

STATUS OF SUSTAINABILITY OF ORGANIC RICE COMMODITIES AS RURAL ECONOMIC POTENTIAL IN BONDOWOSO REGENCY

Herman Cahyo Diartho

Development Economics Study Program, Faculty of Economics and Business, University of Jember, Jember, East Java, Indonesia

*Correspondence Email: hermancahyo.feb@unej.ac.id

Submitted 15 August 2023; Approved 13 November 2023

ABSTRACT

The complexity of organic farming system problems starts from the increasingly scarce availability of land resources, farmers' business capital which is still very limited and marketing access and the organic rice market chain, population growth continues to increase every year and the low quality of community resources, and knowledge in the application of technology and quality standardization will impact on the sustainability of organic rice commodities. The aim of this research is to analyze the sustainability status of organic rice commodities in terms of ecological, economic and social dimensions. The analytical method used in this research is Rapfish which is modified into RAP-Organic rice using the Multidimensional scaling method. The results of research on the multidimensional sustainability status of organic rice commodities including ecological, economic, social and infrastructure & technology dimensions show that organic rice commodities have a fairly sustainable index value with an index value of 73.58, meaning that with this index value all dimensions include: ecological dimension, economic, social and infrastructure & technology influence the sustainability status of organic rice commodities. The implication of the analysis results is that the Regional Government needs to increase attention to organic rice farmer groups regarding the importance of organic rice businesses by making special policies for the development of organic rice businesses to continue to increase the sustainability of organic rice commodities.

Keywords: *organic rice commodities, rap- organic rice, status of sustainability*

BACKGROUND

An organic farming system is an agricultural system that can increase and maintain land productivity so that it can provide sufficient, quality and sustainable food to support local food security, reduce environmental pollution and increase farmers' income. Organic farming is based on minimal use of external inputs and does not use chemical fertilizers and pesticides. The organic farming system has several advantages compared to using non-organic farming, including ensuring the continuity of the agricultural ecosystem, more economical production with higher selling prices, healthier products, guaranteeing sustainability, helping to create farmer independence and having a gender perspective. Organic farming provides good benefits from ecological, economic and social aspects (Indriana et al., 2016).

Bondowoso Regency is one of the areas that has high potential in the food crop subsector, especially in organic rice commodities. One of the sub-districts in Bondowoso Regency that is interesting to study is Wonosari Sub-district because it has a fairly high organic rice harvest area. The

organic rice harvest area in Lombok Kulon Village in the 2018-2022 period experienced positive growth with an average growth of 75.02% with a harvest area of around 70 ha/year. The highest growth rate of harvested area occurred in 2020 at 16.35% from 125 ha increasing to 145 ha, while the lowest growth rate of harvested area occurred in 2022 at 10.00% with a harvested area of 25 ha.

The organic farming system in Lombok Kulon Village, Wonosari District, Bondowoso Regency experiences many challenges caused by three main problems, namely; (1) Ecological problems, increasingly scarce availability of land resources (2) Economic problems, such as farmers' business capital which is still very limited and marketing access and the organic rice market chain (3) Social problems, such as population growth which continues to increase every year and the low quality of community resources, (4) Infrastructure and technology issues, such as knowledge in the application of technology and quality standardization. The complexity of organic farming system problems has an impact on the sustainable status of organic rice commodities as a potential rural economy in Lombok Kulon Village, Wonosari District, Bondowoso Regency. The complexity of the problems in the organic farming system above shows that agricultural development is carried out to strengthen economic growth while ignoring the principles of sustainable development.

The development of regional potential through a commodity approach, especially food crops, is of course not seen from an economic perspective alone, but in terms of facilities that support activities to develop these food crop commodities (Qomariyah et al., 2018). According to Karismawan et al. (2020), the existence of economic potential in an area has no meaning for the economic development of that area if there is no effort to utilize and develop it optimally. According to Muktiyanto & Diartho (2018) stated that proper planning is planning that is based on problems, basic needs and regional potential so that the development carried out can improve the regional economy.

Efforts continue to be made by the Bondowoso Regional Government and the Bondowoso Agriculture Service together with several farmer groups in Lombok Kulon Village, Wonosari District, to limit permits related to development that involves land conversion through regional regulations. Apart from that, the Regional Government is present to provide assistance to develop an organic rice farming system and provide education to farmers regarding the impact of land conversion and the importance of managing agricultural land in an organic farming system and being registered with LeSOS (Seloman Organic Certification Institute) and international organic certification by research institutions. Control Union is based in the Netherlands in order to guarantee the quality of organic rice production and reach a wider market.

Based on the phenomena that occur and awareness of the large role given by the agricultural sector, especially organic rice as a potential for the rural economy in Lombok Kulon Village, Wonosari District, Bondowoso Regency, a study is needed to analyze the sustainability status of organic rice commodities by integrating all aspects and accommodating all multidimensional interests (ecological, economic, social, infrastructure and technology) and determine the indicators that have the highest level of sensitivity in each dimension. Thus, it is hoped that the sustainable status of organic rice commodities can be used as a potential for the rural economy by the community and be able to meet the needs and improve the welfare of the community in Lombok Kulon Village, Wonosari District, Bondowoso Regency, both now and in the future. This research aims to analyze the sustainability status of organic rice commodities in terms of ecological, economic, social, infrastructure and technological dimensions.

RESEARCH METHODS

Data Collection Method

The basic research method used is a quantitative descriptive method. The method for determining the research location was carried out purposively. The area chosen as the research object is Bondowoso Regency where Bondowoso Regency is a fairly large producer of Organic Rice. Sampling in this research was carried out in Wonosari District, this was taken on the basis that Wonosari District has the highest Organic Rice productivity in Bondowoso Regency. The sampling method used in this research is a probability sampling technique using proportionate stratified random sampling. According to Sugiyono (2019) Probability sampling technique is a sampling technique that provides an equal opportunity for each element of the population to be selected as a member of the sample. Meanwhile, the proportionate stratified random sampling technique is a technique commonly used in populations that have a stratified or multi-layered structure. The population taken was 1,971 farmers who planted organic rice in Wonosari District, Bondowoso Regency. Sampling was based on the area of land owned, namely groups of small farmers with land areas $0.1 \leq 0.50$ ha; medium farmer group with land area $0.51 \leq 1$ ha; and large farmer groups with land area > 1 ha. To determine the number of samples to be taken from the total population, use the Slovin formula:

$$n = \frac{N}{1 + Ne^2}$$

Information:

n : Sampel Size

N : Population Size

E : Percentage of inaccuracy allowance due to sampling error that is tolerable or desirable

So, the number of research samples can be calculated as follows:

$$n = \frac{1,971}{1 + (1,971 \times 0,1)^2}$$

$$n = 95.17$$

So the sample obtained was 95 people (after rounding) with an error rate of (10%). A sample of 95 was taken from Lombok Kulon village in Wonosari District.

Analysis Data

The data analysis method used in this research is RAP-Fish (Rapid Appraisal for Fisheries) with the Multidimensional Scaling (MDS) method which was modified to become RAP-Organic Rice (Rapid Appraisal for Organic Rice). The Rapfish method was developed by the University of British Columbia, Canada and was first used to assess the sustainability status of fisheries. This research adopts Rapfish and uses the principles of the Rapfish method. The value of the sustainability status

of organic rice was carried out using RAP-Fish analysis using the Multidimensional Scaling (MDS) method through several stages (Fauzi, 2019), namely

1. Stage of determining the sustainability status attributes of organic rice for each dimension. This determination is made by conducting field observations of problems in each ecological, economic, social and infrastructure & technological dimension.
2. Attribute assessment stage on an ordinal scale based on sustainability criteria for each dimension and ordination analysis based on the Multidimensional Scaling (MDS) method;
3. Stage of index preparation and sustainability status of organic rice.

Table 1. Sustainability Status Categories of Organic Rice on The Results Index Value Analysis Using Multidimensional Scaling (MDS) Techniques

Index Value	Sustainability Status
0.00 – 25.00	Bad (Not Sustainable)
25.01 – 50.00	Less (Less Sustainable)
50.01 – 75.00	Sufficient (Sufficiently Sustainable)
75.01 – 100.00	Good (Very Sustainable)

Source: Fauzi (2019)

Table 2. Variables and Indicators for The Sustainability Status of Organic Rice

Variable	Indicator (Atribut)
Ecological Dimension	Land Ownership Status
	Frequency Of Land Conversion
	Frequency Of Drought
	Availability Of Water
	Control Of The Spread Pests
	Superior Seed Quality
	Soil Fertility
	Intensity Of Plant-Disturbing Organisms
	Land Suitability
	Land Quality
Economic Dimension	Waste Utilization
	Creation Of New Business Opportunities
	Production Costs
	Organic Rice Farmers Profits
	Contribution Of Organic Rice To GRDP
	Market Access
	Organic Rice Productivity
	Capital Independence
Social Dimension	Marketing Chain
	Organic Rice Price Conditions
	Organic Rice Business Feasibility
	Employment In Organic Farming
	Communication Patterns Between Organic Rice Farmers

Infrastructure & Technology Dimensions	The Level Of Farmers' Knowledge About Sustainable Organic Rice
	Public Awareness Of Healthy Food
	The Number Of Organic Farmers
	The Existence Of Organic Farmers
	Application Of Quality Standardization Of Organic Rice Products
	Availability Of Technology And Information On Organic Rice Farming
	Application Of Organic Rice Cultivation Technology
	Seed Quality
	Product Certification
	Availability Of Product Processing Industry

Source: Fauzi (2019), Ristianingrum et al. (2016), Observation, and Interview

RESULT AND DISCUSSION

The Sustainability Status of The Organic Rice Commodity as A Rural Economic Potential in Bondowoso Regency Viewed from The Ecological Dimension

There are 11 attributes to measure the sustainability status of organic rice commodities in terms of ecological dimensions, namely, (1) land ownership status, (2) frequency of land conversion, (3) frequency of drought, (4) availability of water, (5) control of the spread pests, (6) superior seed quality, (7) soil fertility, (8) intensity of plant-disturbing organisms, (9) land suitability, (10) land quality, (11) waste utilization. The value of the sustainability index on the ecological dimension is 68.07. This value indicates the sustainability status of organic rice commodities is in the ordinate scale position between 50.01 – 75.00 and this shows that organic rice farming in rural areas in Wonosari District, Bondowoso Regency on the ecological dimension is in a fairly sustainable state.

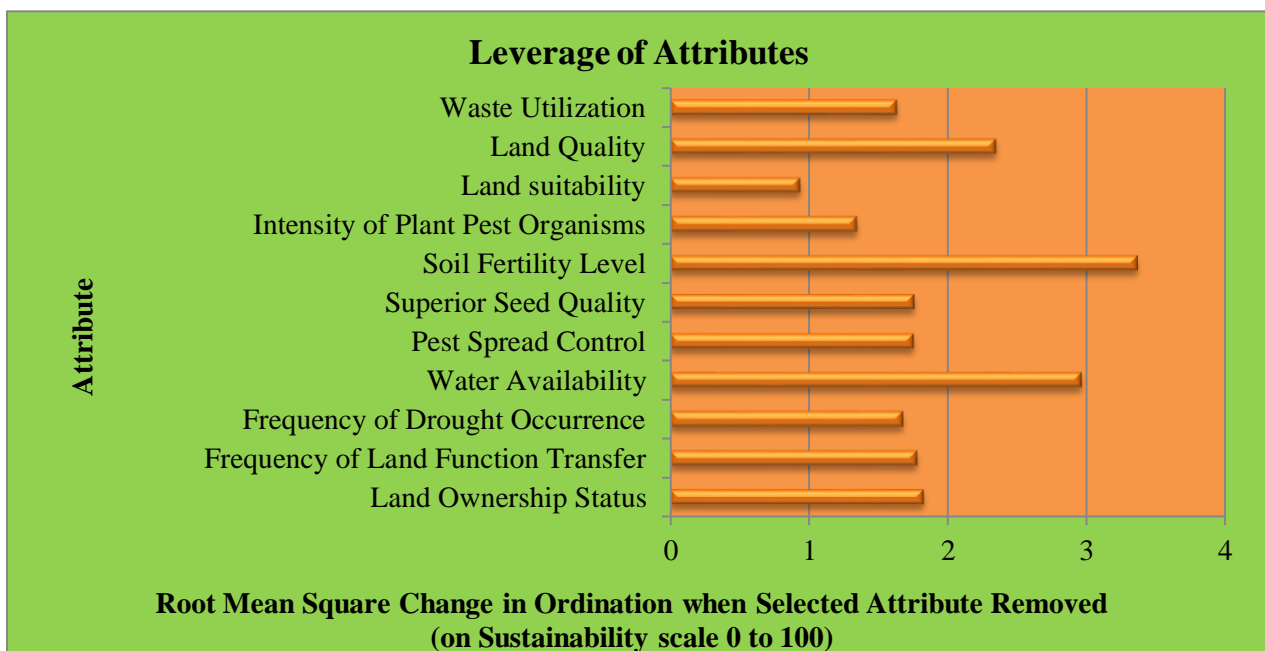


Figure 1. Leverage Analysis of Ecological Dimension Attributes on The Sustainability Status of Organic Rice Commodities in Wonosari District, Bondowoso Regency
Source: Primary Data (2023)

Based on Figure 2 above, it shows that the results of the analysis of leverage attributes or sensitive attributes on the sustainability status of organic rice commodities in Lombok Kulon Village, Wonosari District, Bondowoso Regency in terms of the ecological dimension have an RMS (Root Mean Square) value of $\geq 2\%$, namely: (1) Soil Fertility Level has an RMS value of 3.36% (2) Water Availability is 2.96%, (3) Land Quality has an RMS value of 2.34%, Sensitive attributes are attributes that influence the sustainability status of rice commodities organic in the ecological dimension. Sensitive attributes can be seen from the Root Mean Square (RMS) value. If the RMS value is $\geq 2\%$ then the attribute is included in the sensitive category (Fauzi, 2019). Regarding the sustainability status of organic rice commodities in terms of the ecological dimension, the sensitive attribute that has the largest RMS value is Soil Fertility Level which has an RMS value of 3.36%.

The condition of soil fertility on organic rice farming land in Lombok Kulon Village, Wonosari District, Bondowoso Regency is quite fertile. The condition of soil fertility on agricultural land at the research location was assessed based on the parameters of soil pH, total N content in the soil, P-available elements in the soil, and K-available elements in the soil carried out by the Bondowoso District Agriculture Service. The soil pH value is in the range of 5.8–6.6 where the soil condition is in the fertile category. Some farmers in Lombok Kulon Village, Wonosari District, Bondowoso Regency have used fertilizers and pesticides containing organic plant residues so that soil fertility does not decrease. Soil fertility greatly influences the sustainability of the organic rice business because the organic nature of the product is determined by the condition of the land which does not contain chemical residues from fertilizers and pesticides. According to (Ristianingrum et al., 2016) in his research, land quality greatly influences the sustainability of the organic rice business because the organicity of the product is largely determined by the condition of the land which does not contain chemical residues from fertilizers and pesticides. For this reason, it is necessary to encourage farmers to use organic inputs and return organic material from plant residues after harvest to improve land quality. Furthermore, in the results of research conducted by Vanlauwe et al., (2017) soil fertility determines stability and increased agricultural production.

Apart from soil fertility based on collected farmer statements, water availability (irrigation) is a very important factor in determining the success of organic farming. Organic rice farmers in Lombok Kulon Village, Wonosari District, Bondowoso Regency agree that the water used to irrigate organic rice fields must be free from contamination from various chemicals. Farmers also agree that the water channels used should not be the same as water channels on non-organic rice farms to avoid contamination through water flow. According to Weiner (2017) stated that an agricultural system with an ecological nuance should integrate the ecological system broadly and focus on efforts to maintain and improve agricultural resources, especially in terms of soil fertility, land quality and irrigation processes. In practice, deviation from ecological rules will only have a negative impact on environmental balance. Agricultural businesses depend on soil fertility and water availability (irrigation) (Gunawan et al., 2019).

The Sustainability Status of The Organic Rice Commodity as A Rural Economic Potential in Bondowoso Regency Viewed from The Economic Dimension

There are 10 attributes to measure the sustainability status of organic rice commodities in terms of the economic dimension, namely, (1) creation of new business opportunities, (2) Production costs, (3) organic rice profits, (4) contribution of organic rice to GRDP, (5) market access, (6) organic rice productivity, (7) capital independence, (8) marketing chain, (9) organic rice price conditions,

(10) organic rice business feasibility. The value of the sustainability index on the economic dimension is 78.01. This value indicates the status of organic rice commodity sustainability in the position of the ordinate scale between 50.01 – 75.00 and this shows that organic rice farming in rural areas in Wonosari District, Bondowoso Regency, on the economic dimension is in a very sustainable status.

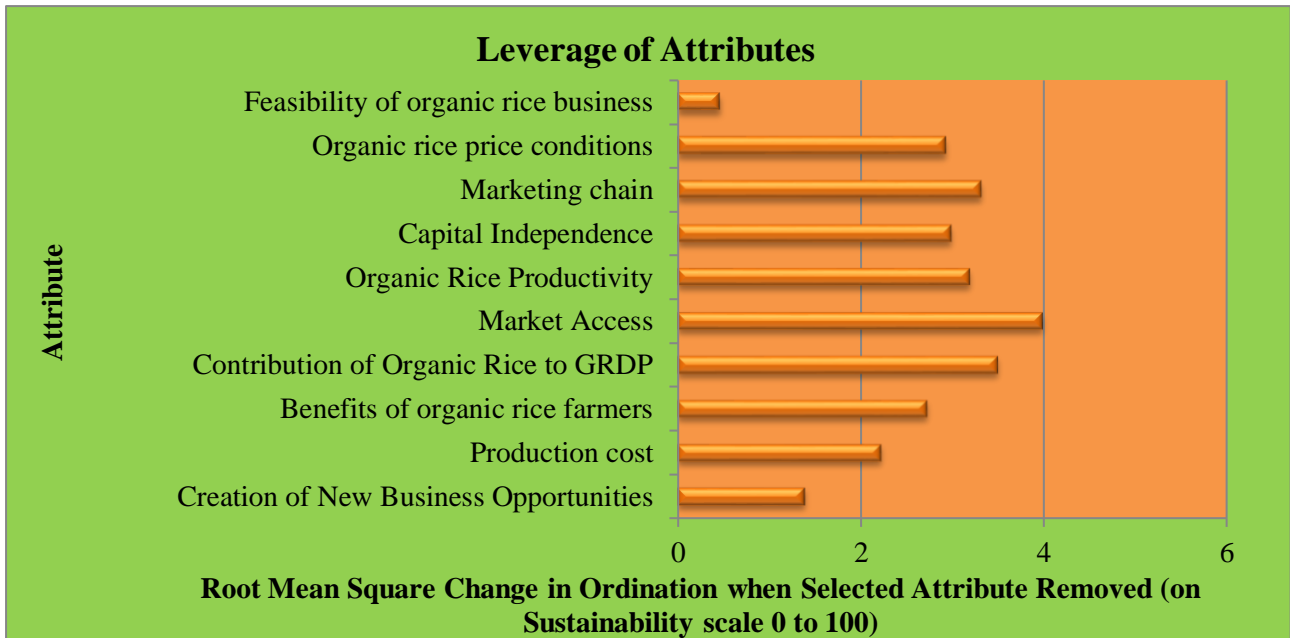


Figure 2. Leverage Analysis Attributes The Economic Dimension to The Sustainability Status of Organic Rice Commodities in Wonosari District, Bondowoso Regency
Source: Primary Data (2023)

Based on Figure 2 above, it shows that the results of the analysis of leverage attributes or sensitive attributes on the sustainability status of organic rice commodities in Lombok Kulon Village, Wonosari District, Bondowoso Regency in terms of economic dimensions have an RMS (Root Mean Square) value of $\geq 2\%$, namely: (1) Production costs have an RMS value of 2.22%, (2) Benefits of Organic Rice Farmers have an RMS value of 2.73%, (3) Contribution of Organic Rice to GRDP has an RMS value of 3.49%, (4) Market Access has an RMS value of 3.98%, (5) Organic Rice Productivity has an RMS value of 3.19%, (6) Capital Independence has an RMS value of 2.98%, (7) Marketing chain has an RMS value of 3.31%, (8) Organic Rice Price Conditions has an RMS value of 2.92%. Regarding the sustainability status of organic rice commodities in terms of the economic dimension, the sensitive attribute that has the largest RMS value is Market Access with an RMS value of 3.98%.

The production of organic rice commodities in Lombok Kulon Village, Wonosari District, Bondowoso Regency has now received market access. The Bondowoso Agricultural Service and the government together with several farmer groups in Lombok Kulon Village have registered with LeSOS (Seloman Organic Certification Institute) and international organic certification by the research institution, Control Union, based in the Netherlands in order to obtain quality assurance from organic rice production and reach a wider market. wide. Bondowoso farmers want to prove that the quality of rice in their area has improved until an international organic certificate is issued. Conditions like this really encourage the sustainability status of organic rice. The Bondowoso District Government will continue to develop organic farming by adding 60 Ha of organic land in Sulek

Village, 20 Ha in Sumbermalang Village and 20 Ha in Lombok Kulon Village. This is done so that rice from Bondowoso will be able to meet market demand and compete in world markets.

The collaboration carried out between the Bondowoso Agriculture Service and the Regional Government together with several farmer groups in Lombok Kulon Village, Wonosari District, obtained market certainty for the production of organic rice commodities. The supply chain for organic rice production has found a party that can connect farmers to larger markets. So far, farmers who are driven by subsistence have often fallen into the hands of middlemen, and middlemen have even been ensnared during the process of planting organic rice seeds. According to Sulistyowati et al. (2013) in their research results, market selection is a strategic decision for producers, where producers can choose any market that can bring prosperity to them and promises a good position in the market. This is in accordance with research by Rasmikayati et al. (2021) that when farmers sell their crops to middlemen or farmer dealers who have low bargaining power and set selling prices and are still unable to provide welfare to farmers. This is because the market information held by middlemen or dealers is better than that of farmers.

The existence of parties who can connect farmers to open greater market access for organic rice production (organic rice) in Lombok Kulon Village, Wonosari District in the value chain of organic rice commodity development also provides benefits for micro business actors, including through related assistance. cultivation, guaranteeing absorption of production results by the market at competitive prices, and providing profits for farmers. According to Gatara et al. (2017), in their research results, farmers who sell their products exclusively to the market will receive the highest average prices, while farmers who sell their products through mediators will receive the lowest homogeneous prices. Selling their produce to the market is an attractive option for farmers, in line with researchers Muktianto & Diartho (2018) that the farming activities carried out by horticultural farmers who sell to the current market are more efficient and the income received by farmers is higher. Market access is very crucial for agricultural commodities, especially organic rice commodities in Lombok Kulon Village, Wonosari District. The collaboration carried out between the Regional Government and the Bondowoso Agricultural Service shows that the Regional Government really cares about what organic rice farmers need now, such as off takers to buy their products.

The Sustainability Status of The Organic Rice Commodity as A Rural Economic Potential in Bondowoso Regency Viewed from The Social Dimension

There are 6 attributes to measure the sustainability status of organic rice commodities in terms of the social dimension, namely, (1) employment in organic farming, (2) communication patterns between organic rice farmers, (3) the level of farmers' knowledge about sustainable organic rice, (4) public awareness of healthy food, (5) the number of organic farmers, (6) the existence of organic farmers. The value of the sustainability index on the social dimension is 76.86. This value indicates the status of organic rice commodity sustainability is in the position of the ordinate scale between 50.01 – 75.00 and this shows that organic rice farming in rural areas in Wonosari District, Bondowoso Regency, on the social dimension is in a very sustainable status

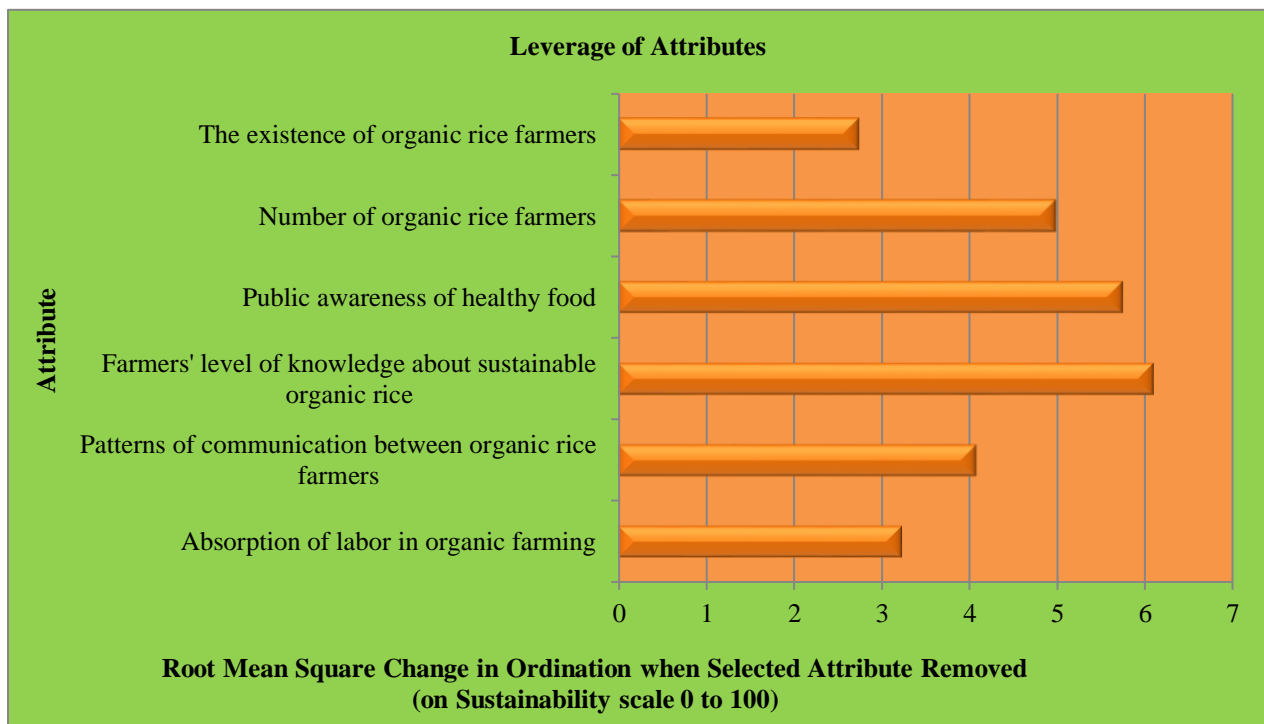


Figure 3. Leverage Analysis of Social Dimension Attributes on The Sustainability Status of Organic Rice Commodities in Wonosari District, Bondowoso Regency
Source: Primary Data (2023)

Based on Figure 3 above, it shows that the results of the analysis of leverage attributes or sensitive attributes on the sustainability status of organic rice commodities in Lombok Kulon Village, Wonosari District, Bondowoso Regency in terms of social dimensions have an RMS (Root Mean Square) value of $\geq 2\%$, namely: (1) Labor Absorption in Organic Agriculture has an RMS value of 3.22%, (2) Communication Patterns among Organic Rice Farmers has an RMS value of 4.07%, (3) Level of Knowledge of Farmers on Sustainable Organic Rice has an RMS value of 6.09%, (4) Public Awareness of Healthy Food has an RMS value of 5.74%, (5) Number of Organic Rice Farmers has an RMS value of 4.98%, (6) The Existence of Organic Rice Farming Groups has RMS value of 2.74%. Regarding the sustainability status of organic rice commodities in terms of the social dimension, the sensitive attribute that has the largest RMS value is Level of Knowledge of Farmers on Sustainable Organic Rice which has an RMS value of 6.09%.

The behavior of organic rice farmers in Lombok Kulon Village, Wonosari District, Bondowoso Regency has met organic farming standards for annual crops. Organic rice farmers already have the knowledge, attitudes and skills according to organic farming standards, starting from soil processing, seed treatment, planting, fertilizing, irrigation, harvest and post-harvest handling. Farmers know how to make and provide organic inputs in organic rice farming. Farmers agree and are able to accept that organic rice farming must be free from chemical contaminants from the beginning of planting to post-harvest. Farmers carry out organic rice farming activities by following operational standards and correct organic rice planting methods and not adding chemical inputs, both on and off farm.

According to Listiana et al. (2020) in their research results, knowledge, behavior and skills will influence the process of implementing a commoditist system which will later have an impact on

production. Knowledge at the initial stage of perception that influences attitudes and then gives birth to actions or actions (skills). Furthermore, according to Fadhilah et al. (2018), in the results of their research, if farmers have good insight into something, it will encourage behavior which in turn will encourage behavior change. Farmers who have good skills can choose their options perfectly so they can know what is efficient and effective.

Based on farmer statements collected, most farmers in Lombok Kulon Village, Wonosari District, Bondowoso Regency have knowledge from land selection, seeding, planting to harvest and post-harvest handling according to organic standards. Farmers know that growing organic rice cannot use chemicals. Farmers also know that choosing land must be in a place where it is possible to get a water supply that is free from chemicals. During land preparation from conventional to organic, organic rice farmers in Lombok Kulon Village, Wonosari District, Bondowoso Regency do not use manufactured chemicals. During that time, farmers are not allowed to return to conventional farming.

This is in accordance with research results from Indeche & Ondieki-Mwaura (2015) that knowledge is determined from experience, years of farming and the farmer's environment. Apart from that, good knowledge about something new will encourage changes in attitudes in individuals, where knowledge about the benefits of something will result in a person having a positive attitude towards that thing, and vice versa. According to Lesmana & Margareta (2017) knowledge is the basis for a child adoption whether it can be done well or not. This is reinforced by the opinion of Azizah & Sugiarti (2020) that knowledge is one component of farmer behavior which is used as a factor in adopting innovation.

The Sustainability Status of The Organic Rice Commodity as A Rural Economic Potential in Bondowoso Regency in Terms Of Infrastructure & Technology Dimensions

There are 6 attributes to measure the sustainability status of organic rice commodities in terms of infrastructure and technology dimensions, namely, (1) Application of Quality Standardization of Organic Rice Products, (2) Availability of technology and information on organic rice farming, (3) Application of Organic Rice Cultivation Technology, (4) Seed Quality, (5) Product Certification, (6) Availability of Product Processing Industry. The value of the sustainability index on the social dimension is 71.36. This value indicates the status of organic rice commodity sustainability is in the position of the ordinate scale between 50.01 – 75.00 and this shows that organic rice farming in rural areas in Wonosari District, Bondowoso Regency, on the social dimension is in a very sustainable status.

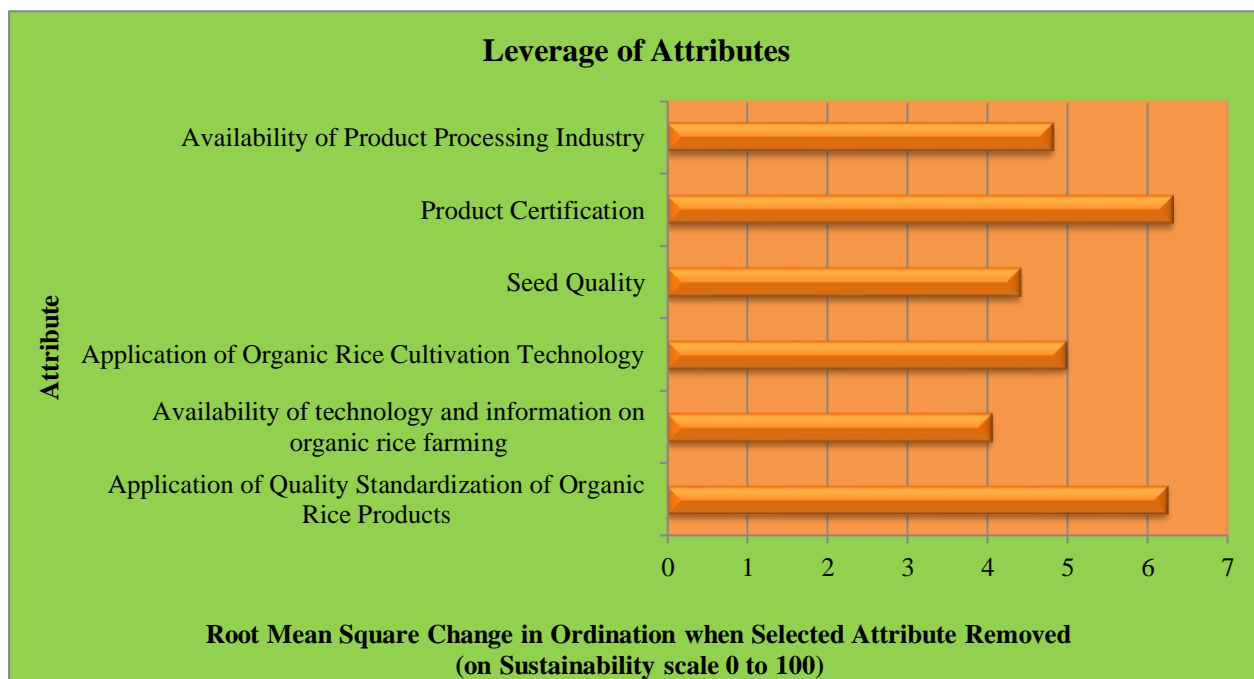


Figure 4. Leverage Analysis of Infrastructure & Technology Dimension Attributes on The Sustainability Status of Organic Rice Commodities in Wonosari District, Bondowoso Regency
Source: Primary Data (2023)

Based on Figure 4 above, it shows that the results of the analysis of leverage attributes or sensitive attributes on the sustainability status of organic rice commodities in Lombok Kulon Village, Wonosari District, Bondowoso Regency in terms of infrastructure & technology dimensions have an RMS (Root Mean Square) value of $\geq 2\%$, including: (1) Application of Quality Standardization of Organic Rice Products has an RMS value of 6.24%, (2) Availability of technology and information on organic rice farming has an RMS value of 4.04%, (3) Application of Organic Rice Cultivation Technology has an RMS value of 4.98%, (4) Seed Quality has an RMS value of 4.40%, (5) Product Certification has an RMS value of 6.31%, (6) Availability of Product Processing Industry has an RMS value of 4.81%. Regarding the sustainability status of organic rice commodities in terms of infrastructure & technology dimensions, the sensitive attribute that has the largest RMS value is Product Certification which has an RMS value of 6.31%.

Product certification is the most sensitive attribute compared to other attributes. The local government and the Bondowoso Agriculture Service together with several farmer groups in Lombok Kulon Village have registered with LeSOS (Seloman Organic Certification Institute) and international organic certification by the research institution, Control Union, based in the Netherlands in order to obtain quality assurance from organic rice production and reach a wider market. wider. Bondowoso farmers want to prove that the quality of rice in their area has improved until an international organic certificate is issued. The quality aspect is the main attribute that determines people's preferences in purchasing rice (Dara Guccione et al., 2021). Furthermore, in Kim et al. (2018) research, organic farming certification is a form of public trust and also a guarantee for the product without causing harm to consumers or producers, which at the same time increases the competitiveness of agricultural products. The value of the sustainability status index in each

dimension starting from the ecological, economic and social dimensions, can be described in the fly chart as follows:

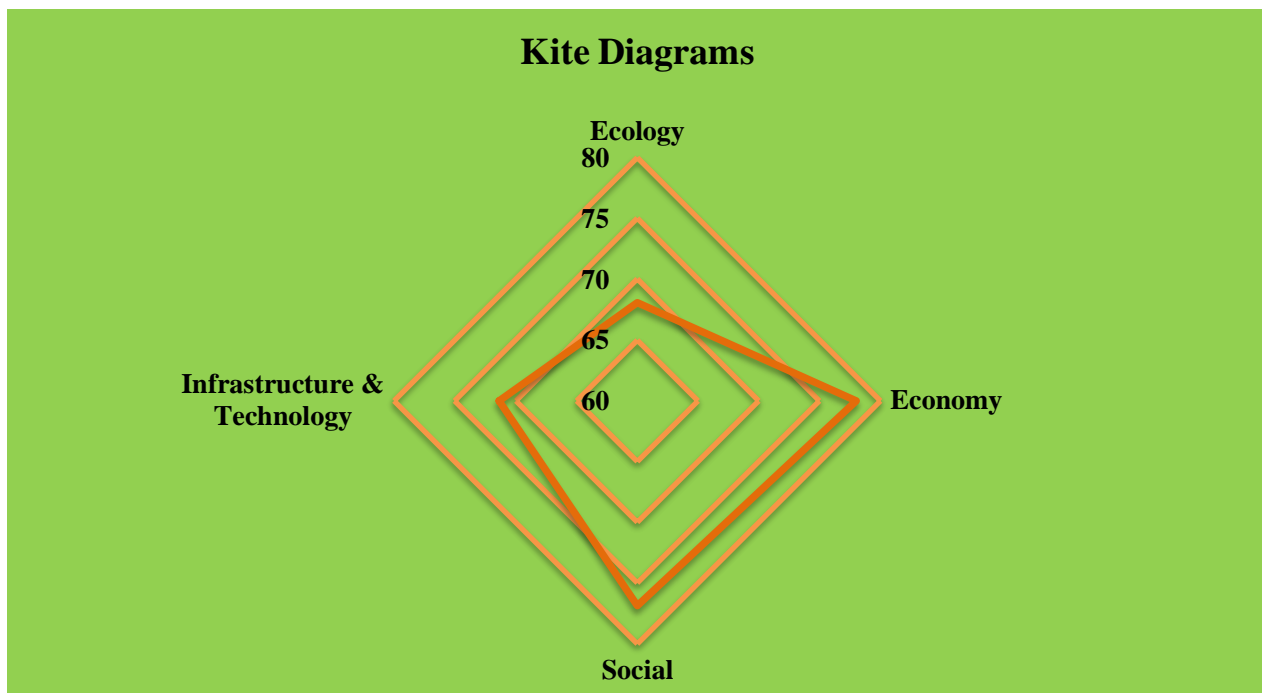


Figure 5. Sustainability Index Value of Organic Rice Commodities in Multi-Dimensional Terms in Wonosari District, Bondowoso Regency
Source: Primary Data (2023)

The results of the multidimensional analysis, namely ecological, economic, social, infrastructure and technological dimensions, show that the sustainability status of organic rice commodities is at a fairly sustainable status with a sustainability status index value of 73.58, this value is on an ordination scale of 50.01 – 75.00. In aggregate, sensitive attributes influencing the sustainability status of organic rice commodities can be grouped into four factors, namely 1) local government policies in dealing with land conversion, 2) organic rice market, 3) farmer knowledge and skills, and 4) product certification. Counseling to farmers regarding organic farming systems, the seriousness of regional government policies in dealing with land conversion and organic rice development as well as infrastructure and technology support by the Regional Government and the Bondowoso Agriculture Service. Several farmer groups in Lombok Kulon Village have registered with LeSOS (Seloiman Organic Certification Institute) and international organic certification by the research institution, Control Union, based in the Netherlands in order to obtain quality assurance for organic rice production so that it can reach a wider market, thereby making organic rice commodities show a fairly sustainable status. For this reason, it is necessary to maintain and improve the quality of human resources and policies of regional governments and agricultural services to support the development of organic rice commodities which can be used as potential for the rural economy.

CONCLUSION AND SUGGESTION

The results of research on the sustainability status of organic rice commodities as a rural economic potential in Bondowoso Regency in terms of ecological, economic, social, and Status of Sustainability of Organic Rice in Bondowoso Regency (Diartho, 2024)

infrastructure & technology dimensions are included in the fairly sustainable category. The dimension that has the most influence on the sustainability status of organic rice commodities as a rural economic potential in Bondowoso Regency is the economic dimension, when compared to other dimensions (ecology, social and infrastructure & technology). The economic dimension has the highest sustainability index value and has a great opportunity to improve the sustainability status of organic rice commodities in Wonosari District, Bondowoso Regency.

To improve the sustainability status of organic rice commodities, improvement efforts are needed, namely 1) increasing the government's attention and commitment by making special policies for the development of organic rice businesses, limiting land ownership by people outside the region to ensure land sustainability and firmness in implementing land conversion policies for preventing conversion of agricultural land; 2) providing facilities and infrastructure assistance for organic rice businesses, namely capital assistance with easy terms and low interest rates, as well as organic certification to increase consumer confidence; 3) establishing partnerships between farmer organizations and marketing institutions or investors to provide market and price guarantees for organic rice as well as support for roads and transportation facilities to increase marketing access for organic rice; 4) increasing the frequency of counseling and training to increase farmers' awareness and skills in organic rice cultivation, as well as the need for assistance for farmers, especially during the transition period; 5) make efforts to disseminate information about the benefits of organic rice farming through mass media to increase awareness of farmers and the public about the importance of organic rice farming so that the development of organic rice businesses can be accelerated with support from the community.

REFERENCES

- Azizah, L. N., & Sugiarti, T. 2020. Tingkat Pengetahuan Petani Terhadap Pemanfaatan Tanaman Refugia di Desa Bandung Kecamatan Prambon Kabupaten Nganjuk. *AGRISCIENCE*, 1(2): 353–366. <https://doi.org/10.21107/agriscience.v1i2.8012>
- Dara Guccione, G., Pagliarino, E., Borri, I., Vaccaro, A., & Borsotto, P. 2021. A Participatory Analysis of the Control and Certification System in the Italian Organic Rice Value Chain. *Sustainability*, 13(4): 2001. <https://doi.org/10.3390/su13042001>
- Fadhilah, M. L., Eddy, B. T., & Gayatri, S. 2018. The effect of knowledges, attitudes and skills in the application of tithout the agribusiness system on the production of rice farmers at Cimanggu Subdistrict, Cilacap Regency). *Jurnal Sosial Ekonomi Pertanian*, 2(1): 39–49. <http://ejournal2.undip.ac.id/index.php/agrisocionomics>
- Fauzi. 2019. *Teknik Analisis Keberlanjutan*. Gramedia Pustaka Utama.
- Gatare, E., Zenon, M., & Oduor, J. 2017. Factors Affecting Market Access In Agricultural Based Projects In Rwanda: A Case Of Home Grown School Feeding (Hgsf) Project In Nyaruguru District. *International Journal of Civil Engineering, Construction and Estate Management*, 5(1): 27–37. <https://doi.org/https://doi.org/10.37745/ijcecem.14>
- Gunawan, G., Hubeis, A. V. S., Fatchiya, A., & Susanto, D. 2019. Dukungan Penyuluhan dan Lingkungan Ekternal terhadap Adopsi Inovasi dan Keberlanjutan Usaha Pertanian Padi Organik. *Agriekonomika*, 8(1): 70. <https://doi.org/10.21107/agriekonomika.v8i1.4951>
- Indeche, A., & Ondieki-Mwaura, F. 2015. Level of knowledge on application of sustainable agriculture practices among rice farmers in Mwea, Kirinyaga County, Kenya. *International Journal of Education and Research*, 3(9). www.ijern.com

- Indriana, H., A Kinseng, R., & Adriana, G. 2016. Dinamika Kelembagaan Pertanian Organik Menuju Pembangunan Berkelanjutan. *Sodality: Jurnal Sosiologi Pedesaan*, 4(2). <https://doi.org/10.22500/sodality.v4i2.13652>
- Kim, S., Kim, T., Smith, T. M., & Suh, K. 2018. Environmental implications of eco-labeling for rice farming systems. *Sustainability (Switzerland)*, 10(4). <https://doi.org/10.3390/su10041050>
- Lesmana, D., & Margareta, M. 2017. Tingkat Pengetahuan Petani Padi Sawah (*Oryza sativa* L.) Terhadap Pertanian Organik di Desa Manunggal Jaya Kecamatan Tenggarong Seberang. *Jurnal Pertanian Terpadu*, 5(2): 18–33. <https://doi.org/10.36084/jpt.v5i2.124>
- Listiana, I., Hudoyo, A., Prayitno, R. T., Mutolib, A., Yanfika, H., & Rahmat, A. 2020. Adoption Level of Environmentally Friendly Paddy Cultivated Innovation in Pringsewu District, Lampung Province, Indonesia. *Journal of Physics: Conference Series*, 1467(1): 012025. <https://doi.org/10.1088/1742-6596/1467/1/012025>
- Muktianto, R. T., & Diartho, H. C. 2018. Komoditas Tembakau Besuki Na-Oogst dalam Perspektif Pembangunan Berkelanjutan di Kabupaten Jember. *Caraka Tani: Journal of Sustainable Agriculture*, 33(2): 115. <https://doi.org/10.20961/carakatani.v33i2.20598>
- Putu Karismawan, M. Alwi, & B. Ismiwati. 2020. Analisis Potensi Ekonomi Pada Setiap Kecamatan Dalam Pengembangan Pembangunan Ekonomi di Kabupaten Lombok Utara. *Elastisitas - Jurnal Ekonomi Pembangunan*, 2(2): 192–198. <https://doi.org/10.29303/e-jep.v2i2.31>
- Qomariyah, S., Mustapit, M., & Supriono, A. 2018. Analisis Potensi Wilayah Berbasis Komoditas Pertanian Tanaman Pangan Serta Kontribusinya Terhadap Perekonomian Kabupaten Bondowoso. *JSEP (Journal of Social and Agricultural Economics)*, 11(1): 66. <https://doi.org/10.19184/jsep.v11i1.6883>
- Rasmikayati, E., Dafa, M., Purnama, Z., Renaldi, E., Tridakusumah, A. C., & Saefudin, B. R. 2021. Akses Pasar Mangga dan Faktor Yang Memengaruhinya (Studi Komparatif antara Kecamatan Greged dan Japara). *Jurnal Pertanian Agros*, 23(2). www.data.jabarprov.go.id
- Ristianingrum, A., Chozin, M. A., Machfud, M., Sugiyanta, S., & Mulatsih, S. 2016. Optimalisasi Keberlanjutan Pengembangan Usaha Padi Organik Di Kabupaten Cianjur, Jawa Barat. *Jurnal Manajemen Dan Agribisnis*, 13(1): 37–49. <https://doi.org/10.17358/jma.13.1.37>
- Sugiyono. 2019. *Metode penelitian kuantitatif kualitatif dan R&D*. Alfabeta.
- Sulistiyowati, L., Natawidjaja, R. S., & Saidah, Z. 2013. Faktor-Faktor Sosial Ekonomi Yang Mempengaruhi Keputusan Petani Mangga Terlibat Dalam Sistem Informal Dengan Pedagang Pengumpul. *Sosiohumaniora*, 15(3): 285. <https://doi.org/10.24198/sosiohumaniora.v15i3.5753>
- Vanlauwe, B., AbdelGadir, A. H., Adewopo, J., Adjei-Nsiah, S., Ampadu-Boakye, T., Asare, R., Baijukya, F., Baars, E., Bekunda, M., Coyne, D., Dianda, M., Dontsop-Nguezet, P. M., Ebanyat, P., Hauser, S., Huising, J., Jalloh, A., Jassogne, L., Kamai, N., Kamara, A., & Mutsaers, H. J. W. 2017. Looking back and moving forward: 50 years of soil and soil fertility management research in sub-Saharan Africa. *International Journal of Agricultural Sustainability*, 15(6): 613–631. <https://doi.org/10.1080/14735903.2017.1393038>
- Weiner, J. 2017. Applying plant ecological knowledge to increase agricultural sustainability. In *Journal of Ecology*, 105(4): 865–870. Blackwell Publishing Ltd. <https://doi.org/10.1111/1365-2745.12792>