IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 12, Issue 10 Ser. II (October 2019), PP 46-55
www.iosrjournals.org

Analysis Of The Factors That Influence The Use Of Agricultural Mechanization In Rice Farming In Swamps In The Barito Kuala Tidal Area

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Abstract. *Mechanization of agriculture aims to increase labor productivity, improve land productivity, and lower production costs. The use of tools and machinery in the production process is intended to improve the efficiency, effectiveness, productivity, quality of results and reduce the workload of farmers. This study aimed to analyze the level of productivity, net income and factors (net income, employment, age, land and education) that affect farmers and non-users mechanization mechanization of rice farming in tidal swamp land Barito Kuala. The research was conducted in the District Mandastana with a total sample of 80 farmers. The samples were taken by simple random sampling method. The results showed that the productivity and net income exhibited significantly different between farmers using mechanization and are not using mechanization. While the factors that significantly influencethe use of agricultural mechanization in tidal swamp land variable net income of farmers and family labor at α = 5%. Factorthe level of education of farmerssignificant effect until α = 10%. While the rest of age factor farmers and land area did not significantly although until α = 10%.*

Keywords: *agricultural mechanization, rice farming, wetlands recede rasang*

Date of Submission: 18-10-2019 Date of Acceptance: 02-11-2019

I. Preliminary

Agricultural mechanization is the study of all the activities of the use of agricultural tools and machines are driven both by human power, animal power, an electric motor or other mechanical energy. This is done to reduce fatigue or fatigue and improving the timeliness of activities (operations) agriculture, and ultimately can secure production, improve production quality and improve work efficiency.

Agricultural mechanization for most people in Barito Kuala still considered to be difficult to implement, particularly for indigenous people Barito Kuala. The difficulty is because some people think that there is fear when in the use of mechanization can decrease the value of production, for example in the use of tractors is feared to lift the pyrite surface, as well as for example in the use of the harvester some people were also worried about losing high because most people who grow rice locally.

Many factors in the use of agricultural mechanization, such as net income, labor, land, farmers age, and education. Little revenue can not use tractors because renting expensive tools. Labor shortages suspected as a major factor in the use of mechanization in addition to other factors such as net income, land area, age of farmers, and education. So with the above description is need for research on the factors that influence the use of mechanization in rice farming carried out dilahan tidal Barito Kuala.

Goals and usage

This study aims to determine: (1) the magnitude of productivity and farmers' net income and non mechanization mechanization users; (2) factors (net income, employment, age, land and education) that affect farmers and non-users mechanization mechanization of rice farming in tidal swamp land Barito Kuala.

The usefulness of this study: (1) for farmers to determine the use of any input that is efficient and which inputs are not efficient / inefficient, so that farmers can increase production on a profitable scale; (2) for the government to set the direction of the government in providing policies to improve the welfare of farmers; (3) for academics as reference material or literature for further research.

II. Method

Place and time of research

The research was conducted in three Village Sub Mandastana Barito Kuala from February to June 2019.

Data Types and Sources of Data

In this study, the data used is primary and secondary data. Primary data were obtained by direct observation to the test site and conduct interviews with respondents using a list of questions that have been prepared in

accordance with the purpose of research. While secondary data needed to support primary data obtained from the study of literature, the institution - the institution or agency - related agencies such as the Department of Food Crops and Horticulture, and Agricultural Extension Centers (BPP) which supported this research.

Sampling method

This study was conducted using a survey method, where the study population are farmers using mechanization (Hand Tractor, Power Thresher) and non-agricultural mechanization in Barito Kuala.Pemilihan Mandastana research sites in the District based on the consideration that these districts have the availability of agricultural mechanization at most compared to other districts. Given that each district be sample has a land area is different for each type of tidal overflow. As well as agricultural mechanization used in full starting from land preparation to harvest, likely to be used on land based on the type of tidal surge of type B. So it is determined that the District Mandastana as representative district land with overflow type "B". In the District Mandastana been three villages to represent the region with land based type B, namely Karang Indah, Coral Flower and Puntik In.

The number of samples that will be used in this study is as much as 80 farmers of the mechanized and non-mechanized. Where the number of farmers to be sampled will be tailored to the proportion of the number of farmers in each village, namely:

$Karang\ Bunga * = \frac{186}{(186+158)} \times 31 = 17$

$Karang\ Bunga ** = \frac{158}{(186+158)} \times 31 = 14$

$Karang\ Indah * = \frac{115}{(115+97)} \times 20 = 11$

$Karang\ Indah ** = \frac{97}{(115+97)} \times 20 = 9$

$Puntik\ Dalam * = \frac{158}{(158+149)} \times 29 = 15$

$Puntik\ Dalam ** = \frac{149}{(158+149)} \times 29 = 14$

$Information : * = Mekanisasi$

$** = Non\ Mekanisasi$

III. Data Analysis

To answer the first objective is to know the magnitude of productivity and net income on rice farming mechanization users and non mechanization in tidal swamp land, using the analysis of productivity and net income.

a) Productivity

$P_i = \frac{amount\ \ of\ production}{total\ \ land\ \ area}$ = Kg/ ha ..... (1)

with:

P : productivity

i : Mechanization, non mechanization

To determine differences in the productivity of the farmers of rice farming mechanization mechanization and the use of non statistical hypothesis, namely:

H_0: $P_m = P_{NM}$

H_1: $P_m > P_{NM}$

To test the hypothesis productivity statistics t test was used with the following formula:

$$t_{hit} = \frac{(\overline{P_m} - \overline{P_{nm}})}{SP\sqrt{\frac{1}{n_m} + \frac{1}{n_{nm}}}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$S_m = \sqrt{\frac{n_m \sum P_m^2 - (\sum P_m)^2}{n_m (n_m - 1)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

$$S_{nm} = \sqrt{\frac{n_{nm} \sum P_{nm}^2 - (\sum P_{nm})^2}{n_{nm} (n_{nm} - 1)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$SP = \sqrt{\frac{(n_m - 1)S_m^2 + (n_{nm} - 1)S_{nm}^2}{n_m + n_{nm} - 2}} \dots\dots\dots\dots\dots\dots (5)$$

Where:
$\overline{P_m}$: The average productivity rice farm with mechanization
$\overline{P_{nm}}$: The average productivity of rice farming with non mechanization
nm : Number of samples of farmers who use mechanization
nnm : Number of samples of farmers who use non mechanization
S_m^2 : Using a variety of petaniyang mechanization
S_{nm}^2 : Diversity of farmers using non mechanization
SP : Standard deviation of two varieties
db : Degrees of freedom

b) Net income
$I_i = TR - TC$ ..... (6)
with:
I : net income
TR : Acceptance of farming
TC : total cost farming
i : Mechanization, non mechanization
To determine differences in net income of farmers of rice farming mechanization and non-users of the mechanization used statistical hypothesis, namely:
H_0: $I_m = I_{nm}$
H_1: $I_m > I_{nm}$
To test the hypothesis of net income used statistical t-test with the formula:

$$t_{hit} = \frac{(\overline{I_m} - \overline{I_{nm}})}{SP\sqrt{\frac{1}{n_m} + \frac{1}{n_{nm}}}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

$$S_m = \sqrt{\frac{n_{m\,\sum I_m^2 - (\sum I_m)^2}}{n_m(n_m - 1)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (8)$$

$$S_{nm} = \sqrt{\frac{n_{nm\,\sum I_{nm}^2 - (\sum I_{nm})^2}}{n_{nm}(n_{nm} - 1)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (9)$$

$$SP = \sqrt{\frac{(n_m - 1)S_m^2 + (n_{nm} - 1)S_{nm}^2}{n_m + n_{nm} - 2}} \dots\dots\dots\dots\dots\dots (10)$$

Where:
$\overline{I_m}$: The average net income of rice farming with mechanization
$\overline{I_{nm}}$: The average net income of rice farming with non mechanization
nm : Number of samples of farmers who use mechanization
nnm : Number of samples of farmers who use non mechanization
S_m^2 : Diversity of farmers who use mechanization
S_{nm}^2 : Diversity of farmers using non mechanization
SP : Standard deviation of two varieties

db : Degrees of freedom

To answer the second objective is to know the factors (net revenue, labor, family, age, land and education) that affect the use of agricultural mechanization in the tidal wetlands were analyzed using logistic regression analysis as follows (Agresti, 1996):

$$Logit\,[\pi(x)] = Ln\left[\frac{P}{1-P}\right] = g(x) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_4 X_4 + \beta_5 X_5 \quad (11)$$

with:

g (x) : the estimated value of logit(1 = mechanization;0 = non mechanization)
α : *intercept*
β : logistics coeficient (1.2, ..., 5)
X1 : Net income (Rp)
X2 : Family labor (HKO)
X3 : Age (years)
X4 : Land area (ha)
X5 : Education (years)

According to Hosmer & Lemeshow (2000), for simultaneous testing overall effect of independent variables through statistical test Test G. G is formulated as follows:

$$G = -2Ln\left[\frac{L_o}{L_1}\right] \quad (12)$$

with:

L0 : likelihood without the explanatory variables (model consisting only of constants only)
L1 : Likelihood with the explanatory variables (model consists of all variables)

By hypothesis is as follows:

H_0: $\beta_i = 0$
H_1: $\beta_i \neq 0$

Test G follows the X2 distribution with p degrees of freedom, so that the rules of using statistical hypothesis testing as follows:

H_0 rejected if $G_{count} \geq X^2_{k(p)}$
H_0 accepted if $G_{count} < X^2_{k(p)}$

As for the partial test Wald test was used, namely by the formula:

$$W_i = \frac{\beta_i}{SE_i} \quad (13)$$

with:

β_i : Logistic regression coefficient values for the variable i-th
SE_i : the value of the standard error for the variable i-th

By hypothesis is as follows:

H_0: $\beta_i = 0$
H_1: $\beta_i \neq 0$

Wald test follows the standard normal distribution, so the decision rules are as follows:

H_0 is rejected if $|W_{count}| > Z_{\frac{\alpha}{2}}$
H_0 accepted if $|W_{count}| \leq Z_{\frac{\alpha}{2}}$

For the interpretation of coefficients performed by the coefficient odds ratio (trend), with the following formula:

$$P_i = \frac{Odds\ 1}{Odds\ 2} = \frac{\frac{P_1}{1-P_1}}{\frac{P_2}{1-P_2}} \quad (14)$$

with:

Pi : Chance to occur (Y = 1)
1-Pi : An opportunity to not happen (Y = 0)

IV. Results And Discussion

characteristics of Respondents

Age. Circumstances age of mechanization and non-mechanized farmers can be seen in the following table.

Table 1. Situation age of farmers

Age (years)	Mechanization (person)	Non Mechanization (vote)
31-39	8	8
40-48	24	10
49-57	11	10
58-66	0	9
amount	43	37

Source: Primary Data Processing (2019)

If viewed in the productive age is the age of 15-66 years, farmers and non mechanization mechanization users are in the productive age is equal to 100%. The higher level of farmers age, the level of ability to work and how to think and act in terms of decision-making for rice farming was declining, as will their physical. However, the higher the age of farmers means more farming experience that influence the behavior of farmers in managing usahatnainya. Usually farmers have farming experience longer and a lot of knowledge in farming so that they tend to be cautious in making decisions. With a high level of farming experience that a farmer can manage or management of farming properly.

Level of education. The quality of human resources in a region residents can be seen from the level of education attained by the population. The more people who graduated from high dijenjang then certainly the human resources of the region well. Based on the results of research, education of farmers mechanize the majority are at primary school level, amounting to 21 people, while the non-mechanized farmers are also mostly at the level of primary school, amounting to 24 people. Higher education at the farmer mechanization was graduated from high school at 4, while the non-mechanized farmers are junior high school graduation by 12 people. The education level of mechanization and non-mechanized farmers can be seen in the following table.

Table 2. The level of education of farmers

level Pendidkan	Mechanization (person)	Non Mechanization (vote)
elementary school	21	24
Junior Class 2	0	1
junior high school graduation	17	12
High School Class 1	1	0
finished school	4	0
amount	43	37

Source: Primary Data Processing (2019)

Occupation. The results showed that that farmers and non mechanization mechanization users mostly work as farmers of rice which is equal to 100.00%. Livelihood or profession as farmers, depending on the level of its income from agricultural purposes. The higher income is the higher the level of welfare, yet conversely if the lower their income, the lower the level of welfare.

Farming experience. Old farmer farming experience can be seen in the following table.

Table 4. Older farmers farming experience

old farming	Mechanization (person)	Non Mechanization (vote)
1-10	9	12
11-20	11	15
21-30	17	8
31-40	6	2
amount	43	37

Source: Primary Data Processing (2019)

Based on the research that the experience of peasant farming mechanization user respondents were highest among 21-30 amounted to 39.53%, while the experience of non mechanized farming farmer respondents are between 11-20 years amounted to 34.88%. With a high level of farming experience that a farmer can manage or management of farming properly.

Comparison of User Productivity Farmers Rice Mechanization and Non Mechanization

Farm productivity in question is the rice production per unit area, namely per hectare planted. By knowing this productivity, we can surmise production research area. The level of productivity of rice farming can be seen in the following table.

Table 5. The level of productivity of rice farming

commentary	Mechanization	Non Mechanization
Land area	1.60	1.50
Production per farm (Kg)	4674.42	3006.09
Productivity per hectare (kg / ha)	4054.05	2774.77

Source: Primary Data Processing (2019)

Farming and production per unit area (farm productivity) showed that farmers higher mechanization users compared with non-mechanized farmers. Production per mechanized rice farming at 4674.42 kg with an average land area of 1.60 hectares, while for non-mechanized farmers amounted to 4054.05 kg with an average land area of 1.50 hectares. When viewed from the side of production per unit area (farm productivity) of rice by

using mechanization amounted to 3006.09 kg / ha, while the productivity of rice farming with non mechanization of 2774.77 kg / ha can be found in Appendix 19 and 20. In other words, that tillage is better with mechanization. The reason is that the results show that a greater production than non-mechanized farmers, because using that tool tillage mechanization and harvesting equipment, allegedly in tilling the soil faster and better, also reducing losses and improving the timeliness in agricultural activity.

Based on testing, comparison of the productivity of paddy farming using mechanized and non mechanized indicates that the value of t-hit ($\left| 3{,}554 \right|$) is greater than the value of the t-tabs (1.66462). So that the decisions taken are reject H0 and accept H1, with the conclusion that farmers farm productivity significantly greater mechanization users compared with non-mechanized farmers.

Comparison of Net Income and Non Farmer Users Mechanization Mechanization

Cost. Farming costs to be calculated here is made up of the cost of seed, fertilizer costs, the cost of pesticides, labor costs, depreciation costs of equipment and supplies, interest rates and the cost of land and building tax. In each part of the cost can be divided, that the depreciation cost of equipment and supplies, interest rates and the cost of land and building tax include both fixed costs, while the cost of seed, fertilizer costs, the cost of pesticide and labor costs included in cost variabel.Rata -rata totalper cost of farming can be seen in the following table.

Table 6. Average total explicit costs per farm

Explicit costs	per Farming	
	Users Mechanization (USD)	Non Mechanization (USD)
variable costs		
Seed	246,988.37	228,797.30
Fertilizer	833,895.35	1,016,216.22
Pesticide	295,581.40	417,027.16
Labor	7,647,674.42	9,406,418.92
Fixed cost		
Depreciation of equipment and fix	762,935.49	726,075.93
Property tax	9994.19	9790.54
Interest rate	718,451.74	865,650.58
Total	10,515,520.96	12,669,976.65

Source: Primary Data Processing (2019)

The average cost per hectare can be seen in the following table.

Table 7. Average total cost per hectare

Explicit costs	per Hectare	
	Users Mechanization (USD)	Non Mechanization (USD)
variable costs		
Seed	153,920.29	152,531.53
Fertilizer	519,673.91	677,477.48
Pesticide	184,202.90	278,018.11
Labor	4.765,942,03	6,270,945.95
Fixed cost		
Depreciation of equipment a fixtures	475,452.55	484,050.62
Property tax	6228.26	6527.03
Interest rate	447,730.80	557,100.39
Total	6,553,150.74	8,446,651.10

Source: Primary Data Processing (2019)

Based on this research, the costs incurred in the use of mechanized rice farming calculated in per farm is greater than the non-mechanized farmers. This is evidenced by the average total cost of farm mechanization users Rp 10,515,520.96 / farming, while the non-mechanized Rp 12,669,976.65 / farm. When viewed from the side of the cost per unit area (costs of farming / ha) for the mechanization of Rp 6,553,150.74 / ha, while the non-mechanized Rp 8,446,651.10 / ha.

Seed costs incurred by users of non mechanized farmers are relatively small compared to the cost of seeds using mechanization if calculated per farm or per hectare. This is shown by the analysis of the calculation that the average cost of seeds farmers mechanize manual Rp 246,988.37 / farming or Rp 153,920.29 / ha, whereas farmers who do not use mechanization Rp 228,797.30 / farming or Rp 152,531.53 / ha , The reason is the heavy use of seed per hectare shows that rice farming mechanization greater than non-mechanized rice farming. This is because the average area of rice farming mechanization is greater than non-mechanized, so if calculated with the use of seed based on scale per farm, the farmers are certainly greater mechanization cost seed.

Fertilizer costs incurred by the farmer mechanization is relatively small compared to the cost of fertilizers that do not use if calculated per farm mechanization and per hectare. This is shown by the analysis of the calculation that the average cost of fertilizer farmers mechanize manual Rp 856,220.93 / farming or Rp 533,586.96 / ha, whereas farmers who do not use the mechanization of Rp 1,016,216.22 / farming or USD 677,477.48 /Ha. The reason is that not using mechanized farming tend to make excessive fertilization in farming since found semkain much fertilizer is given to the plant then the plant increasingly prosperous and increasing production.

Pesticide costs incurred by the farmer mechanization relatively small compared to the cost of pesticide use if calculated per farm mechanization and per hectare. This is shown by the analysis of the calculation that the average cost of pesticides farmers mechanize manual Rp 295,581.40 / farming or Rp 184,202.90 / ha, whereas the farmers who do not use mechanization Rp 417,027.16 / farming or Rp 278,018.11 / Ha. The reason is in the control of weeds in non-mechanized farming tends to be more done because the land is overgrown with a lot of weeds that tend to result from the technical processing of the land.

Labor costs incurred by the farmer mechanization users is relatively small compared to the cost of labor is not used if calculated per farm mechanization and per hectare. This is shown by the analysis of the calculation of that average labor costs of farmers mechanize manual Rp 6,621,511.63 / farming or Rp 4,126,449.28 / ha, whereas the farmers who do not use the mechanization of Rp 7,555,743.24 / farming or Rp 5,037,162.16 / ha. The reason is because the labor costs of farming using farm mechanization manage faster and better, and to improve the timeliness in farming activities. Users mechanization can lower production costs in addition also occur spare time that might be used to make the cultivation more and more optimal treatment. Compared to farmers who do not use a lot of manpower necessary mechanization conventional or simple (manpower) to undertake rice farming so spend a large workforce.

Depreciation costs incurred by farmers tool users mechanization is relatively larger than the depreciation costs that do not use the tool if calculated per farm mechanization and per hectare. This is shown by the analysis of the calculation that the average cost of depreciation tool user farmer mechanization Rp 762,935.49 / farming or Rp 475,452.55 / ha, whereas the farmers who do not use mechanization Rp 726,075.93 / 484,050.62 atauRp farm / Ha. Because the tools are calculated depreciation in the mechanization of farming more than the non mechanized farming.

The cost of land and building tax incurred by the farmer mechanization is relatively larger than the cost of land and building tax that do not use if calculated per farm mechanization. However, if calculated per hectare, the cost of land and building tax non users a higher mechanization. This is shown by the analysis of the calculation that the cost of land and building tax farmer mechanization users Rp 9994.19 / farming or USD 6228.26 / hectare, while farmers who do not use mechanization Rp 9790.54 / farming or USD 6527.03 / hectare , The reason is that farmers mechanization users have a larger land area for farming land as compared with non-mechanized farmers.

Interest costs incurred by the farmer mechanization smaller than the non-mechanized farmers if calculated per farm or per hectare. It is shown that the cost of farm mechanization rate of Rp 718,451.74 / farming or Rp 447,730.80 / hectare, while the non-mechanized Rp 865,650.58 / farming or Rp 557,100.39 / hectare. The reason is because the total cost of mechanization farmers before plus the cost of the interest rate is already lower than the non-mechanized farming.

Reception

Admission is by multiplying the amount of output produced for sale at a price of production. Acceptance of farmers can be seen in the following table.

Table 8. Average admission farmers

old farming	Mechanization	Non Mechanization
Per Farming (USD)	30,426,162.79	26,729,729.73
Per Ha (USD)	18,961,231.88	17,819,819.82

Source: Primary Data Processing (2019)

The research concludes that the revenue generated by the user farmer mechanization is higher than that of non mechanization. The reason is as a result of production / farm productivity generated is also high. This is because the processing capability of land with mechanization able to further increase production is high, and the mechanization of the harvest to minimize the loss of crops.

Net income

Net income of farmers is the result of total revenue minus total cost. Net income of farmers can be seen in the following table.

Table 9. Average net income of farmers

old farming	Mechanization	Non Mechanization
Per Farming (USD)	19,910,641.82	14,059,753.08
Per Ha (USD)	12,408,081.14	9,373,168.72

Source: Primary Data Processing (2019)

Based on the results, that the net revenue generated by the user farmer mechanization is higher than that of non mechanization. Based on testing, the ratio of rice farming income and non mechanization mechanization users shows that the value of t-hit ($\left|3{,}865\right|$) is greater than the value of the t-tabs (1.66462). So that the decisions taken are reject H0 and accept H1, with the conclusion that the income earned peasant rice farming mechanization users significantly greater than the income earned rice farming mechanization farmers non users.

Factors influential Against the Use of Agricultural Mechanization in Swamp Land Tidal

From the results of calculations using SPSS 21, obtained equation the use of agricultural mechanization in tidal swamp land in District Mandastana Barito Kuala namely:

$Logit\ [P] = Ln\ \left[\frac{P}{1-P}\right]$ = -4.274 + 0,000X1*- *0,073X2 **

*-0,079X3 + 0,224X4 + 0,552X5 ***

*Note: * = significantly to α 5%*

*** = significantly to α 10%*

Value Y or factors dependent on logit model above is to show that farmers use mechanization and who do not use mechanization, where 0 = farmers who do not use mechanization and 1 = farmers using rice farming mechanization in the implementation. The number of samples in this study were as many as 80 people consisting of farmers using mechanization as many as 43 people and who do not use as much as 37 mechanization.

Goodness Test Model. Before the above equation model of interpretation of the coefficient is used, then the model must first be tested goodness of the model to see if the model used empirical fit with the data. The basis of analysis by the Omnibus Tests of Model Ceofificients the G test of 70.152 and a P value less than α = 5% (0.050) is 0.000 (Table 10). This suggests that the independent factors together significantly influential.

Furthermore, to determine the ability of the dependent factor that is able to be explained by factors independently used value of Cox & Snell R Square and Nagelkerke R Square. Based on the test results indicate that the value Nagelkerke R Square of 0.780 (Table 10). It shows that the use of agricultural mechanization in tidal swamp land 78.0% is determined by the independent variables on the function, while the remaining 22.0% is determined by factors outside the model or were not included in the model function.

Table 10. Results of the logit analysis

predictor	*coef*	*SE COEF*	*Z*	*P*	*oods Ratio*
Constant	-4.274	3,205	1,779	.182	
Net Income (USD)	0,000	0,000	15,450	0,000 *	1,000
Family labor (HKO)	-0.073	0,018	16.388	0,000 *	.930
Age (years)	-0.079	0,049	2,545	.111	.924
Land area (ha)	.224	0.173	1.667	0,197	1.251
Education (years)	0.552	0,302	3.331	0.068 **	1,736
Simultaneously Test Criteria (Model): G = 63.163, DF = 7, P-Value = 0.000					
Nagelkerke R Square= 0,729					

Source: Primary Data processing denganaplikasi SPSS (2019)

Partial Test. Based on the partial test (Wald test) showed that the factors that significantly affect the use of agricultural mechanization in land tidal marsh in the District Mandastana Barito Kuala ie factor income (X1) and family labor (X2) until α = 5% , While the farmer education factor (X5) significantly until α = 10% (Table 10). While the remaining farmers age factor (X3) and land area (X4) did not significantly until α = 10%. Details about each of these factors can be described as follows:

Net income. Factors farmers' net income has a positive coefficient with a value odds ratio of 1.000. Judging from the P value is smaller than α = 5% (0.050) is 0.000, so that the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of directional signs were positive coefficient and the odds ratio has a meaning that if the net income of farmers increased by one unit rupiah then the chances of the use of agricultural mechanization for better or larger increased 1 times the original. As disclosed the results Panjaitan (2016), suggests that the benefits of mechanization of rice farming by using significantly higher compared to farmers who do not use mechanized or non-mechanized. Most income is the capital of the charges for the needs of users ushatani rice mechanization and non mechanization. The greater the farmers' income

earned, the greater the capital these farmers for rice farming. With the ability to better capital then, the better the farming.

Family labor. Labor factor family has a negative coefficient with a value odds ratio of 0.930. Judging from the P value is smaller than α = 5% (0.050) is 0.000, so that the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of directional signs negative coefficient values and odds ratio has a meaning that if the family labor force increased by one unit of the working day then the chances of the use of agricultural mechanization reduced by 0.930 times the original. As disclosed the results Panjaitan (2016), showed that the use of mechanization to reduce the use of human labor, but it also can accelerate the mechanization of work. So that the condition of local human labor shortages can be overcome with the use of agricultural mechanization.

Age Farmers. Farmers age factor has a negative coefficient but not significant. Judging from the P value is larger than α = 5% (0.050) is 0.111, so that the null hypothesis (H0) is received and the alternative hypothesis (H1) is rejected. This suggests that in order to further increase the use of agricultural mechanization is not visible from the age of the farmer. It also gives the sense that the efforts undertaken in order to further increase the use of agricultural mechanization is not of the age of the farmer. Farmers who are elderly usually fanatical about tradition and difficult to be given notions that can change the way of thinking and perspectives to improve progress in terms of farming, ways of working and way of life. Farmers have to be apathetic towards these new technologies. As disclosed the results of Surya (2011), showed that if the older a farmer, there is a tendency owned land will tend to be less. Simultaneously so that, if the land area of the less use of mechanization would be smaller / less.

Land area. Factors land area has a positive coefficient but insignificant. Judging from the P value is larger than α = 5% (0.050) is 0.197, so that the null hypothesis (H0) is received and the alternative hypothesis (H1) is rejected. This suggests that in order to further increase the use of agricultural mechanization is not required scale area of land. It also gives the sense that the efforts undertaken in order to further increase the use of agricultural mechanization is not on the scale of the land area. As disclosed the results Panjaitan (2016), showed that rice farming land owned by farmers using mechanization tends to be more than the non-mechanized farmers. This is evident through student t analysis, which showed that mechanization farmers' fields is significantly wider than the non-mechanized, t (3.550) is greater than t table (1.6715).

Level of education. Factor level of education has a positive coefficient with a value odds ratio of 1.736. Judging from the P value is smaller than α = 10% (0.010) is 0.068, so that the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of directional signs were positive coefficient and the odds ratio has a meaning that if the level of education of farmers increased by one unit of education the probability of use of agricultural mechanization for better or larger increased 1,616 times before. The higher the education level of farmers, the more curiosity towards something higher and interest to adopt towards higher technology introduction. Low education levels lead to farmers lacked the specific skills required in the use of educational pertanian.Keterbatasan owned mechanization led to limited success in the use of mechanization. And this is often a barrier to the use of mechanization thoroughly. The education level will also affect the process of acceptance of new technologies are introduced, where they do not directly accept or reject without any practice and evidence by the changes that they feel from the new technology.

V. Conclusions And Suggestions

Conclusion

The conclusions obtained based on the research that has been done is as beriku:

1. The productivity of paddy farming using mechanization amounted to 3006.09 kg / ha, whereas the non-farm productivity with mechanization of rice amounting to 2774.77 kg / ha. The average net income of farmers the mechanization of Rp 19,910,641.82 / farming or USD 12,408,081.14 / hectare, while farmers who do not use the mechanization of Rp 14,059,753.08 / farming or USD 9,373,168.72 / hectare
2. Factors that affect the use of agricultural mechanization in tidal swamp land Barito Kuala is variable farmer income, employment and education levels of farmers.

Suggestion

Based on the conclusions obtained, then the advice that can be given by researchers to farmers for better use of agricultural mechanization. It is given based on the test results showed that there was a significant difference if farmers use mechanization in farming, meaning that although both models equally farming viable, but comparatively mechanization of farming with relatively better with a higher income. In addition, the government should be able to add tools of agricultural mechanization, given the tools available are limited. Thus, farmers more flexibility in using the tools of the agricultural mechanization.

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