food sector in South Kalimantan, especially rice, credit is needed as a step to strengthen capital (Suhari, 2013). Capital in rice farming is generally required in (a) the tillage phase, including buying seeds and fertilizers; (b) the planting phase for both labor and fertilizer; and (c) harvest and post-harvest phases for human or mechanical labor and purchase of equipment for post-harvest. In general, the problem faced by most farmers (especially small farmers) is that they are unable to finance their

farming at their own expense. So that other sources of capital are needed outside of personal funds in the form of loans or credit.

Banjar Regency is one of the rice granaries in South Kalimantan and also an area that has various types of land that can be planted with rice, namely from tidal, rain-fed, lebak and irrigation land. Of the total rice production of South Kalimantan Province, Banjar Regency contributed 250,367 tons of GKG in 2017. However, it was reported that from 2016 to 2017 there was a decrease in planted area, harvested area, production and productivity of rice in Banjar Regency. This is thought to be caused by many factors such as natural conditions, land conversion, capital and so on (BPS, 2018).

The capital factor plays an important role that farmers consider before doing farming. Credit that can help facilitate farmers' capital is not only obtained from government programs or banks, but can also be financed or assisted by financial institutions such as cooperatives, farmer groups or individuals or better known as moneylenders. The number of parties who make it easier for farmers to facilitate their farming will eventually bring up various thoughts and considerations by farmers as business actors and people who need the capital. Related to this background, it is necessary to study access to credit for rice plants in Banjar Regency so that in general information can be obtained regarding the use of credit and then examine how the credit is implemented in the research area.

II. Material and Methods

The research was carried out in Banjar Regency, South Kalimantan Province with the consideration that this Regency is one of the rice barns as the third largest area of rice field use in South Kalimantan. In addition, it has a location close to the provincial capital so it is very good in terms of marketing/distribution of rice products and obtaining information regarding access to farming capital. Preparation of reports to interviews with respondents started from August 2019 to April 2020. After that, data processing to writing the final research report began from August 2020 to May 2021.

The data used in this study are primary and secondary data. Primary data were obtained directly from respondent farmers by conducting interviews and distributing questionnaires, some of the questions listed in the questionnaire were matters relating to the characteristics of farmers and the farming they were running such as age, education level, farming costs, income and related to the source of capital used. respondent farmers. While secondary data obtained from agencies or institutions related to the subject and object of research such as the Department of Agriculture, Field Agricultural Extension and so on.

Sampling in this study was carried out in several stages, the determination of the research area was chosen deliberately based on the type of land and the type of rice cultivated and is an area with large rice production in Banjar Regency. Aluh-Aluh and Beruntung Baru sub-districts represent tidal land with all farmers working on local rice, then Sungai Tabuk and Matapura Barat sub-districts represent irrigated rice fields with high yield rice cultivation.

The study was conducted on 120 rice farmers using *simple random sampling* method due to the absence of definite data on the use of farmer's capital in farming, from each village in 4 pre-determined sub-districts. So that the proportion of the number of samples is 30 respondents each on each type of land and type of rice cultivated.

To answer **the first objective**, which is to analyze the costs incurred by farmers from rice farming in Banjar Regency, it is carried out in the following way:

$$TC = TCe + TCi \quad (1)$$

Description :

TC = Total Cost (Rp)

TCe = Total Explicit Cost (Rp)

TCi = Total Implicit Cost (Rp)

To answer **the second objective**, the contribution of own capital and credit, it is analyzed tabulated and expressed in percent (%) with the following formula:

$$Z = \frac{X}{Y} \times 100 \% \quad (2)$$

Description:

Z = Contribution

X = Equity or credit

Y = Total cost of rice farming

To answer **the third objective** of this study, to find out sources of capital, especially access to credit and at what stages of farming require access to credit, descriptive analysis from interviews and discussions with respondent farmers as well as from questions and answers to related parties at the research site.

To answer **the fourth objective** as the last research, to analyze what factors influence farmers in making decisions on the use of financing sources for their farming by using logit model regression analysis. The logit model is often used in situations where there are two alternative choices. In this case, the decision to utilize other sources of capital other than own capital (credit) or to use only own capital. The Logistics Regression formula is written as follows (Hosmer and Lemeshow, 2000):

$$Y = \text{Ln} \left[\frac{P}{1-P} \right] = \beta_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \dots + b_nX_n \quad (3)$$

Description :

Y = Opportunity to use capital sources

Y = 0 = if the farmer does not use
one agricultural credit

Y = 1 = if the farmer uses one of
agricultural credit

β_0 = Intercept/constant

b_{1-n} = Delta increase or decrease X
(regression coefficient)

X_1 = Age

X_2 = Education

X_3 = Number of Family Members

X_4 = Side Job

(0 = exists, 1 = does not exist)

X_5 = Previous farm income

(company)

X_6 = Land Area (ha)

X_7 = Land Type

(0 = low tide, 1 = irrigation)

To see the suitability of the Logit model, a partial parameter test (Wald test) and simultaneously (G test) was carried out with the SPSS 26 application.

III. Result

Age. The age of the respondents is in the productive or economically active age group, namely the age of 21-60 years. The results of data processing show that the older the farmer, the more the number of people taking agricultural credit in the research area.

Level of education. The highest education level of respondent farmers is bachelor degree and the lowest is elementary school. The Last education by the majority of respondent farmers was elementary school with a percentage of 60%, this value is quite different from the percentage of farmers who take credit, which is 45%. In addition, with a length of education > 12 years or equivalent to a bachelor's degree, the percentage is greater for farmers who take credit, which is 5%.

Number of Family Members. The majority of respondent farmers who take farming credit have the highest number of family members, namely 4 people, while the farmers who do not take farming credit have the largest number of members only 3 people.

Side job. Respondent farmers who took farming credit of 71.25% did not have a side job, and the percentage of farmers who did not take credit was also large around 18 farmers or 45%.

Land area. The majority of farmers who do not take agricultural credit have less than or equal to 1 hectare of land area, besides that only 2 farmers cultivate more than 1 hectare.

Capital Source. Farmers' capital in the research area comes from their own capital and credit. There are farmers who use only their own capital, credit only and their own capital plus credit. In the research area, 40 farmers only used their own capital, 43 farmers on credit alone and 37 farmers' own capital + credit. In the next study, only 40 were divided into 2, namely 40 farmers who did not use credit, and 80 farmers who used credit.

Components of the cost of rice farming on tidal land and irrigated land

Explicit costs are costs that are actually incurred by farmers. Such as the cost of seeds, fertilizers, medicines, land rent, depreciation, family member labor. For farmers who take credit there is an additional fee, known as the interest on the loan from the credit they take .

Implicit costs are costs that are not actually incurred by farmers but are still calculated as costs that must be paid by farmers. The explicit and implicit cost components can be seen in more detail in Table 1 below:

Table 1. Components of the total cost of rice farming on tidal land and irrigated land per hectare

Cost component	Farmer			
	Tidal Land		Irrigation Land	
	Non Credit	Credit	Non Credit	Credit
Explicit Cost:				
Seed	53.478	83.490	140.435	127.914
Fertilizer	126.739	126.567	357.698	383.465
Drugs	147.527	135.919	219.285	184.973
Land lease	469.861	978.051	0	58.962
Depreciation	154.622	123.786	135.480	118.089
Hired Labor	2.727.009	4.172.419	3.999.806	4.711.506
Loan Interest	0	399.917	0	451.988
Total Explicit Cost	3.679.235	6.020.148	4.853.074	6.036.898
Implicit Cost:				
Family Labor	2.991.692	1.499.862	2.611.781	1.899.638
Rent Own Land	3.006.182	2.477.913	3.499.222	3.440.869
Own Capital Interest	331.131	189.053	436.777	96.542
Total Implicit Cost	6.329.006	4.166.828	6.547.780	5.437.049
Total Cost	10.008.241	10.186.976	11.400.854	11.473.947

Source: data processing 2021

Table 1 explains that the average total cost of rice farming for farmers who do not take credit is greater than that of farmers who take credit. This is because there are various types of credit in the research area and not all respondent farmers borrow large amounts.

Many respondent farmers take credit only during the planting season or harvest season, in addition, some farmers who take advantage of credit also continue to use their own capital so that farmers still have to find ways to minimize the costs incurred.

When viewed from the explicit cost, the nominal for farmers who take credit is greater because farmers generally use credit to pay for workers outside the family to help with their work. In contrast to the implicit costs, the nominal non-credit farmers are larger because farmers use more labor in family member than farmers who take credit.

Contribution of Capital and Credit

The contribution of capital and credit for farming can be seen from the percentage of the influence of own capital and the use of agricultural credit on the total costs that have been incurred by farmers. More details can be seen in Tables 2 and 3 below:

Table 2. Contribution of own capital to the total cost of farming in Banjar Regency

Own capital contribution (%)	Farmer	
	Tidal	Irrigation
0	17	26
1 - 25	9	5
26 - 50	16	12
51 - 75	16	17
76 - 100	2	0
Total	60	60

Source: data processing 2021

In Table 2 it can be seen that the farmers who do not feel the contribution of their own capital are 43 farmers, from tidal land 17 farmers and 26 farmers from irrigation. The contribution of own capital of >50% is felt the same for farmers on tidal land and on irrigated land because the difference is only 1. Then in Table 3 it is the credit contribution.

Table 3. Contribution of credit to the total cost of farming in Banjar Regency

Credit contribution (%)	Farmer	
	Tidal	Irrigation
0	20	20
1 - 25	7	6
26 - 50	14	13
51 - 75	10	21
76 - 100	9	0
Total	60	60

Source: data processing 2021

In Table 3, farmers who feel a credit contribution of 0% or do not feel a credit contribution are 40 farmers, namely 20 farmers in tidal land and 20 farmers in irrigated land. The farmer is purely using his own capital and does not take advantage of any type of credit. The contribution of credit above 75% is felt by 9 farmers, while compared to the contribution of own capital in Table 2 at 75% it is only felt by 2 farmers. This shows that credit is quite a big contribution to the costs incurred by farmers because more farmers feel it.

Source of Capital and Stages of Credit Use

Of the 120 respondents who were interviewed, 80 of them took agricultural credit from various sources of capital such as from banks, agricultural product traders, agricultural kiosks, moneylenders and relatives. the remaining 40 farmers did not take credit because they felt they had sufficient capital apart from that they did not want to go into debt. Some farmers also have difficulty with the requirements to take formal credit such as KUR Bank so they choose to borrow from relatives or moneylenders which are easier and faster to disburse, the source of capital for farmers in Banjar Regency can be seen in Table 4 below:

Table 4. Sources of Farmer's Capital in Banjar Regency

Capital	Tidal	Irrigation
Owner's equity	20	20
BRI KUR	19	12
Agricultural product traders	6	11
Kiosk/Farm shop	3	0
Relatives/Family/Friends	8	13
moneylender	4	4
Total	60	60

Source: data processing 2021

Formal Credit. Formal credit that is well-known and wide in scope so that many farmers in the research area take is the credit for public bussines (KUR) from Bank Rakyat Indonesia or BRI. In its use this KUR must be used by customers for their farming purposes, if the bank finds farmers using money from KUR other than for their farming, the bank will immediately ask the customer to pay off the loan. The interest given by BRI is 9% per year.

Non-Formal Credit. There are many non-formal credit in the research area, ranging from agricultural stall, agricultural product traders, money lenders and relatives.

Agricultural stall in terms of capital assistance usually help farmers with medicines or fertilizers, or agricultural stall in the city can lend in the form of money whose returns and interest rates are regulated by both parties.

Traders of agricultural products or middlemen are also widely used as a source of capital by farmers. Farmers make loans in the form of money to middlemen then at harvest time they will sell their farming products to the middlemen at a lower price or repay loans with interest set by the middlemen. The interest given by middlemen varies from 40%-60% per year.

Loans to moneylenders are also mostly done by farmers because the process is very fast, it is immediately disbursed in one day but the loan interest is higher. Generally, farmers who take credit from moneylenders are farmers who need fast money because there are circumstances that suddenly occur and the nominal is also not much. Similar to middlemen, interest rates on moneylenders also vary but are higher, ranging from 50% -70% a year.

Relatives are the last non-formal credit available in the research area. Some of the loan processes to relatives are very easy to do and some are very difficult for respondent farmers. This is because these loans are based on mutual trust and involve family or friendship relationships so that if something happens it will cause damage to existing relationships.

Stages of Using Credit. The use of credit in farming activities in the research area, according to the results of interviews, was mostly in land cultivation, planting and harvesting activities. If seen in Table 5, the outside labor data processing for land cultivation, planting and harvesting is indeed larger than other activities.

Table 5. Employment of labor on credit farmers per hectare

Activity	Family labor		Hired labor	
	Tidal	Irrigation	Tidal	Irrigation
Tillage	3,96	5,97	2,20	2,35
Seedbed	3,03	1,65	1,58	0,29
Planting	2,46	4,94	15,15	13,14
Cultivation	2,81	4,35	0,74	1,22
Harvesting	2,73	2,07	22,22	30,10
	14,999	18,996	41,903	47,115

Sumber : data processing 2021

From Table 5 is the average use of labor from 80 farmers who use credit. It can be seen that the use of labor that is widely used is labor from outside the family, this is because one of the reasons farmers in the research area use credit is to be able to hire additional workers to make their work easier.

Tillage. Soil cultivation is carried out by farmers in the rainy season, on October-November. In the research area, the workforce that is commonly used is human labor, while only a few farmers use machine. Of the 80 farmers who use credit, 31 farmers use credit capital for land cultivation activities.

Planting. In the research area during the planting season, besides the farmers themselves who plant on their land, there are also planting activities together alternately by the local community called handipan, this handipan system is the same as arisan which means that all members must take turns planting rice with each other. However, only a few farmers use this system, more farmers employ workers outside the family who are paid per day or per wholesale. In the research area the cost for planting is Rp. 100.000,- for 2 pieces of land.

Harvest. Harvesting activities also require a large amount of capital and energy. This activity requires a fast and precise completion time so that the results obtained are maximum and the quality is maintained. The work process at this stage is quite a lot starting from harvesting, threshing rice to transportation. Due to the large number of processes, a large number of workers are required.

Factors that affecting farmers in making decisions to utilize farm credit

Factors that are considered to have an effect on the use of capital sources by farmers in this study are age (X_1), education (X_2), number of family members (X_3), side work (yes or not) (X_4), previous farming income (X_5), land area (X_6), and land type (X_7) From the results of calculations using SPSS 26, obtained the following equation and more complete can be seen in Table 5:

$$Y = Ln \left[\frac{P}{1-P} \right] = 85,697 + 0,045X_1 - 0,574X_2 + 3,191X_3 + 3,027X_4 - 5,352X_5 + 11,344X_6 - 0,032X_7$$

Table 6. The results of the logit analysis of factors that influence decision making on the use of rice farming credit in Banjar Regency

Predictor	Coef	SE Coef	Z	P	Oods Ratio
Constant	85,697	40,985	4,372	0,037	
Age (years)	0,045	1,634	0,001	0,978	1,046
Education (years)	-0,574	1,014	0,320	0,571	0,563
Family Members (person)	3,191	1,298	6,040	0,014*	24,312
Side Job	3,027	0,943	10,299	0,001*	20,629
Previous Farming Income	-5,352	2,475	4,678	0,031*	0,005
Land Area	11,344	3,160	12,884	0,000*	84457,998
Land Type	-0,032	-0,803	0,002	0,968	0,968

Concurrent Test Criteria (Model): G=96,631, DF=7, P-Value=0,000

Nagelkerke R Square = 0,768 Note: * = significant up to a 5%

Sumber: Data processing 2021 with SPSS 26 application.

Model Goodness Test

Test the goodness of the model in this logistic regression using the *Chi-Square value* of the difference between *-2 log likelihood* before and after the independent variables entered the model. Based on the results of the analysis with the *Omnibus Test of Model Coefficients on the G test*, the *Chi-Square* value is 96.630 and the *P* value is smaller than = 5%, which is 0.000 (can be seen in Table 5). This shows that the independent factors simultaneously affect the dependent variable.

Then to assess the ability of the independent variable to explain the dependent variable, the *Cox & Snell R-Square* or *Nagelkerke R Square* values were used. Based on the results of the analysis, the value of *Nagelkerke R Square* is 0.768. This shows that 76.8% of decision making on the use of farm credit is determined by the independent variables in the model, while the remaining 23.2% is determined by other factors not included in the model.

The final test step is to determine whether the model formed is correct or not, the *Goodness of fit test (GoF)* or *Hosmer and Lemeshow Test* is used. It is said to be appropriate if there is no significant difference between the model and the observed value. From the results of the study, it was found that the *Chi Square Hosmer and Lemeshow* value was 3.615 with a significance value of 0.890. Thus the value of sig is greater when compared to =5%. This shows that the logistic regression model is able to explain the data and there is no difference between the model and the observed values. So that the logistic regression equation can be used to explain the relationship between the independent variable and the dependent variable.

Partial Test

age. The age factor studied in this research is the age of the head of the family as a decision maker and the person responsible for carrying out household rice farming. This age factor has a positive coefficient value with an odds ratio of 1.046. seen from the *P*, the age factor is not significant either at the level of 5% or 10%, which means that this factor does not have a significant influence on farmers' decision making in taking credit. In addition, age does not always reflect the experience or readiness of farmers to use credit for their farming.

Education. The educational factor here is also the education of the head of the family as a decision maker and the backbone of the family. This factor has a negative coefficient value but is not significant. Judging from the *P* is greater than = 5%, namely 0.571, so the null hypothesis (H_0) cannot be rejected. This shows that the use of farming credit is not determined by the education of farmers, a farmer who has higher education does not necessarily have a lot of capital to do farming and vice versa.

Number of family members. The number of family members here is the total number of families living and eating in one house. The factor of the number of family members has a positive coefficient with an odds ratio of 24,312. Judging from the *P*- value is smaller than = 5%, namely 0.014, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, namely the number of family members has a significant effect on farmers' decision making in using credit. The positive coefficient value and the odds ratio means that if the respondent has more family members, the opportunity to use one of the credits for farming is 24,312 times greater than the respondent with one family member below.

Side job. This factor is used to distinguish between households that have a side job and those who don't, where 0 = there is a side job and 1 = there is no side job. The side job factor has a positive coefficient value with an odds ratio of 20.629. Judging from the *P* value is smaller than = 5%, namely 0.001, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This shows that decision making in taking credit depends on side jobs, whether there are or not. The combination of a positive coefficient and the *odds ratio* means that if a household does not have a side job, the chance of making a decision to take credit is 20.629 times that of a household with a side job.

Previous farm receipts. This factor is based on the results of the respondent's narrative, namely from the results of rice production in the previous season which is then multiplied by the selling price. This income has not been reduced by the expenditure of the farmer's household but has been reduced by the consumption of the farmer's rice. The previous farm acceptance factor had a negative coefficient with an odds ratio of 0.005. Judging from the *P* value is smaller than = 5%, namely 0.031, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. The combination of the negative coefficient value and the *odds ratio* means that if the previous farm income increases by one rupiah, the chance of making a decision to use credit is 0.005 times smaller than before. With the acceptance of farming, farmers have the ability to make ends meet, save and as capital for the next farming.

Land area. The last factor is land area, which is the area of land cultivated by farmers to plant rice. This factor has a positive coefficient value with an odds ratio of 84,457,998. The land area variable has a positive coefficient and an *odds ratio*, which means that every increase in land area per hectare will increase the chances of farmers making decisions in using credit by 84,457,998 times greater than the land area before the increase. On average, farmers who take credit have an area of 1,648 hectares, while farmers who do not take credit have an area of 0.645 hectares.

Land type. This factor has a negative coefficient value but is not significant. Judging from the *P* it is greater than = 5% that is 0.968, so the null hypothesis (H_0) cannot be rejected. This shows that the use of farming credit is not determined by the type of farmer's land, because in both tidal and irrigated lands, some farmers still need credit and some do not.

IV. Conclusion

The conclusions from this research are:

1. The average total cost per hectare incurred by farmers who take credit for local rice farming on tidal land during one growing season is Rp. 10,186,976, - Meanwhile for non-credit farmers is Rp. 10.008.241,-. The total cost incurred by farmers who take credit for superior rice farming in irrigated land for one growing season is Rp. 11,473,947, -, while for non-credit farmers is Rp. 11,400,854,-.
2. The percentage of contribution of 75%-100% which contributes more is from taking credit because there are 9 farmers who feel the high contribution, while on their own capital there are only 2 farmers.
3. Sources of capital in the research area from formal institutions are People's Business Credit from Bank BRI and non-formal institutions are from agricultural product traders, agricultural kiosks, moneylenders and relatives. The phases where credit is most needed are during land preparation, planting and harvesting.
4. Factors that influence farmers' decision making in utilizing farm credit are the number of family members, side jobs, previous farm income and land area. Factors of age, education and land type have no effect on farmers' decision making in utilizing agricultural credit.

V. Suggestion

Suggestions and follow-up from this research are as follows:

- a. The Banjar Regency Government needs to provide socialization/training to related parties so that they can better run the existing cooperatives and Gapoktan so that they can become legal entities so that if there is a government program or assistance, it can be immediately distributed to its member farmers to be able to help and prosper the farmers.
- b. It is necessary to conduct more detailed research related to farm credit in the research area, or research to a formal institution, namely the Bank so that it is known how the response of farmers to these formal institutions is because they see quite a lot of farmers taking credit from these institutions.
- c. Local governments must supervise parties related to non-formal institutions such as agricultural product traders so as not to play with the price of grain at the farmer level, and also moneylenders not to give interest that is too high.

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