

# Economic Social Factor of Farmer and the Affect to Paddy Field Farming Productivity in Sungai Penuh City- Indonesian

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## ABSTRACT

The research aims to analyze economic social factor of farmer and the affect to paddy field farming productivity. Location determination do as purposive. Total of sample farmers are 62 farmers. Data analysis uses primary data and uses approach with Partial Least Square (PLS). Match test of outer model is convergent validity test, discriminant validity and composite validity are qualify. Inner model test has value of Q2 amount of 99,3% meets match test of inner model. The affect of social factor and economic directly have coefficient amount of -0,043 and 0,038 to paddy field farming productivity with p value (0,046) $<\alpha(0,05)$  and p value (0,033) $<\alpha(0,05)$ . The affect of social factor indirectly through of production input variable usage and activeness of farmer group have coefficients amount of 0,237 and 0,034 to productivity with p value (0,059) $>\alpha(0,05)$  and p value (0,026) $<\alpha(0,05)$ . Economic factor through input production variable usage and activeness of farmer group have coefficients amount of 0,367 and 0,010 to productivity with p value (0,000) $<\alpha(0,05)$  and p value (0,099) $>\alpha(0,05)$ . Total affect of the research of social factor and economic have coefficients amount of 0,228 and 0,415 to paddy field farming productivity with p value (0,064) $>\alpha(0,05)$  and p value (0,000) $<\alpha(0,05)$ . The relation to this in order to empower farmer to raise of paddy field farming productivity need to pay attention of social factor, economic factor, cultivation technology of paddy field farming.

## KEYWORDS

economic social; production input; activeness; productivity

## INTRODUCTION

The result of Survei Pertanian Antar Sensus (2018) that the most higher sector who have total of household agriculture farming was food crop sector, especially paddy field amount of 13,15 millions households. Needs of food who increase to encourage people of agriculture to increase and develop of diversification food. Kementerian Pertanian (2018) proclaimed main target of agriculture development, is: self-sufficiency sustainability, increase food diversification, increase of value-added, competitiveness and export with increase of farmer welfare.

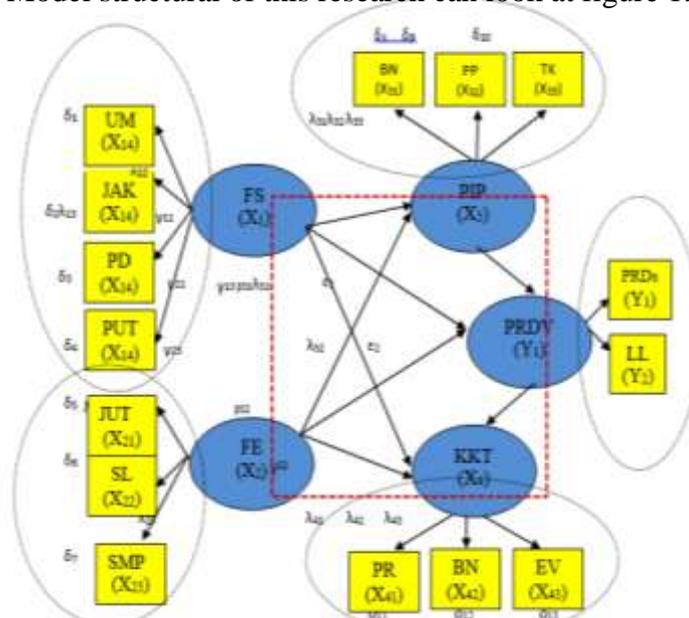
Jambi province has a potential to try paddy field farming and the result of production contributed for National in rank 17 from 34 province in 2018 (Kementan RI, 2019). Jambi province has some regions as center of production paddy filed. Sungai Penuh City as one of district who tried paddy field farming with land area harvest amount of 8.058 ha and production total amount of 48.387 ton with productivity amount of 6,00 ton/ha. In 2014-2017 paddy field farming at Sungai Penuh City have productivity increase amount of 3,36 % per year but have decrease of land area harvest and production amount of 10,02 % and 6,93 % per year.

The center production of paddy field in Sungai Penuh city is Sub-district Hamparan Rawang. Its contribute to Sungai Penuh city each other amount of 22,15 %. Paddy field farming productivity in Sungai Penuh city amount of 6,00 ton/ha. Progression of harvest area, production and productivity a long period of 2014-2017 have progress each other amount of 7,77 %, 8,70 % and 1,12 % per year. Soekartawi (2011) said that factors who affected to production differentiated to two classifications were biologic factor and economic social factor. Biologic factor (like agriculture land with assortment levels of fertility, seed, variety, fertilize, pesticide and others) and economic social factor (like production cost, price, labor, level of education, income and others).

The policy of paddy field farming need study about farmer economic social factor and affect of productivity. Age, farmer will me more easy in productive age and able to do farming program to increase productivity. The total member of family is how many member of family who can contribute in addition for labor in family to increase productivity of paddy field. High Education can increase skill of human resource and able to see the risk and will able to work as efficient for increase productivity. Experience of farming, the longer of experience in farming possible to farmer be able for increase paddy field farming. Land status may result in different of farming productivity. Source of livelihood, activity performed by human to cultivated of natural resource if main work as farmer, so more able to increase productivity. From this introduction, research aims to analyze economic social factor and the affect to paddy field farming productivity.

### RESEARCH METHODS

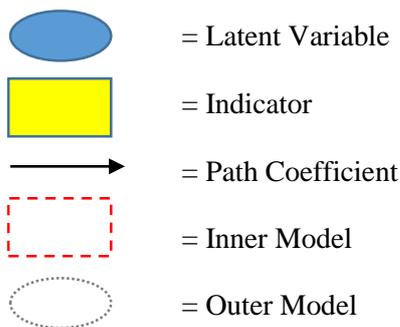
This research did in April 2020 – October 2020. The sample region is Simpang Tiga Rawang village and Koto Dian village in Sub-district Hamparan Rawang Sungai Penuh City. The sample region did as purposive. The object of this research is paddy field farmer. Scope of this research is economic social factor of farmer and activeness in farmer’s group towards paddy field farming productivity. The type of data was primary data obtained by used questionnaires. Sample size amount of 62 farmers determined by slovin method. Sample was carried out by incidental technique by non-probability approach, Sugiyono (2011) said that sampling incidentalnon probability was sample chosen by chance with researcher. Analysis toolwho used is Partial Least Square (PLS), doesn’t require randomization. (Sarwono dan Narimawati, 2015) Model structural of this research can look at figure 1.



**Figure 1.** Path Diagram of The Effect Economic Social Factor to Paddy Field Farming

Information:

- FS = Social Factor
- UM = Age
- JAK = The number of family member
- PD = Education
- PU = Farming Experience
- FE = Economic factor
- JUT = Distance of land farming with home
- SL = Land status
- SMP = Source of livelihood
- KKT = Activeness farmer's group
- PR = Planning
- PL = Implementing
- EV = Evaluation
- PIP = Used of production input
- BN = Seed
- PP = Fertilize (Urea and Phonska)
- TK = Labor
- PRDV = Productivity of paddy field farming
- LL = Land area
- PRDs = Production of paddy field
- $\lambda$  (Lamda kecil) = Represent parameter related to the relation between exogenous latent variable ( $\xi$ ) and observed variable (X)/ loading factor
- $\delta$  (Delta Kecil) = Parameter related relation between residual variants from observed size (X) or residual variants covariance from two observed sizes in exogenous side
- $\varepsilon$  (Epsilon kecil) = Parameter related relation between residual variants from observed size (Y) or residual variants covariance from two observed sizes in endogenous side
- $\gamma$  (Gamma kecil) = Parameter related relation between exogenous variable ( $\xi$ ) and endogenous variable ( $\eta$ )
- $\beta$  (Beta Kecil) = Parameter related relation between two endogenous variable ( $\eta$ )
- $\zeta$  (Zeta) = Covariance value between error (*error*) from ( $\eta$ )



1. *Goodness of Fit*
  - a. Outer model (*Convergent Validity, Discriminant Validity, and Composite Reliability*)
  - b. Inner model (*Goodness of Fit* use value of *R-Squared* to count *Q-Squared* was showed *predictive relevance* in path diagram of research).

## RESULTS AND DISCUSSION

### Measurement Goodness of Fit model

*Outer model* showed how *observed* variable or *manifest* presented konstruk latent construction measured by Validity tested and latent construction reliability. The result of estimasi *outer model* is *convergent validity*, *discriminant validity*, dan *composite validity* can look at Table 1.

**Table 1.** Validity and Reliability of Farmer's Economic Social Factor and the Affected to Productivity of Paddy Field Farming in Region Research 2020

| Instrument                         | Validities     |       | Reliabilities    |                       |
|------------------------------------|----------------|-------|------------------|-----------------------|
|                                    | Factor Loading | AVE   | Cronbach's Alpha | Composite Reliability |
| Social factor (X1)                 |                |       |                  |                       |
| - Age (X11)                        | 0,893          |       |                  |                       |
| - The number of family member(X12) | 0,817          | 0,672 | 0,390            | 0,771                 |
| - Education (X13)                  | -0,561         |       |                  |                       |
| - Farming Experience (X14)         | 0,953          |       |                  |                       |
| Economic factor (X2)               |                |       |                  |                       |
| - Distance of farming              | 0,718          |       |                  |                       |
| - Land Status (X22)                | 0,910          | 0,720 | 0,814            | 0,884                 |
| - Source of Livelihood (X23)       | 0,904          |       |                  |                       |
| Input production used (X3)         |                |       |                  |                       |
| - Seed (X31)                       | 0,991          | 0,961 | 0,979            | 0,987                 |
| - Fertilizer (X32)                 | 0,991          |       |                  |                       |
| - Labor (X33)                      | 0,957          |       |                  |                       |
| Activeness in farmer's group (X4)  |                |       |                  |                       |
| - Planning (X41)                   | 0,983          |       |                  |                       |
| - Implementing (X42)               | 0,978          | 0,950 | 0,974            | 0,983                 |
| - Evaluation (X43)                 | 0,963          |       |                  |                       |
| Productivity (Y)                   |                |       |                  |                       |
| - Land area (Y1)                   | 0,999          | 0,999 | 0,999            | 0,999                 |
| - Production (Y2)                  | 0,999          |       |                  |                       |

Source: Data result from Smart PLS Versi 3.0, 2020

Table 1. showed that Convergent Validity relatively good. Value of outer loading, the value above 0,7 and AVE value dabove 0,5. The thing means that each indicator is valid as estimator in latent variable except education variable. Discriminant Validity could see from the result of cross loading showed all of variables were social factor (X1), economic factor (X2), production input used (X3), activeness farmer's group (X4) and productivity of paddy field (Y) of each indicator able to said that's good and valid

Latent variable (construct) in this research have good discriminant validity because its latent variable has strong correlation with every construct indicator except education variable. Composite Reliability Reliability test aimed to got research instrument with high accuracy looked from composite reliability value and cronbach's alpha. Some latent constructs estimated a variable have good reliability if it has composite reliability and cronbach's alphadiatas 0,7 (Hengky Latan, 2013). Cronbach's alpha value in social factor has a value under 0,7 but one of the other requisite is reliability composite has a value *above 0,7 so fifth of model latent constructs were reliable in estimated research variables.*

### Evaluasi goodness of fit

Evaluasi *inner model* can look from *R-squared* ( $R^2$ ) to estimated the level of *goodness of fit* in structural model struktural and estimation test path coefficient to know about the affect of exogenous variable to variable endogenous.

**Table 2.**  $R^2$  Value Factor Social Variable and Economic to Paddy Field Farming Productivity in Reasearh Region 2020

|             | <b>R Squared</b> |
|-------------|------------------|
| <b>PIP</b>  | 0,238            |
| <b>KKT</b>  | 0,488            |
| <b>PRDV</b> | 0,984            |

*Source: Data result from Smart PLS Versi 3.0, 2020*

Table 2 showed that variable of used production input (PIP) have  $R^2$  value amount of 0,238, so model was in low category (Chin, 1998 in Sarwono and Narimawati, 2015). Activeness farmer's group variable (KKT) have  $R^2$  value amount of 0,488, the meaning of that was Activeness farmer's group variable (KKT) could affected as together by social factor variable and economic factor amount of 48,8 % so the category of model was moderat. Farming productivity variable (PRDV) have  $R^2$  value amount of 0,984 this result showed that farming productivity variable (PRDV) could affected as together by social factor, economic factor, used of production input and activeness farmer's group amount of 98,5% which mean model was strong/good category (Sarwono and Narimawati, 2015).

$Q^2$  value of structural model described by inner model was amount of 0,9938 yaitu approached number of 1 so could said that structural model have suitability with good data (goodness of fit). Which mean that the information in data amount 99,3 % could described by structural model was social factor variable, economic factor, used of production input, activeness farmer's group and farming productivity.

### Direct Affect

**Table 3.** Path Coefficient/ Direct Affect of Social Factor and Economic to Paddy Field Farming Productivity in Research Region 2020

| <b>Relation Between Variables</b>                      | <b>Path Coefficient</b> | <b>Sample average</b> | <b>Deviation standard</b> | <b>t-statistic</b> | <b>P Value</b> | <b>Information</b>            |
|--|-------------------------|-----------------------|---------------------------|--------------------|----------------|-------------------------------|
| Social factor (X1) -> Used of production input (X3)    | 0,241                   | 0,231                 | 0,126                     | 1,903              | 0,058          | Positive and non significant  |
| Social factor (X1) -> Activeness farmer's group (X4)   | 0,632                   | 0,629                 | 0,088                     | 7,140              | 0,000          | Positive and very significant |
| Social Factor (X1)-> Productivity (Y)                  | -0,043                  | -0,044                | 0,021                     | 2,000              | 0,046          | Negative and significant      |
| Economic factor -> used of production input (X3)       | 0,373                   | 0,388                 | 0,088                     | 4,234              | 0,000          | Positive and significant      |
| Economic factor (X2) -> activeness farmer's group (X4) | 0,187                   | 0,191                 | 0,080                     | 2,336              | 0,020          | Positive and significant      |
| Economic factor (X2) -> Productivity (Y)               | 0,038                   | 0,037                 | 0,018                     | 2,141              | 0,033          | Positive and significant      |
| Used of production input (X3) -> Productivity (Y)      | 0,984                   | 0,984                 | 0,011                     | 90,176             | 0,000          | Positive and significant      |

|  |       |       |       |       |       |                          |
|--|-------|-------|-------|-------|-------|--------------------------|
| Activeness farmer's group (X4) -> Productivity (Y) | 0,054 | 0,055 | 0,020 | 2,680 | 0,008 | Positive and significant |
|--|-------|-------|-------|-------|-------|--------------------------|

*Source: Data Result from Smart PLS Versi 3.0, 2020*

Table 3 showed that social factor (X1) directly have positive affect and non significant ( $p\text{-value} = 0,058 > \alpha = 0,050$ ) to used of production input (X3) and have positive affect and significant to activeness farmer's group. (X4) more, have negative affect and significant to farming productivity (Y). Strengthening of social factor variable amount of 10% so will make increase of production input amount of 2,41 %, strengthening of activeness farmer's group amount of 6,32 % and productivity amount of 0,43 %.

Economic factor has positive affect directly and significant to used of production input, activeness farmer's group and strengthening production of productivity amount of 10% so will make increase of input production used amount of 3,73 %, increase of activeness farmer's group amount of 1,87% and increase of farming productivity amount of 0,38 %. Used of production input has positive affect directly and significant to farming productivity. Strengthening of production input used amount of 10% so will make increase of farming productivity amount of 9,84%. Activeness farmer's group has positive affect directly and significant. Strengthening of activeness farmer's group amount of 10% will make increase of farming productivity amount 0,54%.

### Indirect Affect

**Table 4.** Indirect affect of Social Factor and Farmer's Economic to Pengaruh Paddy Field Farming Productivity in Research Region 2020

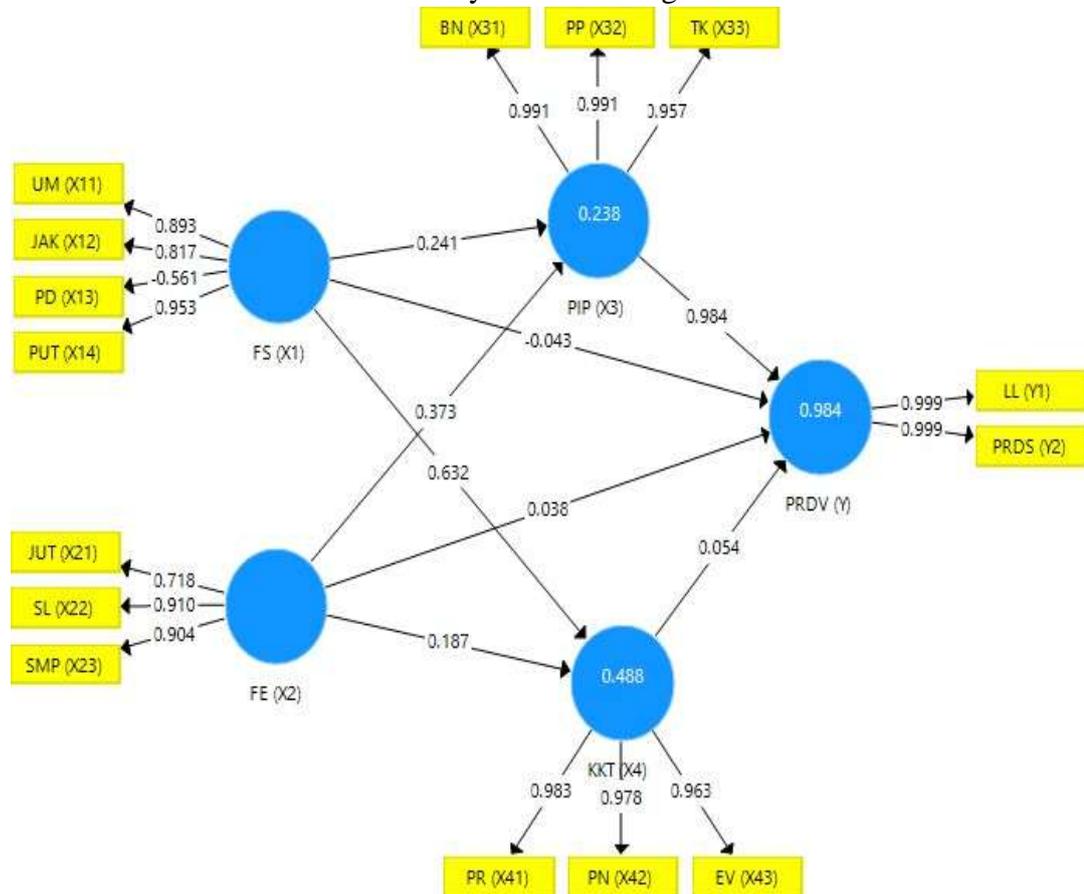
| Relation between Variable       | Original Sample (SO) | Sample Mean (M) | Standard Deviation (STDEV) | T-Statistic | P-Value |
|---------------------------------|----------------------|-----------------|----------------------------|-------------|---------|
| FS -> PIP -> PRDV               | 0,237                | 0,228           | 0,125                      | 1,896       | 0,059   |
| FS-> KKT-> PRDV                 | 0,034                | 0,035           | 0,015                      | 2,229       | 0,026   |
| FE-> PIP -> PRDV                | 0,367                | 0,382           | 0,086                      | 4,287       | 0,000   |
| FE-> KKT -> PRDV                | 0,010                | 0,011           | 0,006                      | 1,654       | 0,099   |
| <b>Total of Indirect Affect</b> |                      |                 |                            |             |         |
| FS -> PRDV                      | 0,271                | 0,263           | 0,124                      | 2,184       | 0,029   |
| FE -> PRDV                      | 0,377                | 0,392           | 0,085                      | 4,432       | 0,000   |

*Source: Data Result from Smart PLS Versi 3.0, 2020*

Table 4 showed that correlation coefficient of social factor through used of production input moderation to productivity have positive affect but non significant ( $p\text{-value} = 0,059 > \alpha = 0,050$ ) and by through activeness farmer's group moderation to farming productivity were positive affect and significant. Strengthening of social factor amount of 10% by used of production input moderation so will increase farming productivity amount of 2,37 % and by activeness farmer's group moderation will increase farming productivity amount of 0,34 %.

Economic factor through by used of production input moderation to farming productivity was positive affected and significant. Strengthening of economic factor amount of 10% by used of production input moderation will increase productivity amount of 3,67 %. The magnitude correlation coefficient economic factor throught by activeness farmer's group moderation to farming productivity was positive affected but no significant ( $p\text{-value} = 0,099 > \alpha = 0,050$ ). Strengthening of economic factor amount of 10% by moderation variable will increase productivity amount of 0,10 %.

Coefficient total affected indirectly of variable social factor to productivity was positive affected and significant. That could said indirectly every strengthening of social factor amount of 10% so will increase farming productivity amount of 2,71 %. Coefficient total affected indirectly economic factor to farming productivity was positive affected and significant. Strengthening of economic factor amount of 10% with moderation variable will increase farming productivity amount of 3,77 %. The Result of Path Diagram of Farmer Social Factor and The Affect to Productivity can look at figure 2.



**Figure 2.** The Result of Diagram Path Structural Model Analysis

Image 2 showed that total affect was almost the same with affect directly. The different of it was in coefficient value relation between social factor to productivity and coefficient value economic factor to productivity. Social factor (X1) as total has positive affected but non significant ( $p\text{-value} = 0,058 > \alpha = 0,050$ ) to used of production input (X3), affected positive and significant to activeness farmer's group (X4) and affected positive but non significant  $p\text{-value} = 0,064 > \alpha = 0,050$ ) to farming productivity (Y). Strengthening of social factor as total amount of 10% will increase used of production input amount of 2,41%, increase activeness farmer's group amount of 6,32 % and increase productivity amount of 2,28 %.

Economic factor as total affected positive and significant to used of production input, activeness farmer's group and productivity. Strengthening of economic factor as total amount of 10 % will make reveal used of production input amount of 3,73 %, reveal activeness farmer's group amount of 1,87% and reveal farming productivity amount of 4,15 %. Total affect of production input used and activeness farmer's group to productivity affected positive and significant. So it could said that every reveal of used of production

input and activeness farmer's group amount of 10% will reveal about productivity amount of 9,84 % and 0,54 %.

The affect of social factor (age, the number of family member, education, and experience) its coefficient has positive value but non significant. Which mean getting older their age, the number of family member and farming experience as together through by social factor will increase productivity. Except, education who has negative value, where doesn't suitable as theory that said getting high education so can increase production of paddy field who as walk as with research by Hoar and Fallo (2017). Indicator of education affected positive to farming productivity, where education formal in research region was relatively high. According to Juita (2005) described that level of formal education unaffected to level of adoption technology PPT because for applied a technology in farming, farmer hasn't to have high level of formal education, not all of farmer have high education who have skill and more high knowledge than farmer who have low education. Research region assumed doesn't depend on formal education but from non formal education got from activeness farmer's group and their farming experience learned by hereditary or old family. The result of analysis social factor as walk as with research by Neobota and Kue (2016) farming experience variable affected positive but non significant. Research by Isyanto (2012) where said that age unaffected significant and have positive coefficient. The result of analysis economic factor as walk as with research by Sukayat and Rumna (2017) and Novita et al (2016) that land status variable affected significant.

The result of production input used as walk as with research by Bananiek, S and Z abidin (2013) Hasrani and Tangkesalu (2013) and penelitian Ifgayani et al, (2019) that seed variable, fertilizer and labor affected positive and significant. The affect of seed used, fertilizer, labor as together by used of production input in this research was more increase used of seed, fertilizer and labor will increase productivity. The result of analysis activeness farmer's group as walk as with research by Isma et al, (2018) and Bashir, MIA and Koestiono (2018) was any significant relation between role of farmer's group with paddy field productivity. Consistent stated by Mosher (1968) that one of condition smooth agriculture development was any farmer's activity joined in farmer's group. The affect of activeness farmer's group in this research was more active a farmer in activity (Planning, Implementing and evaluation) so will increase farming productivity.

## **CONCLUSION**

The affect of social factor and economic directly have coefficient amount of -0,043 and 0,038 to paddy field farming productivity with p value (0,046)  $< \alpha$  (0,05) and p value (0,033)  $< \alpha$  (0,05). Indirect affect of social factor through by used of production input and activeness farmer's group have coefficient amount of 0,237 and 0,034 to productivity with p value (0,059)  $> \alpha$  (0,05) and p value (0,026)  $< \alpha$  (0,05). Economic factor through by used of production input variable and activeness farmer's group have coefficient amount of 0,367 and 0,010 to productivity with p value (0,000)  $> \alpha$  (0,05) and p value (0,099)  $> \alpha$  (0,05). Total result affect of the research of social factor and economic have coefficient amount of 0,228 and 0,415 to paddy field farming productivity with p value (0,064)  $< \alpha$  (0,05) and p value (0,000)  $< \alpha$  (0,05). Related from this in order to improvement of paddy field farming productivity needs farmer empowerment with pay attention to social factor, economic factor, activeness farmer's group and effort from agriculture extension about new technology of paddy field farming.

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