Farmers rationality in doing land conversion

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Abstract. All actions taken by farmers are not simply focused on benefits that can be obtained today. They also think about sustainability and the ability to make profits in the future. This study aims to discover the sustainability of the results of land conversion that has been carried out by the farmers in Tadokkong Village, Pinrang Regency. This research was conducted in Tadokkong Village, Lembang District, Pinrang Regency, South Sulawesi. Data collection was gathered through interviews and questionnaires obtained from the farmers. Analysis of the data used in this study was descriptive qualitative. Data were processed using a Likert scale. The results of this research indicated the sustainability of land conversion derived from three dimensions. First, the economic aspect to see the benefits derived from land conversion. Second is the ecological dimension to see the impact on the environment and the last is the social dimension to know the relationship cooperation between the farmers.

1. Introduction
The concept of land conversion carried out by the farming community in Tadokkong urban village does not have a negative economic, social or ecological impact. The activities of the conversion of garden land into paddy fields can support the creation of food security both at the regional and regional levels with the formation of several new rice fields. According to Hartati et. al [1], one of the causes of the low production of food farming is due to the narrow land area. Therefore, in this case, it is necessary to do a land conversion or new land printing that can provide benefits in the present and the future even sustainable. This is consistent with the opinion of Irawan and Jumiyati [2,3] that increasing food security is one of the national development goals. In terms of production, increasing food security is sought through developed rice production, especially those produced from paddy fields. It can also be a good concept of sustainability from the results of land conversion. Agricultural development must be done in a balanced manner and adjusted to the carrying capacity of the ecosystem so that sustainable production can be maintained in the long term by reducing the level of environmental damage to a minimum. Pulubuhu [4] revealed the change from nature to "natural resources" had resulted in a very bitter for farmers who had to be driven from their own land and some were forced to turn into wage labor. Indicators used to see the sustainability of land conversion are economic, ecological and social aspects.
2. Methods
This research was extended out in Tadokkong Village, Lembang District, Pinrang Regency, South Sulawesi. The selection of this location was done by purposive sampling considering the majority of the farmers carry out the activity of changing the land into a paddy field in Tadokkong Village for a living. The research was conducted in February – March.

2.1. Method of analysis
The analytical method used in this study was a qualitative analysis method. The research method used was a type of qualitative research with a descriptive approach. Qualitative research is describing or describing a thing, namely data in the form of speech, tangible words, writing, behavior that can be observed from the person (subject) itself, stated in symbolic forms such as statements, interpretations, and oral verbal responses. The purpose of descriptive research is to explain things systematically, factually, and accurately as well as the characteristics of populations in certain areas[5].

The number of samples used in this study was 46 farmers taken using census methods. All the total population of farmers who carry out land conversion activities in the Village Tadokkong, Lembang District, Pinrang District, based on the provisions put forward by Sugiyono[6], which says that "saturated sampling is sampling technique if all members of the population are used as samples. Another term for saturated samples is the census.

2.2. Data analysis
Data obtained from further research were tabulated and proceed by a scoring system. The scoring system was used to score each statement related to each indicator of rationality and sustainability. Scoring was done by using a Likert scale. According to Budiaji[7], a Likert scale is a scale contains four or more question items combined to form a score with five levels of answers regarding the respondent's agreement to the statement stated prior to the answer options provided and explained descriptively in discussion by looking at indicators of rationality and sustainability as a foundation. The indicator to measure the expectation of the sustainability level on the conversion of plantation land into rice fields is by seeing how many benefits or uses that can be generated from the converted rice fields. According to Ruhimat, three dimensions to measure it are economic dimension with its indicators; a) meet the household food availability of farmers, b) Increase in grain prices, c) increase in household income of farmers, d) the potential of paddy land compared to plantation land before conversion, e) the ability of land to be able to plant seasonal crops. Ecological dimension with its indicators; a) water availability, b) land carrying capacity, c) land drainage and erase capability, d) resource management (nutrient cycle, plant pests, etc.). The three social dimensions with the indicators; a) influence from other farmers who carry out land conversion activities; b) cooperation relationships between farmers; c) higher status of paddy landowner, d) management of land that has been converted by the farmers. In this study, the scoring system was used as follows:

a. Determination of answer scores
   Score 3: High
   Score 2: Medium
   Score 1: Low

b. Interval score
   The formula used to find out the interval score from the Likert scale calculation:
   \[ I = \frac{100}{\text{(number of scores)}} \]
   Then, \( I = 100/3 = 33 \) (this is the interval from the lowest 0% of the highest 100%)
   The following criteria for interpretation of scores are based on intervals:
   Figures 0% - 33.99% = Low
   Figures 34% - 66.99% = Medium
   Figures 70% - 100% = High
c. Ideal score
The ideal score is the formula used to find out the value of $n$ on the Likert scale final equation. Meanwhile, the formula used to find out the ideal score:
Ideal Score: Scale Value x Number of Respondents
Then, Ideal score = $3 \times 46 = 138$
Thus, the ideal score on the use of a scale 3 value with 46 respondents is 138.

d. Percentage / Final Settlement
To find out the high standard of a low level of sustainability expectation, in the conversion of plantation land into paddy fields, the formula is used:
$$P = \frac{f}{n} \times 100\%$$
Information:
$p$ = Percentage
$f$ = The frequency of each answer
$n$ = Maximum / ideal number of scores
$100 = $ Fixed number

3. Results and Discussion
The theory of rationality in this study was used to measure the reasons the rationality of the farmers in making decisions to convert the land. According to Mansur[8], people who act rationally are people who make profit maximization as a basis for action. Weber distinguishes rationality actions into four types of social actions. First, rational actions that are instrumental are actions aimed at achieving goals that are rationally calculated and attempted by the actors themselves. Second, rational actions based on values (value-rational action) carried out for reasons of goals that have to do with values that are believed personally without taking into account the prospects associated with the success or failure of the action. Third, the traditional action of an individual exhibiting behavior out of habit without conscious reflection or planning. Fourth, effective action is the type of action dominated by feelings or emotions without intellectual thought or conscious planning. Such actions are assumed to be completely irrational due to a lack of logical considerations, ideology, or other criteria of rationality[9].

The theory of rationality used in this study was to see the rational reasons for farmers to conduct land conversion activities and to see the goals to be achieved by the farmers. They struggle in taking action to convert the land because it is deemed necessary to do. Farmers, in this case, are faced with two choices, maintaining their unproductive farmland because of the status of idle land or turning it into paddy fields. The land can be planted with rice plants or an alternative plant. The results of the rationality of the conversion of garden land into paddy fields carried out by farmers can be seen in table 1.

| Table 1. Rationality measures for converting plantation land into rice fields in Tadokkong Village, Lembang District, Pinrang Regency, 2019 |
|---------------------------------------------------------------|
| Indicator | Instrument | Value |
| Increased land use | √ | |
| Increase land selling prices | √ | |
| Land conversion costs | √ | |
| Land suitability | | √ |
| The geographical location of the area/land accessibility | | √ |
| Land area | | √ |

In table 1, it can be seen that there are two acts of rationality that serve as the basis for measuring the rationality of farmers in converting plantation land into paddy fields in Tadokkong Village, Lembang.
District, Pinrang District, namely acts of rationality are instrumental, and rational actions based on values. In the table above, the decision of farmers to convert land is more focused on achieving the goals and values to be achieved in this land conversion. As explained earlier, farmers chose to convert land in Tadokkong because the condition of garden land was previously less productive anymore. It is necessary to take any action to increase land use by doing the land conversion. It is also directly related to rational actions based on the value which if referring to the understanding of rational action based on value, the farmer converts the land because the action is deemed necessary. Based on the table above, the measurement of the rationality level of farmers who convert garden land into paddy fields is illustrated in table 2.

**Table 2.** Rationality measures for converting plantation land into rice fields in Tadokkong Village, Lembang District, Pinrang Regency, 2019.

| Rationality               | Rationality score | Percentage of approval (%) | Rating Scale (interval) |
|---------------------------|-------------------|----------------------------|-------------------------|
| Instrumental              | 226               | 98.26                      | Strongly agree          |
| Value-based (value-rational action) | 216.8            | 94.26                      | Strongly agree          |

In table 2, there are two acts of rationality to measure the rationality of farmers in carrying out the conversion of plantation land into paddy fields in Tadokkong Village, Lembang District, Pinrang District are actions of instrumental rationality and rational actions based on values (value-rational action). The results of the actions of instrumental rationality are based on the rating scale (interval) Very Rational with an average rationality score of 226 and the percentage of agreement of 98.26%. The scale rating according to [10] is the result of the calculation of the highest scale 100 divided by the scales scores used. To see the rationality of farmers doing a land conversion, the researcher uses 5 scale counts. The scales can be seen as the criteria in the feasibility table based on the presentation of the scale according to the total percentage score.

**Figure 1.** The scale of instrumental rationality actions conversion of garden land to rice field.

Where:

| STR | TR | N | R | SR |
|-----|----|---|---|----|
| 0%  | 20%| 40%| 60%| 80%| 100% |

(Result = 98.26%)

The results of the rationality action based on value (value rational action) activities of converting plantation land into paddy fields carried out by farmers on a rating scale (interval) are very rational with an average rationality score of 216.8 and a percentage of approval of 94.26%. The presentation of
the scale according to the percentage of the total score according to [10] in detail can be seen in figure 3.

![Scale of rationality actions based on value (value rational action) conversion of plantation land to paddy field.](image)

**Figure 2.** Scale of rationality actions based on value (value rational action) conversion of plantation land to paddy field.

Where:
- **STR** = Very irrational
- **TR** = Not rational
- **N** = Neutral
- **R** = Rational
- **SR** = Very rational

The indicator to measure farmers' rationality in the activity of converting plantation land into paddy land in Tadokkong Village, Lembang District, Pinrang Regency is the use of increasing land to make it more productive compared to when it was still a plantation land. According to farmers, converting or changing the function of plantation land into paddy fields can improve the benefits of the land. Since it was still a garden area, only a portion of land owned by farmers could provide benefits or increase farmers' income. By changing the land, it can be planted with rice as well as other seasonal crops. According to Wati[11], land conversion activities can increase land use due to the regeneration of less productive land. Thus, the existence of land conversion activities is considered to be able to make land productive again. According to Widiatmaka [12], land improvement (land improvement) are activities that can result in favorable changes to land quality. To determine the type of improvement effort that can be done, it must be considered the characteristics of the land are incorporated in each land quality.

In other words, the conversion of garden land into paddy fields can increase land potential. The land potential has an essential meaning in land management and use. Land that has a high potential for agriculture can produce high-quality plants and more agricultural crop production. Land use should be following the potential of the land owned. Each land has different characteristics. It needs a deeper understanding to study the potency of land use. A high potential land certainly has a positive impact on land use results. Potential land in paddy fields illustrates the ideal and suitable conditions for paddy fields. It is expected to produce high-quality rice and has high economic value [13].

Another indicator of farmers' rationality is to convert land by increasing the selling price even though the farmers do not intend to sell the land that has been printed. However, the farmers need to know the information related to the values of the sale price since it is one of the strong reasons for them to choose land conversion activities. According to Mr. Suparno, one of the farmers who converted plantation land into paddy fields, the price of land in Tadokkong village was classified based on its type. It was divided into three clusters; cluster 1 residential land, cluster 2 land rice fields, and clusters 3 of farmland. Cluster 1 has a relatively high price as well as rice fields. The estate land is sold at a price of 2,000,000-2,500,000.

Based on his statement, the selling price of farmland is at the third class level while the paddy field is at the class 2 level year to year.
The other indicator is the land conversion costs must be spent by the farmers. Currently, land conversion activities in Tadokkong Village are intensively carried out. Thus, inviting the attention of the local government to support or assist the farmers. The farmers no longer pay for printing new rice fields due to the assistance of new paddy printing technology. Generally, external and internal factors encourage the conversion of agricultural land, one of which is the costs must be incurred in the process of land conversion. This factor also increases the enthusiasm of farmers in carrying out land conversion activities. Moreover, farmers and local governments realize that many benefits can be obtained from this activity.

According to Mr. Suparno, one of the farmers who carried out the land conversion, the costs must be incurred by farmers if there is no assistance from the government in new paddy printing technology. The cost must be spent by farmers is IDR 500,000 / hour. Therefore, technology is hired hourly by the farmers. He added that for a land area of 1 hectare, he usually worked for at least 10 hours until the land is immaculate from the remnants of trees, twigs, and tree roots until the land is ready to function as paddy land.

Another indicator of the conversion of plantation land into paddy fields in Tadokkong village, Lembang District, Pinrang Regency is the suitability of the land to be converted. It is considered suitable to converting the garden land into paddy fields in Tadokkong village. The benchmark of this indicator is because the land is flat. It is easier to be accessed by transportation or other agricultural technology. Land suitability in terms of the physical properties of the environment consists of climate, soil, topography, hydrology, and drainage according to productive farming or commodity [14].

This is also directly related to the next indicator namely the geographical location of the area (converted land) and land accessibility. Benchmarks of this indicator are because the location of the land is already side by side with extensive rice fields so that the same type of land. Therefore, farmers decided to convert the land due to its adjacent location to paddy fields. It also facilitates the entry of irrigation water into printed rice fields. In addition, the location of land that has been converted is close to the village making it easier for farmers to access their land.

Since the land is accessible, the farm roads that have been built making it possible to be accessed using transportation. Land conversion farmers in Tadokkong urban village said that the farm road that was created was beneficial for farmers, who used to be only able to reach the land on foot. Additionally, the land is possible to reach agricultural technology/machine tools that are commonly used by farmers such as atractors and combine. According to Hardati [15], providing accessibility ease the moving from one place to another within an area. Therefore, accessibility is closely related to distance and human potential in getting existing services.

The final indicator of the rational actions of farmers to do the land conversion is the area of land converted by farmers. Farmers said that the area of the converted garden is suitable to be used as paddy land. Although the area of farmers' land varies, the land is still appropriate to be used as paddy land because it refers to several previous indicators. According to [16-18], the study of agriculture in agricultural geography is related to activities in the context of space, the location of agriculture as a whole and the activities in livestock crops, collection of outputs and inputs needed for the production of fields (land), power, fertilizer, seeds, pesticides, and others.

4. Conclusion
Based on the discussion, it can be concluded that the rationality of farmers to convert plantation land into paddy fields for the sustainability of land conversion was categorized very rational. It was seen in two types of rationality actions, which are instrumental rational actions and rational actions based on values.

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