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ANALYSIS OF THE TECHNICAL EFFICIENCY OF CAYENNE CHILI FARMING IN LIANG ANGGANG SUB-DISTRICT OF BANJARBARU CITY

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ABSTRACT
Farm productivity is closely related to efficiency issues, especially technical efficiency. Efficient farming will produce maximum production and productivity. Cayenne chili production is also influenced by several production factors including land area, seeds, labor, and pesticides, fertilizers, etc (Syamsuddin, 2021). The existence of inefficiency in cayenne chili farming will be followed by low productivity. One of the factors that cause technical inefficiency is internal factors where this factor affects the socio-economic conditions that affect the managerial capabilities of farmers such as land tenure, education, age, income, experience, and others (Sumaryanto, 2001). The purpose of this research is to analyze the factors that affect maximum production and analyze technical efficiency factors and technical inefficiency in cayenne chili farming in Liang Anggang District, Banjarbaru City.

KEY WORDS
Technical efficiency and inefficiency, productivity, production function, cayenne chili.

The horticultural commodity that is one of the most important in Indonesia, namely cayenne chili plants. This is because in addition to being widely cultivated, the development of this commodity is also constantly monitored by the government because it is a commodity that contributes to high inflation but also provides high value with a harvest area and productivity that continues to increase every year.

Productivity is one of the benchmarks in farm success. If a farm can produce maximum production, its productivity will also be high. The decline in cayenne chili productivity in Liang Anggang Subdistrict is thought to be due to inefficiencies in the use of production factors by farmers. The availability of information on the level of technical efficiency of the use of farm production inputs for horticultural commodities, especially vegetables, in this case cayenne chili is quite important.

Problem Formulation: what factors affect the maximum production of cayenne chili farming, and how technical efficiency and technical inefficiency in cayenne chili farming in Liang Anggang District, Banjarbaru City.

Research Objectives: analyzing the factors that affect the maximum production of cayenne chili farming, and analyzing technical efficiency and technical inefficiency in cayenne chili farming in Liang Anggang District, Banjarbaru City.

METHODS OF RESEARCH

This research was conducted in Liang Anggang District, Banjarbaru City, South Kalimantan, from November 2022 to January 2023, and used primary (Questionnaire) and secondary (BPS, Agriculture Office, etc.) data.

Sampling of farmers using the census method technique (non probability) as many as 92 in the village of Landasan Ulin Barat and village Landasan Ulin Utara.

The Stochastic Frontier production function used in this study is expressed in the following equation:

$$Y = b^0 X_1^{b1} X_2^{b2} X_3^{b3} X_4^{b4} X_5^{b5} e^{(\delta i - \mu i)} \qquad (1)$$

The frontier production function estimation equation model of cayenne chili farming in linear form can be written as follows:

$$\ln Y = \beta 0+\beta 1 \ln X1+\beta 2 \ln X2+\beta 3 \ln X3+\beta 4 \ln X4+\beta 5 \ln X5+\beta 6 \ln X6 +vi-ui \quad (2)$$

Where:

- Y: Total production of cayenne chili (kg);
- X1: Area of land planted with cayenne chili (ha);
- X2: amount of seed use (grams);
- X3: Amount of organic fertilizer used (kg);
- X4: Amount of inorganic fertilizer used (kg);
- X5:: Amount of medicine used (Ltr);
- X6: Number of workers (HKO);
- β0: Intersept;
- βj: Coefficient of the estimated parameter, where i =1,2,3,…6;
- vi-ui: Error tern (ui = effect of technical inefficiency in the model). Expected coefficient values: β1, β2, β3, β4, β5, β6 > 0 expected coefficients: β1, β 2, β 3, β 4, β5, β6 > 0.

Stochastic Frontier analysis is done through two stages. To answer the first research objective of analyzing the factors that influence the production factors of cayenne chili farming in Liang Anggang Subdistrict, Banjarbaru City, the technical efficiency analysis is measured using the formula by Coelli et al (1996):

$$\mathrm{TE_i}\exp(-\mathrm{E} \mid \mu_i \mid \epsilon_i \mid) \; \mathrm{i} = 1, \ldots \mathrm{N} \quad (3)$$

Where: TEi is the technical efficiency of the Ith farmer, is the expected value (mean) of μi condition ϵI so 0 = TE = 1. f technical inefficiency. The criteria for farmers who are classified as technically efficient in this study if the efficiency index value = 1, then the cayenne chili farm is technically efficient. Conversely, if the efficiency index value < 1, the cayenne chili farm is not technically efficient (Coelli, 2005).

Farmers' technical inefficiency levels are farmer age (z1), education (z2), experience (z3), land status (z4), and technology use (z5).

Thus the distribution parameter (μi) of the technical inefficiency effect in this study is:

$$\mu_i = \delta_1 + Z_1\delta_1+Z_2\delta_2 + Z_3\delta_3 + Z_4\delta_4 + Z_5\delta_5 + w_i \quad (4)$$

Where:

- μi: Technical inefficiency value;
- z1: Farmer age (years);
- z2: Farmer education (years);
- z3: Farmer experience (years);
- z4: Land ownership status (private or rental);
- z5: Technology use (complete fertilizer use or not);
- w_i: indicates the 1=m famer.

Testing the Stochastic Frontier parameters and technical inefficiency effects was conducted in two stages. The first stage is the estimation of parameters using the OLS method. The second stage is the estimation of all parameters β0, βj, variance ui and vi using the Maximum Likelihood (MLE) method, at a confidence level α 5%.

Mathematically, the Cobb Douglas production function equation is written as follows:

$$Y = aX_1^{b1}X_2^{b2}X_3^{b3} \ldots X_n^{bn}e^u \quad (5)$$

Where: Y = Production; a = Intercept; X1 = Jenis 1st type of production factor, where i=1,2,3... n; bi = Regression coefficient of variable estimator; u = Error.

The Cobb-Douglas production function in this study is used to show the average performance of the farmer's production process at the existing technology level. The logarithmic equation of the Cobb-Douglas production function can be written mathematically:

$$Ln = Ln\beta_0 + \beta_1 LnX_1 + \beta_2 LnX_2 + \beta_3 LnX_3 + \beta_4 LnX_4 + \beta_5 LnX_5 + \mu \quad (6)$$

And if the Cobb-Douglas test results do not affect the technical efficiency of cayenne chili farming, then other factors are needed in the form of management factors to increase the impact of utilization of production factors on the technical efficiency of cayenne chili farming in the form of technical efficiency factors (TE) so that the algorithm equation is written as follows:

$$Ln = Ln\beta_0 + \beta_1 LnX_1 + \beta_2 LnX_2 + \beta_3 LnX_3 + \beta_4 LnX_4 + \beta_5 LnX_5 + \beta_5 LnX_6 + TE + \mu \quad (7)$$

RESULTS AND DISCUSSION

Age can affect the work results obtained by each farmer. Productive age will affect physically at work and on decision-making, of how farmers act in running their farms. Farmers with a young age will have a physically more capable to work compared to farmers who have been old.

Table 1 – Number of Respondents Based on Age

No	Age (Years)	Total Respondent
1	30-40	27
2	41-50	31
3	51-60	28
4	≥ 61	6
Total		92

Source: Primary data processed.

The age of the cayenne chili farmer respondents used is calculated from the day of birth to the cayenne chili planting period under study. The average cayenne chili farmers who are research respondents are in the age range of 30-40 years, namely 27 people (34 percent), followed by farmers with an age range of 41-50 years, namely 31 people (47 percent). While farmers with an age range of 51-60 years consisted of 28 people (30 percent) and with an age range ≥ 61 years consisting of 6 people (7 percent). Most of the cayenne chili farmers in Liang Anggang have a productive age. According to (Sukiyono, 2005) the population is classified as productive age if the range is between 15-59 years. So that overall respondent farmers are still classified as productive age.

Table 2 – Education level of cayenne chili farmers in Liang Anggang

No	Education level	Number of respondents (people)
1	Not in School	0
2	Graduated from junior	22
3	High school	37
4	High school graduate	31
5	S1	2
	Total	92

Source: Primary data processed.

The level of education can affect the mindset and knowledge of respondents in applying the farming system carried out. According to Nababan (2009), the level of formal education possessed will show the level of knowledge and broad insight for farmers to apply what they get to increase the results obtained in their farms, but it does not rule out the possibility that someone who has low education does not have broad insight. Respondents in Liang Anggang sub-district get farming experience from their parents and there is a

companion extension agent in each village that helps and provides agricultural insights to farmers.

Based on the table 2, it can be seen that overall the respondent farmers have taken education. The majority of respondent farmers have an education level equivalent to Sd as many as 22 people (24%), while SLTP is as many as 37 people (40 percent), followed by respondents with an education level equivalent to SLTA as many as 31 people (34 percent) and equivalent to S1 as many as 2 people (2 percent).

The land ownership status of respondent farmers is categorized into 2 (two), namely self-owned or private land and non-owned land. Land ownership status indirectly affects agricultural production. Farmers who have their own land status tend to pay less attention to the production process. Owner farmers have the freedom to use and utilize their land and do not need to pay for the land used. Farmers with non-owner land status tend to pay less attention to the land because they do not have the freedom to use and utilize the land. For land status that is not owned in this study, it is Sakap land or with a profit-sharing system, i.e. other people's land that, with the consent of the owner, is cultivated or managed by other parties (Putri 2018). Farm management and technology choices are consulted with the landowner. In addition, landowners and land managers or cultivators must agree on a profit-sharing system for land use. The distribution of respondents according to land ownership status in the study can be seen in Table 3, as follows:

Table 3 – Distribution of respondents according to land ownership status

Number	Land Ownership Status	Number of farmers (people)	Percentage (%)
1	Owned	51	55
2	Rental	41	45
Total		92	100,0

Source: Primary data processed.

This study shows that 51 people or 55% of respondents are their own landowners, while the other 41 people or 41% were not their own. There are several factors that cause the presence of sharecroppers, including: (a) farmers do not have land; (b) if they have land but not enough to meet their needs; the landowner does not have the capacity to produce (cultivate) his or her own land; and (d) the landowner lives far from the cultivated land (Darwis 2016).

The results of the study (Rondhi and Adi 2018) show that leased land has the highest productivity, followed by owned land, and profit-sharing land. Meanwhile, owned land has the highest farming cost efficiency, followed by profit-sharing land and the lowest efficiency is rented land.

Land is the place where curly red chili farming is carried out. A very important factor in red chili farming is land area. The more land owned by farmers, the higher the production and vice versa, the less land owned by farmers, the lower the production which will result in decreased income. The following characteristics of respondents based on the land area of farmers in Liang Anggang District, Banjarbaru Regency are presented in Table 4.

Table 4 – Characteristics of farmers' land area

No	Land area (Ha)	Total farmers	Percentage (%)
1	0.1	28	30 %
2	0.2	46	50 %
3	0.3	17	19%
4	0.4	1	1 %
Total		92	100 %

Source: Primary data processed.

The majority of respondents' land area in Liang Anggang sub-district is with a land area of 0.2 Ha as many as 46 people (50 percent), followed by respondents with a land area of 0.1 Ha as many as 28 people (30 percent), and 17 people (19 percent) respondents with a land area of 0.3 Ha, as well as 1 (1 percent) of land owners of 0.4 Ha. It can be said that

cayenne chili farmers with a narrow land area in the Liang Anggang sub-district are more dominant. A narrow land area results in low production and vice versa when the land area is wide, the higher the production.

The number of family dependents is the number of family members consisting of children, wives, relatives and other people who are still in the same house, as well as dependents charged to the head of the family. The number of people in the household is one of the important factors in decision-making for farming activities. This condition can influence respondents' decisions.

Table 5 – Respondents based on number family dependents

No	Total Dependents (People) Family	Number of Respondents (People)
1	1 collateral	1
2	2 collateral	47
3	3 collateral	22
4	4 collateral	20
5	5 collateral	2
	Total	92

Source: Primary data processed.

Based on Table 5, it can be seen that cayenne chili farmers who are respondents in the Liang Anggang sub-district have an average number of family dependents of 1 dependent person with a total of 1 respondent (1 percent). Furthermore, respondents who have family dependents of 2 people are 47 respondents (51 percent). Farmers who have 3 dependents consist of 22 respondents (24 percent), and those who have 4 family dependents are 20 respondents (22 percent), and those who have 5 family dependents are 2 respondents (2 percent).

Farmers can directly affect the mindset of farmers. Farmers who have longer experience will be better able to plan their farms better because farmers with long experience already know the aspects of faming to increase farm production. The longer the experience of farmers thath allows can increase production to be higher

The following characteristics of respondents based on the farming experience of curly red chili farmers in Liang Anggang District, Banjarbaru Regency are presented in Table 6. Based on Table 6 that respondents with the most curly red chili farming experience are in the range of 16-10 years as many as 43 people or 47%, in the range of 1-5 years as many as 34 people or 37%, in the range of 11-15 years as many as 9 respondents or 10%, in the range of 16-20 years as many as 4 respondents or 4% and the least is the range of >20 years only 2 people or 2%. It can be said that the farming experience of cayenne chili farmers in the Liang Anggang sub-district is still relatively old and not much experience.

Table 6 – Level of business duration of cayenne chili

No	Length of time in business	Total farmers	Percentage (%)
1	1 -5	34	37
2	6 -10	43	47
3	11 -15	9	10
4	16 -20	4	4
5	>20	2	2
Total		92	100

Source: Primary data processed.

Cayenne chili farming is said to be technically efficient if it is able to produce a certain amount of output using a smaller number of inputs or is able to produce maximum output from the use of a certain amount of input. The estimation results of the *Stochastic Frontier* production function model in this study showed that variable of land area with a coefficient value of 0.813 and a t-ratio of 10.087 has a significant effect on the production factor as well as the variable of organic fertilizer use where the coefficient value is 0.0292 and the t-ratio is 3.654 significantly different from the production factor with a significance value of. While the

variable use of drugs with a coefficient value of -0.222 and its t-ratio of -2.155 is not significantly different from the production factor.

Table 7 – Distribution of technical efficiency index of respondent farmers in cayenne chili farming in Liang Anggang Subdistrict, Banjarbaru Regency, 2023

No.	Distribution Index Efficiency	Total (people)	Percentage (%)
1	0.10 ≤ TE ≤ 0.30	1	1.09
2	0.31 ≤ TE ≤ 0.50	5	5.43
3	0.51 ≤ TE ≤ 0.69	5	5.43
4	0.70 ≤ TE ≤ 0.99	81	88.04
	Jumlah	92	
	Mean efficiency	0.829	

Source: Primary data processed.

Using the efficiency index criteria 0.7 as the efficiency threshold, then 88,04% of farmers overall farmers whose farms are classified as efficient, while the remaining 11.96% of farmers have a low level of efficiency (efficiency value <0.70) or farming activities are classified as inefficient. On average, respondent farmers in the study area are not technically efficient, so if farmers want to improve the technical efficiency of their farms, the way that can be done is to add production inputs that have a real effect on production and pay attention to factors that affect technical efficiency which are the sources that cause inefficiency.

Factors that are thought to affect the level of technical inefficiency of curly cayenne chili farming in the study are: Farmer's age, experience, land ownership status, farmer's education level, and dummy Use of technology / complete fertilizer, The estimation of the inefficiency function is a simultaneous result that is processed together with the production function using the Cobb-Douglas model with the OLS method. The inefficiency effect is the error term of the modeled production function.

The estimation results of the technical inefficiency effect model show that the age factor with a t-statistic of 0.789 at a confidence level of 95 percent gives a real influence on the technicainefficiency of cayenne chili farming. The coefficient value is 0.087 The positive sign indicates that the increasing age of farmers can reduce technical inefficiency by 8.7% in their farms, meaning that the older the age of farmers

The older the farmer, the less efficient he is in running his farm. This is in accordance with the assumption that the older the farmer's age, the more his work ability and technical ability will decrease and have a negative impact on technical efficiency

The positive sign on the age coefficient is in accordance with the results of Susanti's research (2014) which states that age has a positive coefficient sign on the technical inefficiency of curly red chili farming, which means that the higher the age, the higher the technical efficiency.

Education factor is one of the important factors in causing technical inefficiency of farming, where the t value of -1.796 with a confidence level of 95 percent, this means that the education factor has a negative effect on technical inefficiency. With a negative coefficient of -0.192, which means that if there is an increase in education by 0.192%, it means that education has a negative effect on technical inefficiency. In one year it will decrease the technical inefficiency factor by 19.2%.

Higher education can encourage farmers to apply farming technology more proportionally using production inputs, according to research by Saptana, et al (2011) said that the higher the level of education will reduce technical inefficiency in red chili production. The higher the education of farmers, the higher the mastery of technical skills and managing farming is better so that the impact can reduce technical inefficiency.

The experience factor is one of the causes of technical inefficiency in farming, experience is positive towards technical inefficiency factors, where the t value is 0.475 at 95% confidence level. The coefficient is 0.051 which means that with a 5 % increase in the frequency of experience will cause an increase in the level of technical inefficiency by 5.1 %

Experience plays an important role in farmers' farming, because a lot of information can be obtained in this activity such as cultivation techniques, how to control pests and diseases, how to fertilize and harvest techniques, generally what is often given experience is how to control pests and diseases of cayenne chili. Experience as a learning process aimed at farmers and their families has an important role in achieving agricultural development goals.

Use of Technology/Complete Fertilizer is negative to the technical inefficiency factor, where the t value is - 0.968 at 95% confidence level. The coefficient is -0.106 which means that with an increase in the frequency of experience of 5% will cause a decrease in the level of technical inefficiency by -10.6%. The use of Technology / Complete Fertilizer plays an important role in farmers' farms, because the completeness of the nutrient content that can be absorbed by plants will greatly affect the level of cayenne chili productivity. The more complete the nutrients absorbed, the better the production level.

The continuous use of organic fertilizers will maintain nutrient balance, increase fertilizer efficiency and have a positive impact on soil health and the environment. The various benefits of organic fertilizers can be found in "Gembur" Organic Fertilizer. While the benefits and advantages of inorganic fertilizers include: being able to provide nutrients in a relatively faster time, producing available nutrients that are ready to be absorbed by plants, containing more nutrients, no pungent smell, practical and easy to apply.

The technical efficiency factor of land ownership is negative and has no significant effect at the level of the magnitude of the t-count is 0.955. The coefficient of land ownership status is 0.103, indicating that farmers who own their own land will have smaller technical inefficiencies than farmers who rent land.

This is because farmers must get maximum production in order to cover the rental costs incurred, in line with Ekaningtyas and Daryanto (2013) who state that farmers who rent land will have a higher technical efficiency value because the sense of responsibility owned by farmers who rent land is greater than farmers who own their own land, this is because farmers pay rent for a certain period of time, so farmers will try as much as possible to return the capital that has been spent.

The model used to estimate the production function of cayenne chili farming is the Cobb- Douglas function model of the SPSS method using OLS parameters. The OLS method is a method found in multiple regression analysis. This method is used to minimize the sum of squared errors by estimating a regression line. The OLS method is a type of econometric method with 2 variables, namely the independent variable and the dependent variable.

The initial production factors that are thought to affect the production of cayenne chili are land area, number of seeds, amount of organic fertilizer, amount of inorganic fertilizer, use of drugs, and the amount of labor. The results of the Cobb-Douglas production function estimation with the OLS method analyzed using SPSS on the production factor variables show that the production factor variables have no significant effect ($\alpha > 0.05$) at the 95% level on the efficiency of cayenne chili farming in Liang Anggang District.

Production factors alone do not affect the technical efficiency of cayenne chili farming; therefore other factors are needed in the form of management factors to increase the impact of production factor utilization on the technical efficiency of cayenne chili farming. According to Soekartawi (1990) production factors in agricultural farming can be in the form of agricultural land, labor, capital and management that can produce a product. Management is an art in planning, organizing and implementing and evaluating a production process. Management factors are influenced by the level of education, farming experience, business scale, the size of the credit and the type of commodity and others. So that in testing the Cobb-Douglas production function with the OLS method, management factors are added in the form of TE (Technical Efficiency) values to increase the influence of production factors.

The results of the Cobb-Douglas production function estimation with the OLS method analyzed using SPSS on the variable production factors after including management factors in the form of TE (Technical Efficiency) values show that the variable production factors have a real effect ($\alpha > 0.05$) at the 95% level on the efficiency of cayenne chili farming in Liang Anggang District.

Land use has a positive and real effect at the 95% confidence level on the maximum production of cayenne chili, From the results of the analysis of land area, the t-count of 27.660 is greater than the t table value, thus the positive coefficient value of 0.703 means that if there is an increase in land use by 5%, it will increase the maximum production of cayenne chili by 50%. 70.3%, considering that the land area of chili farming respondents in Liang Anggang Subdistrict is not so extensive ranging from 0.1 Ha to 0.38 Ha, thus it is possible for respondent farmers to be able to increase the land area for cayenne chili cultivation. However, the increase in land area must be followed by the use of other variable inputs in a constant ratio. Land for farming is the main production factor that is irreplaceable, the more land owned by farmers, will increase the opportunity for farmers to produce more).

Based on the results of data analysis the number of seeds (X_2) has no significant effect with a t value of 1.239. where the coefficient value has a positive value of 0.029 which means that if there is an increase in the use of seeds by 5%, it can reduce the production of cayenne chili by only 2.9 %, meaning that if more seeds are planted in land with normal spacing it will automatically increase the production of chili plants, but if the spacing is too narrow it can cause a struggle for nutrients and will increase pest and disease attacks caused by high humidity around the plant. In chili cultivation, the use of the number of seeds has a very important role, the quality of seeds is one of the factors that will affect chili production, this is in accordance with the opinion of Yunus (2019), which states that the use of chili seeds is not optimal, the characteristics of good seeds are uniform seedling growth, seedling leaves are not curly, the appearance of green seedlings.

The results of the analysis on the data on the amount of organic fertilizer (X_3) have a real effect at the 95 percent level where the t-count result of 8.282 is greater than the t table, where the coefficient value is positive by 0.182 means that if there is an increase in the use of fertilizer by 5%, it will increase production by 18.2%, it is suspected that the use of organic fertilizer used by respondent farmers is in accordance with the recommendations and the effect of using organic fertilizer which is long-term and does not have an immediate impact so that the increase in cayenne chili production is not significant.

According to the opinion of Priyono (2017), which states that in increasing the growth rate and development of chili plants, a variety of types of fertilizers such as livestock manure other compound fertilizers.

The results of the data analysis of the amount of inorganic fertilizer (X4) has a real effect at the 95 percent level where the t count of 2.004 is greater than the t table where the coefficient value is negative by 0.038, meaning that if there is an increase in fertilizer use by 5%, it will increase production by 3.8%, it is suspected that the use of organic fertilizers used by respondent farmers is in accordance with the recommendations.

According to Priyono (2017), stating to stimulate the growth and development of chili plants should use 2 types of fertilizers, namely organic fertilizers and inorganic fertilizers. To stimulate the growth and development of roots, stems, leaves, flowers and fruit in chili plants, you can use KCL, TSP, and Pearl NPK fertilizers.

Based on the data, pesticide input has a significant negative effect at the 95% confidence level where the calculated t value of -6.311 is smaller than the t table and the negative coefficient value of -1.26 indicates that the addition of 5% pesticide will reduce the production of cayenne chili by 126%. It is suspected that the use of pesticides, both insecticides and fungicides, is still not as recommended, this is in accordance with the opinion of Sudiyono and Yasin (2006) that the production factor of pesticides if not as recommended will actually cause pests and diseases resistance to these pesticides which in turn will cause crop failure.

The t value of labor of 2.671 is greater than the t table value with a confidence level of 95%, meaning that labor has a significant effect on cayenne chili production. The coefficient value of labor has a positive value of 0.59 which means that if there is an increase in the use of labor by 5%, it can increase the production of cayenne chili by 59%. The use of labor in farming is a very important factor, considering that the production process in the field is carried out by labor.

Saptana (2011), namely the use of labor production factors has a significant effect, which means that labor greatly affects production in farming, if the workforce is reduced, production will also decrease, and vice versa, that the addition of labor can increase production factors.

CONCLUSION AND SUGGESTIONS

From the results of the research and discussion above, it can be concluded that:

- Factors that influence the production process simultaneously at the 95% confidence level are land area, organic fertilizer, inorganic fertilizer, medicines, and labor. While the number of seeds does not affect the production factors of farming;
- The efficiency level of cayenne chili farming in the Liang Anggang sub-district is 88.04 and 11.96% is not technically efficient;
- Factors that affect inefficiency simultaneously (F- test) such as age, education, experience, land ownership status, and technology use.

The suggestions that can be given in this study:

- The factor of using the number of seeds that does not significantly affect the productivity of cayenne chili farming can be overcome by carrying out good and correct cultivation techniques for cayenne chili plants;
- 11.69% of farmers are not technically efficient so that farmers need to increase their efforts through increasing the use of production factors that have a positive effect and improving managerial aspects of farming. As well as increasing the factors that affect farming inefficiency so as to further support the level of productivity of the cayenne chili farming business.

REFERENCES

1. Amin, S. 2009. Cocopreneurship. Various Business Opportunities from Coconut. Liliy Publisher. Yogyakarta.
2. Bowyer JL, Shmulsky, Haygreen JG. 2003. Forest Products and Wood Science - An Introduction, Fourth edition. Iowa State University Press.
3. Directorate General of Plantation. 2014. Indonesian Plantation Statistics. http://ditjenbun.pertanian.go.id. Accessed April 02, 2016 in Banjarbaru.
4. Kamal, N. 2012. Characterization and Potential Utilization of Palm Waste. Chemical Engineering, ITENAS. Bandung.
5. Nuryawan, A. 2007. Physical and Mechanical Properties of OSB from Small Diameter Acacia, Eucalyptus and Gmelina Wood [Thesis]. Postgraduate Program. Bogor Agricultural University. Bogor.