DOES THE TRIBE AFFECT TECHNICAL EFFICIENCY? CASE STUDY OF LOCAL FARMER RICE FARMING IN MERAUKE REGENCY, PAPUA, INDONESIA

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ABSTRACT
This research was conducted in Merauke Regency, Papua - Indonesia Province, in two districts namely Semangga District and Tanah Miring District, from June to August 2018. This research was a descriptive analysis study, with a sampling method using multistage random sampling technique and obtained by 53 local farmers who produce rice. Data analysis uses the stochastic frontier production function. Gamma which is significant shows that the rice production of local farmers in Merauke Regency is not technically efficient. Gamma coefficient ($\gamma$) shows that 99% of technical inefficiency is due to managerial factors (factors that can be controlled by humans) and the remaining 1% is caused by factors that cannot be controlled by humans (noise) namely weather, natural disasters, disease pests and so on. The factor of technical inefficiency decreases with the increase in the number of members in the family. Local farmers who have their own land ownership status are more efficient than local farmers who use land that is not their own, and the Marind are more efficient than other local tribes. The level of technical efficiency achieved by rice farmers of local farmers in Merauke Regency, Papua-Indonesia Province, ranges
Does the Tribe Affect Technical Efficiency? Case Study of Local Farmer Rice Farming in Merauke Regency, Papua, Indonesia

from 34% - 99%. Farmers who achieve technical efficiency above 70% are 77% farmers, while 23% farmers achieve technical efficiency below or equal to 70%.

Key words: technical efficiency, rice production, stochastic frontier.

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1. INTRODUCTION

The population of Indonesia each year has always experienced an increase, this can be seen in the BPS BPS (2017), that in 2012 the population of Indonesia was 245.40 million, then in 2013 the Indonesian population increased to 248.80 million, this means an increase in the population of 1.39%. Then in 2014 it rose to 252.20 (an increase of 1.37% from the previous year), and 2015-2016 the increase in the population of Indonesia was 1.29%, and 1.27%. Seeing this, if the Indonesian State's ability to produce food cannot keep up with the increasing amount of food demand in Indonesia, this will make the State of Indonesia increasingly dependent on imports, this means that Indonesia's food security will be vulnerable because it will depend on the economic policies of other countries (Djamali, et al., 2018; Suryana, 2014).

One of the regencies in Papua Island is Merauke Regency. Merauke Regency is geographically located between 137° - 141° East Longitude and 5° - 9° South Latitude. With an area of up to 46,791.63 km2 or 14.67 percent of the total area of Papua Province. This makes Merauke Regency the largest district not only on the island of Papua but also among other districts in Indonesia. Merauke Regency is limited by land and sea. Geographically, Merauke Regency in the north is directly bordered by Mappi Regency and Boven Digoel Regency, in the east bordering Papua New Guinea, in the south and west bordering the Arafura Sea. The population of Merauke Regency is 234,360 people (BPS Merauke, 2017).

The first rice center in Merauke Regency was in Tanah Miring District with a total production of 61,141.50 tons of rice, the second rice center was the Kurik District with rice production of 49,161.00 tons and the third center was Semangga District with rice production of 38,332.80 tons (BPS Merauke, 2017). Therefore, Merauke Regency is a district that has the potential to develop its agricultural sector. That is why the Merauke Regency was then used as one of the regencies that was declared to be a national food granary. To realize the program, there will be many obstacles that must be faced, such as the need for water that still relies on rainwater, limited agricultural infrastructure and low productivity of rice (2-4ton / ha). Seeing these conditions, one way to realize Merauke Regency as a food granary is to increase rice productivity by maximizing existing potential efficiently. This is consistent with Sembiring's (2007) opinion that the successful increase in rice production from 20.2 million tons in 1971 to more than 54 million tons in 2006 was dominated by increased productivity, compared to an increase in harvested area. Increased productivity contributed around 56.1% to the increase in rice production, while the increase in harvested area and interaction both contributed only 26.3% and 17.5%.

Merauke Regency can be said to be a mini Indonesia, this is because in Merauke Regency the population is heterogeneous. Many tribes from outside who lived and settled in Merauke Regency, and then lived side by side with local tribes (indigenous Papuans) in Merauke. Local tribes (indigenous Papuans) found in Merauke Regency include the Marind, Mandobo, Muyu, Asmat, Mappi, and Auyu Tribes. While the migrants from outside Papua who live in...
Merauke Regency are Javanese. Many Javanese live in Merauke because of the transmigration program organized by the government. This transmigration program made many Javanese tribes become rice farmers in Merauke Regency. The Javanese who carried out transmigration then transmitted the ability to cultivate rice in local tribes (indigenous Papuans) who lived in Merauke. The local Papuans who previously lived from gathering, shifting cultivation, sago breeding, fishing, hunting and farming with slow methods, finally began to be interested in learning to plant rice. Therefore, it is necessary to conduct research on the technical efficiency of rice production for local farmers, so that it can be seen that local tribes are efficient in rice farming in Merauke Regency.

2. METHODS

This research is a descriptive analysis research, which is a research method to collect data in accordance with the truth. Then the data is compiled, processed and analyzed to provide an overview of the existing problems (Mangkoedihardjo, 2007; Razif et al., 2006; Sugiyono, 2008; Utama et al., 2018)

This study was conducted in June - August 2018. The time period used in the study was the data of the previous year's planting season. The planting season data is used to analyze trends in various factors that affect the efficiency of rice production. The location of this study was in Merauke Regency, Papua-Indonesia Province, which was carried out in two districts, Semangga District and Tanah Miring District, which are rice centers in Merauke Regency. In each district two local villages were taken to be used as research sites. Semangga District was taken by the local villages of Serapu and Marga Mulya, while in the Tanah Miring District, the local villages of Kamangi and Sarsang were taken. Population is an entire individual or object that is observed or a measure obtained from all individuals or related objects (Lind et al., 2014; Suryaningsih, et al., 2018). The population in this study was 353 rice farmers who were local people (indigenous Papuans), taking respondents using multistage random sampling technique and obtained 53 local farmers who produce rice. According to Robert and Torrie (1993) the sampling of farmers in socio-economic research is not less than 5% of the total population that is considered to be representative.

The empirical approach in this study was carried out with a 41 frontier analysis tool. The analytical tool used was Stochastic Frontier Efficiency. Farm efficiency is defined as the ratio between actual output and frontier output, using certain available technology and at the same time to determine the level of technical inefficiency. The level of technical efficiency can be calculated using the equation:

\[ ET_1 = \frac{Y_i}{\exp(X_i \beta)} = \frac{\exp(X_i \beta - \mu_i)}{\exp(X_i \beta)} = \exp(- \mu_i) \]

The technical efficiency level (ET) of each individual is obtained from the comparison between the actual level of Yi output and the expected output level of \( \exp (X_1 \beta) \).

The frontier production function equation used in this study is:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + (v_i - \mu_i) \]

where:

- \( Y \) = rice production (kg)
- \( \beta_0 \) = Constant (intersep)
- \( \beta_i \) = Estimator parameter coefficient (where \( i = 1-4 \))
- \( X_1 \) = land area (ha)
- \( X_2 \) = Number of seeds (kg)
- \( X_3 \) = weight of fertilizer (kg)
X₄ = volume of pesticide (ml)

vᵢ = error term

μᵢ = Random variables that describe technical inefficiencies, where is generated from the equation:

μᵢ = δ₀ + δ₁z₁ + δ₂z₂ + δ₃z₃ + δ₄z₄ + δ₅z₅ + δ₆z₆ .............................................. (3)

where:

μᵢ = technical inefficiency effect

δ₀ = Intercept

δ₁ = Estimator parameter coefficient

z₁ = Farmer age (year)

z₂ = Education level of farmers

z₃ = Farming experience (year)

z₄ = Number of family members (people)

z₅ = Dummy Status of land ownership (1 = one's own, and 0 = belongs to someone else).

z₆ = Dummy tribe (1 = Marind, 0 = non Marind)

Estimation of rice farming technique inefficiency parameters is carried out using the Frontier 41 program.

3. RESULTS AND DISCUSSION

3.1. Characteristics of Respondents, Production and Use of Input

Characteristics of respondents in this study include age, farmer education level, farming experience, and number of family members. Respondents in this study were local farmers. What is meant by local farmers in this study are farmers who are indigenous Papuans who live and conduct rice farming in Merauke Regency.

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Average</th>
<th>St. Dev</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age (year)</td>
<td>37.7</td>
<td>12.29</td>
<td>71</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>Education level of farmers (year)</td>
<td>8.5</td>
<td>3.33</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Farming Experience (year)</td>
<td>10.9</td>
<td>8.68</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Number of family members (people)</td>
<td>5</td>
<td>2.41</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Rice Production (kg/ha)</td>
<td>3300.917</td>
<td>5232.69</td>
<td>23550</td>
<td>450</td>
</tr>
<tr>
<td>6</td>
<td>Land area (ha)</td>
<td>1.5</td>
<td>1.59</td>
<td>8</td>
<td>0.25</td>
</tr>
<tr>
<td>7</td>
<td>Seeds (kg/ha)</td>
<td>46</td>
<td>72.54</td>
<td>400</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>Fertilizer (kg)</td>
<td>110.7</td>
<td>260.62</td>
<td>1800</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Pesticide (ml)</td>
<td>574.1</td>
<td>1046.45</td>
<td>6000</td>
<td>0</td>
</tr>
</tbody>
</table>

The average age of local farmer respondents in this study is 37.7 years, this means that the average age of local farmers in Merauke Regency is at the age of the "young" workforce, namely the workforce aged between 15-59 years (Saiyut, 2018 ). The average age of 37.7 years is still included in the age group who are still productive so that they can still work well for doing rice farming.

The education level of local farmers in Merauke Regency is on average 8.5 years. This means that on average local farmers in Merauke Regency have an average level of junior secondary education. The level of education is an important factor that will facilitate farmers in receiving information about technology in the development of rice commodities. The
higher the education of farmers, the easier it is to receive information on the technology of rice development.

The average farming experience of local farmers is 10.9 years. The experience of rice farming of local farmers in Merauke Regency is obtained from transmigration farmers around their homes who guide and assist local farmers so that eventually local farmers can work on their own.

The number of family members of local farmers is an average of five people. In conducting farming, local farmers are usually assisted by their family members. Both by his wife and children. The children of local farmers have been educated from childhood since helping their parents including helping in rice farming.

Local farmers in Merauke Regency in one year only do rice cultivation. This is because agriculture in Merauke Regency generally only relies on rainwater. So that during the rainy season only local farmers plant rice. The average amount of rice production in the 2017 growing season is 3300,917 kg with a standard deviation of 5232.69 kg which means that the distribution of production between farmers is quite large.

The average land area cultivated by local farmers is 1.5 ha, while the broadest area is 8 ha and the narrowest is 0.25 ha. The ownership status of local farmers' land is part of their own property and some farmers use land that belongs to a company that has not been used because their own land has been sold. Soil processing is carried out using a tractor / jonder. They get the Tractor / Jonder by borrowing from the head of the farmer group or renting it from outside. With this equipment, local farmers can more quickly process rice fields.

The rice seeds used by local farmers for one hectare of paddy fields on average were 46 kg. This rice seed is obtained by local farmers, among others, from previous crops, government assistance or buying. There are some planting methods by local farmers who use the scattering system (tablea), which is the seeds of rice that have started to germinate are scattered on the land to be planted, and some are doing the transplanting system.

Fertilizers used by local farmers on average are 110.7 kg / ha, while the average pesticide used by local farmers is 574.1 ml. The highest use of fertilizer is 1800 kg and 6000 ml for pesticides. While the minimum use for fertilizers and pesticides is zero. This means that there are still local farmers who have not used fertilizers and pesticides when producing rice.

Harvesting of rice is done by using a combine harvester which is rented from the head of the farmer group or from outside. By using the combine harvester machine, farmers become easier when harvesting rice. Besides that, at the time of harvest, the rice grains are directly separated from the stems and leaves of rice. Rice stems and leaves were immediately destroyed by the machine and allowed to rot in the paddy field so that it could become compost. The minimum rice production produced by local farmers is 450 kg while the maximum rice production obtained by local farmers is 23,550 kg.

3.2. Stochastic Frontier Production Function Analysis
The purpose of the analysis of the production function is to analyze the factors that influence rice farming. The production function model in this study is the Cobb-Douglas stochastic frontier using the Maximum Likelihood Estimated (MLE) parameter because it can describe the maximum production relationship that can be achieved with the production factors used. To obtain the MLE value, the analysis is carried out using the frontier program 4.1. The estimation of Stochastic Frontier production function in this study can be seen in Table 2.
Table 2: Estimates of Stochastic Frontier Production Function

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>979.627</td>
<td>1.207</td>
<td>811.782</td>
</tr>
<tr>
<td>Land area</td>
<td>828.140***</td>
<td>2.156</td>
<td>384.135</td>
</tr>
<tr>
<td>Seeds</td>
<td>2.450***</td>
<td>0.043</td>
<td>57.133</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>0.654***</td>
<td>0.000</td>
<td>1096.56</td>
</tr>
<tr>
<td>Pesticide</td>
<td>0.495***</td>
<td>0.000</td>
<td>916.69</td>
</tr>
<tr>
<td>Sigma – squared</td>
<td>629473.60</td>
<td>1.00</td>
<td>629473.53</td>
</tr>
<tr>
<td>Gamma</td>
<td>0.9999</td>
<td>0.001</td>
<td>15652861</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-393.320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR test of the one-sided error</td>
<td>38.958</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:

*** : Significant on α = 1% t-table = 2.68
**  : Significant on α = 5%  t-table = 2.01
*   : Significant on α = 10% t-table = 1.67

Table 2 shows that the sigma-square (σ) t value is greater than t-table (α = 1%) this means significant sigma-square, or it can be said that the distribution of the error term inefficiency (vi) in the function is distributed normal, or also means technical inefficiency contributes to the variation of production (UI) in rice farming. Sigma – square values that are greater than zero or 629473.60 indicate that there is an influence of technical inefficiencies in the model. Technical inefficiency factors in the model include age, farmers, farmer education level, farming experience, number of family members, dummy land ownership status and tribal dummy.

The gamma value (γ) shows the ratio between the technical inefficiency deviation (ui) to the deviation that may be caused by a random variable (vi). The gamma t value is greater than the t table value (α = 1%) this means significant gamma. This significant Gamma indicates that the rice farming of local farmers in Merauke Regency is not technically efficient. This can be seen from the gamma coefficient (γ) which is close to one (0.99). This means that the technical inefficiency in this study is due to managerial factors (factors that can be controlled by humans) and the rest (0.01) caused by factors that cannot be controlled by humans (noise) such as weather, natural disasters, pest and so on.

LR value test for parameter γ is 15652861 is greater than the value of $\chi^2 = 15.086$ means that the stochastic frontier production function can explain the existence of technical efficiency and inefficiency of rice farming for local farmers in the production process.

The value of t arithmetic variable land area is greater than the value of t table (α = 1%) this means significant land area for rice production, thus means that rice production can be increased if there is an increase in land area. Land area coefficient value of 828.14 shows that the addition of 1% of the land area will increase rice production by 828.14%. The addition of land area in Merauke Regency can still be done because there are still many sleeping areas that have not been used for agriculture.

The t value of the seed variable is greater than the t table value (α = 1%) this means that the seed variable is significant to rice production. Seed coefficient value of 2.450 indicates that the addition of 1% of seeds can increase production by 2.450%. Local farmers can increase their paddy production by increasing the number of seeds by using certified superior seeds.
The value of the t variable of fertilizer variable is greater than the value of t table ($\alpha = 1\%$), this means that the fertilizer variable is significant to rice production. Fertilizer coefficient value of 0.654 indicates that the addition of 1% fertilizer can increase rice production by 0.654%. In this study there are still many local farmers who have not used fertilizer in rice farming.

The value of the pesticide variable t count is greater than the t table value ($\alpha = 1\%$) this means that the variable pesticide is significant to rice production. Pesticide coefficient value of 0.495 indicates that the addition of 1% of pesticide use tends to increase rice production by 0.495%. Thus local farmers can increase rice production by increasing the use of pesticides. The awareness of local farmers to care for rice is still lacking. There is a culture of concocting, harvesting sago, fishing and hunting so that after planting the rice farmers do not pay attention to the plants.

3.3. Rice Farming Technical Efficiency

Technical efficiency requires the existence of a production process that can utilize fewer inputs to produce the same amount of output (Miller and Meiners, 2000; Mekiuw and Susanti, 2018)). The value of technical efficiency ranges from 0-1, if the efficiency value is close to 1, it means that technically rice farming is said to be efficient. The higher the efficiency value indicates the better management of farmers towards the production factor.

Sugiyono (2004) suggests that differences in the level of technical efficiency in farmers indicate a level of mastery and application of different technologies, besides that also because the attributes found in farmers such as education level, age, and also external factors such as lack of counseling. The results of the analysis of the distribution of the level of technical efficiency of rice production of local farmers in Merauke Regency can be seen in Table 3.

<table>
<thead>
<tr>
<th>Range Technical Efficiency</th>
<th>Number of farmers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.60</td>
<td>8</td>
<td>15%</td>
</tr>
<tr>
<td>&gt; 0.61 – 0.70</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>0.71 – 0.80</td>
<td>10</td>
<td>19%</td>
</tr>
<tr>
<td>0.81 - 0.90</td>
<td>12</td>
<td>23%</td>
</tr>
<tr>
<td>$\geq$ 0.91</td>
<td>19</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3 shows that local farmers who achieve technical efficiency above 70% are 77% farmers, while those who achieve technical efficiency are below or equal to 70% as many as 23% of farmers. According to Coelli (1998), the value of the technical efficiency index results of the analysis is categorized as technically efficient if it gives an estimated value of more than 70% as an efficiency limit. This means that local farmers in Merauke Regency whose rice farming is categorized as technically efficient have 77% of farmers.

Sumaryanto et al. (2001) showed that the level of technical efficiency of rice farming varied between regions, with a range of 64% - 80%. Sumaryanto et al. (2003) say that the average efficiency level is 76%. Daryanto (2000) shows the value of technical efficiency in the range of 59% to 87%. The level of rice farming efficiency in Merauke Regency, Papua Province is in the range of 34% - 99%. Pedrosa (2018) in his research the average level of technical efficiency for the delta irrigation zone in Vietnam was 81%, while the average level of technical efficiency of local farmers’ rice production in Merauke Regency was 80.5% with
the lowest value being 34% and value the highest is 99% which means that on average rice farmers have not reached production potential based on the use of production factors and there are still 19.19% \([1 - (0.80 / 0.99) \times 100]\) opportunity to increase rice production. The most inefficient farmers, To achieve the highest efficiency, there are still 65.66% \([1 - (0.34 / 0.99) \times 100]\) opportunity to increase rice production.

### Table 4 Production of Local Farmers' Rice Potential in Merauke Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Technical Efficiency</th>
<th>Production Potential</th>
<th>Additional Amount of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>0.805</td>
<td>3300.917</td>
<td>4100.519</td>
</tr>
<tr>
<td>Minimal</td>
<td>0.34</td>
<td>1394</td>
<td>4100.519</td>
</tr>
<tr>
<td>Maximal</td>
<td>0.99</td>
<td>41</td>
<td>4100.519</td>
</tr>
</tbody>
</table>

Table 4. shows the amount of potential rice production of local farmers in Merauke District which can be reached by local farmers so that the efficiency value of the technique is equal to one. The potential production amount that can be achieved by local farmers is 4100.519 kg/ha. The value of the technical efficiency of the average local rice-producing farmer in Merauke Regency is 0.805 so to achieve potential production must be added the amount of rice production as much as 799.601 kg. When compared to other regions in Indonesia, the potential production of local farmers in Merauke Regency is still low. This can be evidenced by the results of Rumintjap's research (2016) which shows that the potential yield of lowland rice in South Minahasa regency is in Popontolen Village 6.11 tons/ha, Pakuweru Village 573ton/ha, and Karowa Village 9.00 tons/ha.

### 3.4. Factors Causing Technical Inefficiency in Rice Farming

Factors that cause inefficiency are socio-economic conditions and managerial factors in rice farming. In this study the factors used to see the causes of technical inefficiencies in rice farming are the factors of age, education, farming experience, number of family members, dummy land ownership status and tribal dummy. The results of the analysis that affect the technical inefficiency of rice farming can be seen in Table 5.

### Table 5 Factors affecting the technical efficiency of rice farming

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.970**</td>
<td>1.409</td>
<td>-2.108</td>
</tr>
<tr>
<td>Age</td>
<td>23.4117</td>
<td>3.588</td>
<td>1.365</td>
</tr>
<tr>
<td>Education</td>
<td>-0.564</td>
<td>0.413</td>
<td>-1.365</td>
</tr>
<tr>
<td>Farming experience</td>
<td>-15.737</td>
<td>9.960</td>
<td>-1.580</td>
</tr>
<tr>
<td>Number of family members</td>
<td>-7.194***</td>
<td>1.858</td>
<td>-3.87</td>
</tr>
<tr>
<td>Land ownership status</td>
<td>-33.319***</td>
<td>8.155</td>
<td>-4.085</td>
</tr>
<tr>
<td>Tribe</td>
<td>-12.913***</td>
<td>3.874</td>
<td>-3.333</td>
</tr>
</tbody>
</table>

Note:

*** : Significant on \(\alpha = 1\% \) t-tabel = 2.684  
** : Significant on \(\alpha = 5\% \) t- tabel = 2.012  
* : Significant on \(\alpha = 10\% \) t- tabel = 1.678

Nahraeni (2012) said that a negative sign in the inefficiency parameter of the frontier processing results indicates that the variable decreases the technical inefficiency or increases technical efficiency. A positive sign indicates that increasing this variable will increase technical inefficiency or reduce technical efficiency.
The factors of technical inefficacy in the number of family members have a significant negative effect \((\alpha = 1\%)\), meaning that the more the number of family members, the lower the level of technical inefficiency. The variable value coefficient of the number of family members according to expectations is negative, this indicates the more number of family members the lower the technical inefficiency or the more technically efficient effect. The addition of the number of family members as workers if overcome by increasing the number of family members (adding children), this will further increase the burden of life for local farmers because the average number of family members in this study is five people besides that it will also lead to a level of welfare of farmers local will decrease / decrease. Therefore, there are three other alternatives to overcome this problem, namely 1) Maintaining and increasing local wisdom that is already owned by the local community in Merauke Regency, namely a culture to help one another and a sense of kinship so that local farmers can help each other in processing the land agriculture. 2) Bring in labor from outside Merauke Regency, this second alternative might be less effective and efficient and make labor costs high 3) Replace human labor using machines (mechanization), this is in accordance with Manikmas (2010) which says that the scarcity of workers in Merauke will further encourage the use of agricultural equipment and machinery (Alsintan) such as tractors, planting tools, harvesting equipment, thresher, Rice Milling Unit (RMU), dryers and warehouse systems.

The Dummy factor of land ownership status has a technical inefficiency coefficient as expected namely negative and statistically \((\alpha = 1\%)\) this means that local farmers who have their own land ownership status are more efficient than local farmers who use land that is not their own, so the number of farmers needs to be added local people who have their own land status and the need for socialization and counseling to local farmers to raise awareness of local farmers about the importance of own land ownership status.

Tribal Dummy factor has a technical inefficiency coefficient as expected, namely negative and statistically significant \((\alpha = 1\%)\), this means that the Marind Tribe is more efficient than other local (native Papua) tribes, so the number of local farmers in the Marind tribe needs to be added and assistance is needed and counseling in efforts for local non-Marind tribal farmers in rice farming.

4. CONCLUSIONS
Rice farming by local farmers in Merauke Regency, Papua-Indonesia Province has not been technically efficient with an average efficiency of 80%. Technical inefficiencies in rice farming of local farmers in Merauke Regency are caused by factors that can be controlled by humans (managerial factors), namely the number of family members, land ownership status, and ethnicity. The more the number of family members, the more technical inefficiencies are decreasing, the status of the land itself is more efficient than the status of land that is not theirs, and efficient local tribes are Marind compared to other Papuans.

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