Farming productivity, farmers’ perception and satisfaction to agricultural extension worker in Garut Regency

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Abstract. The objectives of the study were to analyze the productivity of rice cultivation, farmers’ perception of the extension worker’s role and performance, and the level of farmers’ satisfaction during the program. The study was conducted in 2017 in three districts of Garut Regency with the largest number of farmer groups. The respondents were chosen by three-stage sampling consisting of 31 farmers who received assistance. The analysis showed that rice productivity based on revenue/cost ratio has increased. Farmers’ perceptions of the performance and role of instructors analyzed using the Importance Performance Analysis (IPA) method indicated the extension workers were in line with the expectations of farmers in supporting the success of the program. The level of farmers’ satisfaction with the performance of extension workers analyzed by the Customer Satisfaction Index (CSI) gave the results that farmers were generally very satisfied with the extension activities carried out in the program. The future program implementation should pay attention to the seeds’ quality and the planting calendar. The main priority that needs to be improved by the instructors is to intensify training on farms recording and guidance in calculating labor requirements.

1. Introduction

Economic development in the agricultural sector is vital in realizing the national development goals in agriculture. It is namely increasing food production to achieve rice surplus, stabilizing food prices, and stabilizing food diversification based on local resources. Other programs are protecting and empowering farmers as well as improving their welfare. According to the economic structure of Garut Regency, the sector of agriculture, forestry, and fishery provided the largest contribution to Gross Regional Domestic Income (GRDI) which regularly increasing from 2013 to 2017 [1]. About 33.63% of Garut residents work in agriculture sector, it is higher than other sectors such as services (22.20%), trade (20.92%), and industry (9.71%) [2]. It means that the development of the agricultural sector will affect greatly and provide big impact to the residents.

Based on this potential, the Special Effort Program of Rice, Corn, and Soybean (later will be written as UPSUS PAJALE) was expected to give benefits for farmers in Garut Regency. UPSUS PAJALE is a program launched by Ministry of Agriculture and one of the goals is to realize self-sufficiency of those commodities. The program was seed provision about 25 kg/ha and fertilizer provision such as urea (75 kg/ha) and NPK (50 kg/ha) given to farmer groups [3]. The success of the program could be determined from the increasing productivity, the role of the extension workers, and farmers’ participation during the program.

The program aimed to influence the economic structure, including the productivity of agricultural sector. The process of change is needed thus the change of economic structure in line with the change of society structure. The activities facilitated by Government often have rapid improvement on the
regional economy. However, they are rarely sustainable and often do not affect the improvement of society’s welfare.

Previous researches showed that programs launched by Government have not given expected results. Short-term production improvement programs required increase in the number of inputs. However, the farmers do not have unlimited capabilities in increasing the use of input. Therefore, long-term solution was to increase efficiency of available input utilization and introducing production techniques [4]. The development and adoption of rice technology by farmers had not been easy and was still slow as the farmers preferred to observe, know, and prove the benefits of technology innovation themselves [5] and counseling was not important factor in the utilization of technology-induced seedlings for rice farmers [6]. Those researches are supported by the analysis of rice productivity improvement before and after the program which showed technology used by farmers still varied, even though the involvement of extension workers in the program was quite large [7]. The agricultural technology could not be fully utilized by farmers because of fundamental reasons such as reluctance to adopt new technology, different agricultural systems, different regional culture, and the lack of knowledge in proper operation of agricultural technology [8].

Research related to farmers’ perception on the role of extension workers displayed results in two categories: good [9] and very good [10]. The farmers’ satisfaction with the performance of extension workers was decent [11]. Therefore, the research regarding farmers’ perception and satisfaction rate of the extension workers should be conducted. It is to achieve the information regarding the factors which made them dissatisfied with the extension workers, especially during the program. The objectives of the study were to analyze the productivity of rice cultivation, farmers’ perception of the extension worker’s role and performance, and the level of farmers’ satisfaction during UPSUS PAJALE program.

2. Materials and Methods
The study was conducted in 2017 located in Garut Regency. Primary and secondary data were used in the research. Primary data was obtained from interviews with respondents, 31 rice farmers who received seed and fertilizer provisions. Respondent determination using three-stage sampling, which were: (1) location based on districts which had the largest farmer groups: Kadungora, Pasirwangi, and Cilawu District, (2) beneficiary farmer groups in selected districts, and (3) farmers from selected farmer groups were randomly chosen as respondents. Secondary data was obtained from Statistics of West Java Province, Garut Regency, Department of Agriculture, and BP4K of Garut Regency.
The stages of the research are as follows:

2.1. Rice Productivity Analysis
Analysis of rice productivity through recording of production inputs consisting of seed quantity (kg), amount of urea (kg), NPK (kg), TSP (kg) and fertilizer costs (Rp), labor costs (Rp), total cost (Rp), production (tons), farm receipts (Rp) and Revenue/Cost (R/C) ratio.

2.2. Farmers’ Perception Analysis
Analysis of farmers’ perception of the role of extension workers in supervising the program, conducted with Importance Performance Analysis (IPA) [12]. The IPA connects the level of interest of program with level of satisfaction by farmers using the criteria (Table 1). The level of importance of the program referred to the guidelines for the implementation of UPSUS PAJALE program, while the level of satisfaction perceived by farmers was based on mentoring activities carried out during the program.
Table 1. Criteria of assessment of IPA

| Score | Importance level | Satisfaction level |
|-------|------------------|--------------------|
| 1     | Very unimportant | Very dissatisfied  |
| 2     | Less important   | Dissatisfied       |
| 3     | Important        | Satisfied          |
| 4     | Very important   | Very satisfied     |

The link between the level of importance and the reality experienced by farmers is interpreted in the Cartesian diagram of the level of importance and product satisfaction, as presented in Figure 1.

![Figure 1. IPA cartesian diagram](image)

The level of importance and satisfaction is in the form of a score of importance level (Y) and average satisfaction level score (X) per respondent. The average value then drawn in a Cartesian diagram. The Cartesian diagram is divided into four grids that are bounded by two lines that intersect perpendicular to the average X point and the average Y using the following formula:

\[ Q = \frac{Z^2}{n+1} \]

Description:
- \( Q \) = median value
- \( Z \) = answer scoring
- \( N \) = number of respondents

The results from the calculation of average X and Y then used as pairs to locate the position of an attribute on Cartesian diagram.

2.3. Farmers’ Satisfaction Analysis

Farmers’ satisfaction analysis was done by adopting Customer Satisfaction Index (CSI) method analysis [13]. The analysis is to determine overall farmers’ satisfaction level to extension workers performance. There were four steps to measure this index:

a. Mean Importance Score (MIS) and Mean Satisfaction Score (MSS) obtained from the average value of importance and satisfaction level of each person, using the following formula:

\[ MIS = \frac{\sum_{i=1}^{n} Y_i}{n} \quad \text{dan} \quad MSS = \frac{\sum_{i=1}^{n} X_i}{n} \]

b. Weighting Factors (WF), is the function of Mean Importance Score (MISi) of each attribute or indicator in the percentage (%) of total Mean Importance Score (MIS) of overall tested attribute, using the following formula:
Weighting factor = \( \frac{M_i}{\text{Total } M_i} \times 100\% \)

c. Weight Score (WS), is the function of Mean Satisfaction Score (MSS) multiplied by Weight Factors (WF), using the following formula:

\[ WS = \text{MSS} \times \text{WF} \]

d. Customer Satisfaction Index (CSI) calculated using the following formula:

\[ CSI = \frac{\sum_{i=1}^{p} WS_i}{4} \times 100\% \]

*note: highest score = 4

Overall level of respondents’ satisfaction could be observed using the level of satisfaction level. Highest satisfaction is achieved if CSI score is 100%. The satisfaction level ranges from 0 – 100%. To produce numeric linear scale, SR should be obtained using the following formula [14]:

\[ SR = \frac{m - n}{b} \]

*note: m = highest score, n = lowest score and b = number of classes or categories

Based on the formula, Scale Range (SR) in the study is as follows:

\[ SR = \frac{100\% - 0\%}{4} = 25\% \]

Thus the satisfaction criteria are:

0<CSI\leq25 very dissatisfied
25<CSI\leq50 dissatisfied
50<CSI\leq75 satisfied
75<CSI\leq100 very satisfied

3. Results and Discussion

3.1. Characteristics of Respondents

All respondents were farmers. Total number of respondents were 31 people. They were from Kadungora, Pasirwangi, and Cilawu District. Respondents’ age was varied, ranged from 31 to 82 years old with average was 65 years old. Most farmers graduated from primary school (57.50%). Farmers graduated from high school and higher were only 17.50%. Around 61.67% of them had been farmers for 10 to 30 years. The family members were 4 – 6 persons in average (53.33%). The average of land ownership was 1.27 ha with standard deviation of 1.2. The land ownership was not uniformly distributed, and it affected on their ability to adopt technology and their concern regarding land conservation [15]. Respondent characteristics (age, education level, experience, number of family members) indicated that food crop farmers were dominated by old-generation farmers, having a large number of family members with low education level. This could be interpreted that the profession of farmers, especially food crop was less attractive to the young and educated generation. In addition, with more than 10 years of experience indicated there was no regeneration, which implicated a lack of interest in the sector. Primary sectors, especially agriculture with economic actors, and farmers without supporting organizations (institutions) would have low bargaining position in setting prices [15]. The asymmetric condition arises from factors, such as: (1) the characteristics of the commodity and (2) the characteristics of the main actors in the sector.

The characteristics of these farmers influenced farming development process. Because age, skill, location and the area of land positively affected the development of farmland. On the other hand, age and education level negatively affected land utilization [16]. The fertilizer subsidy policy might increase land productivity but could not reduce poverty rate if the income were very low [17].
3.2. Rice Farming Productivity
The average seedlings use was 24.66 kg/ha, standard deviation of 5.18 kg/ha. The data recorded that the number of seedlings used varied greatly. It means that their ability in farming also varied. Eventually, it affected the production cost and its results. Farmers stated the quality of subsidized seedlings was poor and often received late. Furthermore, they also mentioned the quality of subsidized fertilizer was also poor and often delayed. They became less eager to participate in next program. Delays in the distribution of fertilizers should be informed and they were given individual fertilizer coupons to maintain the enthusiasm of farmers [18].

The average use of urea was 189.75 kg/ha, standard deviation of 123.40 kg/ha. The average NPK use was 407.80 kg/ha, standard deviation of 146.99 kg/ha. According to Ministerial Regulation No. 40 Year 2007, the calculation of N (Urea) fertilizer needs was based on productivity level of paddy. At low productivity level (<5 t/ha) 200 kg/ha urea was needed, at moderate productivity level (5-6 t/ha) 250-300 kg/ha urea was needed and at high productivity levels (> 6 t/ha) 300-400 kg/ha urea was needed. However, most of them used fertilizer with dosage 200-250, 150, and 100 kg/ha of urea, SP-36, and KCl respectively (Supra Insus recommendation).

By comparing these recommendations, the amount of fertilizer used by farmers was lower than the recommended dosage. The standard deviation of the use of the two types of fertilizer were quite large, indicating that the technology used by members of farmer groups still varied. The N, P and K fertilizer recommendations on paddy field should be combined with the use of straw or cow manure as organic materials to increase fertilizer efficiency, so that the diversity of fertilizer use at the farm level could also be influenced by the presence of organic material in the farmer groups.

Labor cost component was the largest component in farming. The average labor cost was IDR 7,689,113.29 per ha with standard deviation of 2,359,723.44. Labor demands had huge variation, because the demands of each region varied. Agricultural labor productivity had a certain spatial pattern [19]. The cost of farming was IDR 17,370,419.41 per ha with a standard deviation of 2,695,109.48. It was higher than the average production cost of Indonesian paddy field farming, which was IDR 12.68 million rupiah/ha [2].

Farming productivity was 6.79 tons/ha with a standard deviation 0.47 tons/ha. It was higher than West Java productivity of 5.88 tons/ha [20]. It implied that rice productivity in Garut was already quite good in West Java Province. Therefore, the revenue was recorded around IDR 38,618,594.10/ha with a standard deviation of IDR 3,874,140.94/ha. It was higher than the average revenue of Indonesian paddy farming (IDR 17.17 millions/ha).

R/C ratio in this study was 2.27 with standard deviation of 0.41 indicated that it was feasible in Garut. Based on analysis of R/C ratio, its values had increased from 2015 to 2017. In 2015 (before the program) R/C ratio was 1.68 and increased to 1.86 in 2016 [7]. This indicated the assistance activities provided benefits for farmers. Rice cultivation in Garut should be developed and with ongoing assistance was expected to provide better results. In the future, to maintain the sustainability of agribusiness, a strategy to balance economic and ecological benefits with social interests must be devised [21]. Rice farming productivity are presented in Table 2.

Based on the analysis above, there were a few things to note. The acceptance of agribusiness was good, but the standard deviation of each production factor was huge. There were two possibilities to explain the situation, namely (1) that the technology used by farmers varied and (2) they were not accustomed to record their activities. The low level of technology adoption was influenced by capital factor, higher input prices and lower output prices and recommended technology was difficult to adopt [22]. The allocation of inputs in Indonesia had not been efficient, thus the role of extension services was needed [23]. So, farmer involvement in the program should be able to improve their managerial ability and decision making to use appropriate production inputs in agribusiness [24]. Farming recording system was still poor, only about 5% of farmers who regularly recorded, especially for production inputs that were subsidized [25]. There are several possibilities of that condition, namely the low quality of promotion, the low quality of products, or farmers did not feel the benefits of the recording system [25].
Table 2. Analysis of rice farming productivity

| Description     | Average | Standard Deviation |
|-----------------|---------|--------------------|
| Total area (ha)  | 1,27    | 1,20               |
| Seeds (kg/ha)   | 24.66   | 5.18               |
| Urea (kg/ha)    | 189.75  | 123.40             |
| NPK (kg/ha)     | 407.80  | 146.99             |
| Fertilizer (kg/ha) | 1,338,539,68 | 402,502,47 |
| Labor (IDR/ha)  | 7,689,113,29 | 2,359,723,44 |
| Total cost (IDR/ha) | 17,370,419,41 | 2,695,109,48 |
| Harvest (ton/ha)| 6.79    | 0.47               |
| Revenue (IDR/ha)| 48,618,594,10 | 3,874,140,94 |
| R/C             | 2.27    | 0.41               |

Notes: primary data, calculated

3.3. Farmers’ Perception and Satisfaction of Extension Workers’ Performances

The IPA analysis was carried out by calculating the value of performance, importance level, and conformity level between those achieved by the extension workers in assisting UPSUS PAJALE Program. The results of the IPA analysis showed that the attribute considered by farmers to have the highest level of performance was the pilot activity in the test field and the lowest level of attribute was guidance on calculating R/C ratio. The attribute considered having the highest level of importance was the same as the attribute at the level of performance (pilot activity in the test field), while the lowest level of was guidance on calculating the breakeven value (BEP).

The conformity value was the result of the score of the extension workers’ performance level in UPSUS PAJALE Program with the score of importance of each attribute. The value of the conformity level indicated the extent to which the performance attributes could meet the level of importance or expectations of farmers. The conformity value was equal to 1 (100%) means that the level of performance of the attribute could meet farmers’ expectations, the conformity value less than 1 (<100%) means the level of attribute performance has not been able to meet the expectations of farmers, while the value of the conformity level is greater than 1 (> 100%), the level of performance of these attributes has exceeded consumer expectations.

Data analysis of the conformity level showed that most of the attributes analyzed had scores close to 100%. There were only 3 attributes whose value was less than 70%, namely the attributes on the feasibility analysis dimension. Those attributes were guidance on calculating depreciation (conformity level= 67.5%), guidance on calculating R/C ratio (conformity level= 61.95%), and guidance on calculating BEP (conformity level= 66.36%).

Overall conformity level reached 84.80% (<100%), meaning that in general farmers’ perceptions of the performance and role of extension workers in overseeing the UPSUS PAJALE Program had met farmers’ expectations, yet the extension workers still needed to maximize their performance in providing guidance to farmers in order to meet farmers’ expectations. Further IPA analysis was to compare the level of importance and level of performance using a Cartesian diagram (Figure 2). This was done to find out the attributes that must be a priority for extension workers to improve their performances.
## Table 3. Conformity level of performance and importance of extension workers’ roles

| Dimension       | Attribute                                      | Performance (X) | Importance (Y) | Conformity level (%) |
|-----------------|------------------------------------------------|-----------------|----------------|----------------------|
|                 |                                                | Total score     | Average score  | Total score          | Average score          |                         |
|                 |                                                | of Performance  | of Performance | of Importance        | of Importance          |                         |
| A. Assistance   | 1                                              | 127             | 3.63           | 129                 | 3.69                 | 98.45                   |
|                 | 2                                              | 128             | 3.66           | 131                 | 3.74                 | 97.71                   |
|                 | 3                                              | 123             | 3.51           | 131                 | 3.74                 | 93.89                   |
|                 | 4                                              | 130             | 3.71           | 132                 | 3.77                 | 98.48                   |
|                 | 5                                              | 107             | 3.06           | 127                 | 3.63                 | 84.25                   |
| B. Agribusiness recording | 6                                              | 108             | 3.09           | 127                 | 3.63                 | 85.04                   |
|                 | 7                                              | 107             | 3.06           | 128                 | 3.66                 | 83.59                   |
|                 | 8                                              | 110             | 3.14           | 126                 | 3.60                 | 87.30                   |
|                 | 9                                              | 107             | 3.06           | 126                 | 3.60                 | 84.92                   |
|                 | 10                                             | 103             | 2.94           | 129                 | 3.69                 | 79.84                   |
| C. Feasibility analysis | 11                                             | 125             | 3.57           | 129                 | 3.69                 | 96.90                   |
|                 | 12                                             | 125             | 3.57           | 131                 | 3.74                 | 95.42                   |
|                 | 13                                             | 105             | 3.00           | 127                 | 3.63                 | 82.68                   |
|                 | 14                                             | 89              | 2.54           | 119                 | 3.40                 | 74.79                   |
|                 | 15                                             | 93              | 2.66           | 123                 | 3.51                 | 75.61                   |
|                 | 16                                             | 81              | 2.31           | 120                 | 3.43                 | 67.50                   |
|                 | 17                                             | 120             | 3.43           | 125                 | 3.57                 | 96.00                   |
|                 | 18                                             | 94              | 2.69           | 123                 | 3.51                 | 76.42                   |
|                 | 19                                             | 70              | 2.00           | 113                 | 3.23                 | 61.95                   |
|                 | 20                                             | 73              | 2.09           | 110                 | 3.14                 | 66.36                   |
|                 | Total                                          | 2125            | 60.71          | 2506                | 71.60                | 84.80                   |
| Average         |                                                | -               | 3.04           | -                   | 3.58                 | -                       |

Source: primary data, processed

Description of Table 3:
- Attribute 1: Technology innovation socialization
- Attribute 2: Guidance and counselling on program implementation
- Attribute 3: The use of extension media
- Attribute 4: Pilot activity in test field
- Attribute 5: Trainings related to the Program
- Attribute 6: Socialization of the importance of farming recording
- Attribute 7: Guidance and counselling on farming recording
- Attribute 8: The use of extension media in farming recording
- Attribute 9: Pilot activity in making farming recording
- Attribute 10: Trainings on farming recording
- Attribute 11: Guidance on calculating seeds/seedlings needs
- Attribute 12: Guidance on calculating fertilizer dosage
- Attribute 13: Guidance on calculating the need of labors
- Attribute 14: Guidance on calculating lease cost of field
- Attribute 15: Guidance on calculating the need of agricultural machinery
- Attribute 16: Guidance on calculating tools depreciation
- Attribute 17: Guidance on calculating crop yield
Attribute 18  Guidance on calculating profit/loss analysis  
Attribute 19  Guidance on calculating R/C ratio  
Attribute 20  Guidance on calculating breakeven point (BEP)

As explained earlier in methods, IPA Cartesian diagram is divided into four quadrants. Quadrant I is concentrate here, quadrant II is keep up the good work, quadrant III is low priority, and quadrant IV is possible overkill.  

The determination of the X coordinate which divided the Cartesian diagram horizontally was obtained from the average score of performance level, while the ordinate axis (Y) that divided the Cartesians vertically was obtained from the average score of importance (expectation). Based on Table 1, it is known that the X coordinate average score was 3.04, and the ordinate axis average score (Y) is 3.58. Figure 1 presented a Cartesian diagram of each attribute of the extension workers’ role in assisting UPSUS PAJALE Program.

Based on the IPA Cartesian diagram, in quadrant I (concentrate here) there are 2 attributes, 11 attributes in quadrant II (keep up the good work), quadrant III (low priority) has 6 attributes, and only 1 attribute in quadrant IV (possible overkill).

Quadrant I is the main priority that should be improved by the extension workers in assisting the Program. These attributes are trainings on farming recording and guidance on calculating the need of labors. These attributes were considered as important factors by farmers, yet the extension workers’ performances had not been satisfactory. Therefore, they were obligated to prioritize extension activities to improve the performance of those attributes. Farming recording and the knowledge of the need of labors are vital to assist farmers in carrying out farm management properly so that productivity and efficiency could be improved. Farmers reckoned extension workers had not provided maximum assistance in those two attributes.

Quadrant II is to keep up the good work. The attributes located in quadrant II are attributes considered important by farmers so that the extension workers should maintain the achievements. The attributes in this quadrant also indicated that the extension workers’ performance is in line with farmers’ expectations. Most of the attributes analyzed in this study found in quadrant II (11 of 20 attributes). The attributes that should be maintained by the extension workers are the technology innovation socialization, guidance and counseling on program implementation, the use of pilot extension media in test field, trainings related to the program, socialization of the importance of farming recording, guidance and counseling of farming recording, use of extension media in farming recording, pilot activity in making farming records, guidance about calculating seeds/seedlings needs, and guidance on calculating fertilizer dosage.

Quadrant III is low priority region. There are 6 attributes found in the quadrant, namely guidance on calculating lease cost of field, guidance on calculating the need of agricultural machinery, guidance on calculating tools depreciation, guidance on calculating of profit/loss analysis, guidance on calculating R/C ratio, guidance on calculating breakeven point (BEP). These attributes have a low level of actual performance and farmers also considered those are not too important so that extension workers do not need to prioritize and pay great attention to these attributes.

Quadrant IV is possible overkill. It means that the attributes located in quadrant IV are considered not too important and/or not too expected by farmers. Therefore, the extension workers should decide allocating resources associated with these attributes to others with greater priority and still need improvement, such as those attributes in quadrant I and II. Only one attribute was found in this quadrant according to the analysis namely guidance on calculating crop yields.
The level of farmers’ satisfaction to extension workers’ performances could be discovered from CSI analysis. CSI analysis results are presented in Table 4. Based on the analysis, the result was 76.43%. It indicated that farmers were very satisfied with the workers’ performances.

Based on overall analysis, it can be concluded that the large variation in the use of production inputs was not caused by variations in technology, but rather the low farming recording system. Therefore, for government programs such as UPSUS PAJALE to have a sufficiently good impact, farming recording system should be part of extension workers’ activities when assisting government programs. They should emphasize the benefits obtained with a good recording system since through farming recording system, the farmers would be able to make better farm planning and would be easier to control their farming. To build and farming recording system, we should take close attention to the habits and behavior of farmers [25]. Therefore, for Garut farmers, creating a simple recording system needs to be done.

4. Conclusion

Analysis result indicated that R/C ratio increased from 2015-2017, meaning that the assistance activities provided benefits for farmers. The implementation of the program in the future should pay attention to the seeds’ quality that would be distributed and the planting calendar. Farmers’ perceptions of the performance and role of extension workers in assisting UPSUS PAJALE Program had met farmers’ expectations. The attribute considered by farmers having the highest level of performance as well as the highest level of importance was pilot activities in the test field, while the attribute that have the lowest level of performance was guidance on calculating R/C ratio. Meanwhile, the attribute considered to have the lowest level of importance was guidance on calculating the break even point (BEP). The level of farmers’ satisfaction with the performance of the extension workers based on CSI analysis was in ‘very satisfied’ category. Extension workers still need to maximize their performances in providing guidance to farmers. The main priority is to intensify training in farming recording and guidance in calculating the need of labor.
Table 4. CSI analysis results

| Attribute | Mean Importance Score (MIS) | Weighting Factors (WF) | Mean Satisfaction Score (MSS) | Weight Score (WS) |
|-----------|-----------------------------|------------------------|-------------------------------|-------------------|
| 1         | 3.69                        | 0.051                  | 3.63                          | 0.19              |
| 2         | 3.74                        | 0.052                  | 3.66                          | 0.19              |
| 3         | 3.74                        | 0.052                  | 3.51                          | 0.18              |
| 4         | 3.77                        | 0.053                  | 3.71                          | 0.20              |
| 5         | 3.63                        | 0.051                  | 3.06                          | 0.15              |
| 6         | 3.63                        | 0.051                  | 3.09                          | 0.16              |
| 7         | 3.66                        | 0.051                  | 3.06                          | 0.16              |
| 8         | 3.60                        | 0.050                  | 3.14                          | 0.16              |
| 9         | 3.60                        | 0.050                  | 3.06                          | 0.15              |
| 10        | 3.69                        | 0.051                  | 2.94                          | 0.15              |
| 11        | 3.69                        | 0.051                  | 3.57                          | 0.18              |
| 12        | 3.74                        | 0.052                  | 3.57                          | 0.19              |
| 13        | 3.63                        | 0.051                  | 3.00                          | 0.15              |
| 14        | 3.40                        | 0.047                  | 2.54                          | 0.12              |
| 15        | 3.51                        | 0.049                  | 2.66                          | 0.13              |
| 16        | 3.43                        | 0.048                  | 2.31                          | 0.11              |
| 17        | 3.57                        | 0.050                  | 3.43                          | 0.17              |
| 18        | 3.51                        | 0.049                  | 2.69                          | 0.13              |
| 19        | 3.23                        | 0.045                  | 2.00                          | 0.09              |
| 20        | 3.14                        | 0.044                  | 2.09                          | 0.09              |
| Total     | 71.60                       |                        |                                | 3.06              |
| CSI       | 76.43                       |                        |                                |                   |

Source: Primary data, analyzed

References

[1] Statistics Indonesia 2018 Village Potential Statistics of Indonesia Jakarta
[2] Statistics of Garut Regency 2015 Garut in Figure Garut
[3] Garut Department of Agriculture 2015 Implementation Instruction of Special Effort Program of Rice, Corn and Soybean Garut.
[4] Abro ZA, Alemu BA and Hanjra MA 2014 World Development vol 59 pp 461-474
[5] Ruskandar A 2010 Iptek Tanaman Pangan vol 5 no 2 pp 113-125
[6] Statistics Indonesia 2015 Analysis of food crop business household in Indonesia Jakarta
[7] Saridewi TR 2018 Jurnal Agroekoteknologi dan Agribisnis, vol. 1 no. 2 ed December 2018
[8] Krisnamurthi B 2014 Policy for Farmer: Empowering for Growth and Growth for Empowering Presented in National Congress of Indonesian Agricultural Economic Association XVI Bogor 28-29th August.
[9] Krisnawati, Pernaningsih N and Asngari P 2013 Jurnal Sosio Konsepsi vol 2 no 3 pp 301-312
[10] Timbulus MVG, Sondakh M.L and Rumangkit GAJ 2016 Agri-Sosioekonomi vol 12 no. 2A pp 19-40.
[11] Tinaprilla N 2015 Proceedings of the National Conference XVII and Congress XVI of 2014 Indonesian Agricultural Economic Association Bogor
[12] Martilla JA and James JC 1977 Journal of Marketing 41 pp 77-79
[13] Bhole KR 1996 *The Key to Greater Profitability* New York: American Management Association

[14] Simamora B 2002 *Guide to Consumer Behavior Research* Gramedia Pustaka Utama Jakarta

[15] Rustiadi E, Saefulhakim S and Panuju DR 2009 *Regional Planning and Development* Crestpent Press and Yayasan Obor Indonesia Jakarta

[16] Bartolini F and Viaggi D 2013 *Land Use Policy* 31 pp 126-135

[17] Louhichi K and Paloma SG 2014 *Food Policy* 45 pp 1-13

[18] Saweda L and Tasie L 2014 *Food Policy* 46 pp 37-40

[19] Smit MJ, Van Leewen ES, Florax RJGM 2015 *Ecological Indicators* 59 pp 6-18

[20] Statistics of West Java Province 2016 *West Java Province in Figure Bandung*

[21] Lei Y, Liu C, Zhang L and Luo S 2016 *Land Use Policy* 55 pp 300-308

[22] Maulana M 2004 *Jurnal Agro Ekonomi* vol 22 no 1 pp 74-95

[23] Junaedi M 2016 *Efficiency and Gap of Rice Field Farming Technologies in Indonesia: Meta-frontier Analysis* Dissertation IPB University Bogor

[24] Firmana F 2016 *Rice Farming Efficiency in Karawang Regency using Data Envelopment Analysis* Tesis IPB University Bogor

[25] Hardaker JB and Anderson JR 1981 *Forum Why Farm Recording Systems are Doomed to Failure* Review of Marketing and Agricultural Economics vol 49 no 3 Department of Agricultural Economics and Business Management University of New England