INTRODUCTION AND CONTRIBUTIONS OF THE COMMUNAL INTEGRATION BUSINESS MODEL TO MEET THE DEMAND FOR ORGANIC RICE: CASE STUDY OF ORGANIC RICE IN BANYUMAS

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Abstract: Lifestyle and health issues are important indicators in consuming food, especially organic rice. It is no wonder that the demand for organic rice has increased alongside the development of the era. The organic polemic is also one of the things that consumers consider in buying rice. This also happens in the Banyumas community, which has a group of farmers who cultivate organic rice. This research aims to see how significant the contribution of organic rice produced by farmers in Banyumas is and to provide recommendations in the form of introducing a business model for a communal integration system between organic rice farmers. The method used for analysis in this research is the descriptive statistics and contribution analysis. This research was conducted in Kalisube Village and Dawuhan Village in Banyumas District. The data used is on land area, rice production, and conversion to organic rice production. Using contribution analysis helps to determine the significance of the assumed demand for organic rice in the long term when all people consume organic rice. Based on the research results, it was found that the contribution of organic rice in Dawuhan Village was greater than in Kalisube Village. The research results also state that when 15 percent of Banyumas people consume organic rice, there will be a shortage in meeting the demand for organic rice. Communal system business model is a step in solving the problem with shortage. The combination of cooperation and interaction between organic rice farmers in Banyumas Regency is essential to meet the demand for organic rice in the community.

Keywords: Banyumas, communal, contribution, organic rice

INTRODUCTION

The major interest of the centralized agricultural sector in each region is to meet the domestic food demand by maintaining food production and minimizing crop failures. Food availability in various regions in Indonesia indicates that producing regions can survive the harvest season, so food is relatively available. This is specifically to meet the community's food needs, which are still dominated by the need for rice as the *prima donna*. Household access to rice is influence by the price, thus, the concern of food insecure households is still a problem that must be addressed immediately (Eriawati, 2019).

In Indonesia, rice is still a staple food despite the food diversification campaign by the government. The consumption behavior of the Indonesian population has not changed with the government campaign. Rice is difficult to replace; the proof is that Indonesia's per capita consumption in 2018 was recorded at 1,404 kg per week, and this record increased to reach 1,451 kilograms per capita every week in 2021 (BPS, 2021). In recent times, people are beginning to think about the safety of what they consume. Moreover, Margono et al., (2021) stated that excessive rice consumption can cause diabetes. This is made worse by pesticide residues on plants, which cause other additional health problems (Djojosumarto, 2008) (El Mawaddah et al., 2022). The need for organic rice in Indonesia continues to increase along with consumer awareness of healthy lifestyles and the negative impacts of chemicals on food, with large market potential driven by increased farmer productivity (Zulkifli et al., 2015). The demand for organic rice continues to increase from year to year, reaching 14 million tons in 2017 (Indonesian Organic Alliance, 2017). This could be met from the potential for certified organic rice and the existence of farmers who have implemented an organic farming system but do not yet have a special organic certificate. It is recorded that organic land tends to increase every year, reaching 3%, whereas the existing organic land area is 212,696.55 hectares (Novita, 2017).

Banyumas Regency sells two types of organic rice: certified organic rice and organic rice grown using an organic farming system that has yet to be certified (Arimurti et al., 2021). This lifestyle of consuming organic rice occurs not only in urban communities but also in some regional communities. The sale of organic rice in Banyumas Regency has been widely traded in the community, including modern retailers such as Rita Mall, Moro, Aroma, and other agents. In fact, the high demand for organic rice has not been matched by the land area owned by Banyumas Regency. Therefore, it is important to know how significant a contribution to rice production produced by Banyumas Regency is compared to the demand for organic rice consumption in Banyumas Regency. There are only 19 organic lowland rice farmers in Banyumas Regency in 2021. Organic lowland rice farmers are spread across Kalisube Village and Dawuhan Village, Banyumas District (Sularso & Sutanto, 2020). These organic rice farmers are still independent, so a communal platform is needed to accommodate the farmers' development. Organic rice cultivation in Banyumas has the potential for high competitiveness, considering that the selling price of organic rice is more profitable and demand is still not met. Based on the description above, this research aims to determine the contribution of organic rice production to determine the potential for food reserves (food security) in Banyumas Regency and to introduce a business model, namely the integration of a communal system, which organic rice farmers can possibly implement in Banyumas.

METODE

This research uses descriptive analytical methods. The selection of research locations was carried out using purposive sampling. The research location was chosen in Banyumas Regency because this location is one of the locations that is currently changing from non-organic to organic cultivation systems. This research is precisely in Kalisube Village and Dawuhan Village, two villages with farmer groups that cultivate organic rice, namely the Sida Mukti and Among Tani farmer groups. The research location in the two villages is an area that is a pilot

for organic rice in Banyumas Regency. This condition is supported by the achievements of organic rice farmers in Kalisube and Dawuhan Villages, who have cheaper production costs and do not damage the land with chemicals when cultivating rice plants. Unsurprisingly, these two locations are the leading suppliers in meeting the demand for organic rice in the Banyumas Regency(Amani et al., 2024). Both received organic certification from INOFICE (Indonesian Organic Farming Certification) in 2021. The data used in this research is 2021 data, which is for the first year farmers received organic certification from INOFICE. The data used is secondary data sourced from journals, books, and other sources relevant to the research conducted. To answer questions regarding the contribution of organic rice production, the following mathematical calculations can be used (Saputro & Sariningsih, 2020):

$$Z = \frac{Xn}{Yn} X100\% \quad (1)$$

Information:
Z = Production Contribution (%)
Xn = Production Level in the Lowest Area (Kg)
Yn = Production Level in Areas Above (Kg)

Knowing the level of potential food reserves (food security) is based on the production value of organic rice farmers produce (Anggrasari & Saputro, 2021). The organic rice farmers are farmers in Kalisube Village and Dawuhan Village, which are then converted into rice and subtracted from the community's organic rice consumption at the second level of Banyumas Village and District. Mathematically, the calculation of potential food reserves is as follows (Suroso, 2017):

$$\mathrm{PCP} = \mathrm{Rnet} - \mathrm{Kkr} \quad (2)$$

Information:
PCP = Potential Food Reserves
Rnet = Net Production of Rice
Kkr = Cumulative Consumption of Rice

RESULTS AND DISCUSSION

One agenda of activities in the context of national development that is always emphasized is food security. Food security, which is still an important issue, must be pursued towards food independence so that the country succeeds in providing food for all its citizens or communities in terms of diversity, quantity, and nutrition, and this must be able to run sustainably from time to time. The current condition of food consumption in most parts of Indonesia is still dominated by rice. People believe rice is still the favorite and the dominant source of carbohydrates, and some people even think that they have not eaten if they have not consumed rice. Record data from the Ministry of Agriculture in 2018 states that 97 percent of the total population in Indonesia consumes rice as their primary food, even though many regions that previously

consumed local foods such as corn, tubers, and sago have now changed their consumption patterns to rice. The average public rice consumption was recorded at 314 grams/capita/day. Moreover, the population is experiencing relatively rapid growth from year to year, causing rice consumption also to increase. The impact of this problem means that every region must be able to provide rice food at all times, even though agricultural areas have decreased. This heavy burden causes rice procurement to become difficult and food security to weaken. The effects of consuming food in the form of rice all the time also adversely impact health (Sayekti et al., 2020).

Saleh et al. (2007) say that institutions are important in regulating relationships between individuals to control scarce production factors. Institutions have a strategic role, but according to Soekartawi (2002), institutional aspects can be an obstacle in many developing countries, including Indonesia, which are still not optimal. Pakpahan (1991) stated that the farmer's economic organization system consists of several important elements, including institutions and participation. Institutions can be interpreted as game rules and organizations (Sucihatiningsih & Waridin, 2015). The interaction process of its members greatly influences the institution to achieve common goals (Noor, 2015). Community-based institutions need to be built consciously based on need. Strengthening community-based institutions can improve the economic conditions of farming households and farming community institutions, characterized by leadership attitudes and obeying the rules and social norms of society and institutions in the local social order (Andriana & Mahsyar, 2019).

Tompkins and Adger (2004) state that a community-based and communal land management system will build the resilience of the social ecosystem. Management of agricultural land on communal land generally has high equality because all community members can carry it out with the available resources. Implementing an appropriate communal system can manage possible obstacles such as climate change and pest and disease disturbances. The communal system also encourages farmers to form a unified whole with the use of modern technology, which can be used as an alternative solution among Indonesian farmers who are still traditional (Saliem & Ariani, 2002).

The contribution to the production of plants cultivated by farmers can never be separated from the harvest results experienced by farmers. The higher the farmer's harvest, the better the contribution, especially to the farmer's household income (Jusnawati & Pata, 2020). Of course, farming activities cannot be separated from the production process or inputs cultivated to produce products or outputs that farmers will later sell to the market. The rice production process certainly considers several aspects that farmers must consider, namely economic and technical aspects (Jumiati J, 2016).

Organic rice production is one aspect that farmers always await. Farmers who originally cultivated non-organically and switched to organic certainly have their own challenges, not only in the cultivation aspect but also in other aspects. However, the production aspect is the most important aspect; this is related to the food needs of people who consume organic-based food, which is relatively high. The following is data on organic rice production and its contribution.

Table 1. Production and Contribution of Organic Rice in Banyumas District Per Planting Season in 2021

No	Location	Land Area (Ha)	Organic Rice Production (Kg)	Production Contribution (%)
1	Kalisube Village	1.56	10,075	34.85
2	Dawuhan Village	2.76	18,832	65.15
	Banyumas District	**4.32**	**28,907**	**100.00**

Source: Secondary Data Analysis (2023)

Based on Table 1, it can be seen that the area of organic rice cultivation land registered with INOFICE is 1.56 hectares in Kalisube Village and 2.76 hectares in Dawuhan Village. The number of registered organic rice farmers is 19 in 2021, divided into seven people in the Sida Mukti Farming Group, Kalisube Village and 12 in the Marsudi Among Tani Farming Group. Table 1 shows that the two areas that grow organic rice in Banyumas District have a total area of organic rice cultivation of 4.32 hectares. Table 1 also provides information that organic rice production in Kalisube Village reached 10 thousand tons and more than seventy-five kilograms, while Dawuhan Village reached more than 18 thousand tons of organic rice. The contribution of organic rice in Banyumas District is still dominated by farmers in Dawuhan Village, who make a production contribution of 65.15 percent compared to farmers in Kalisube Village. This is because the number of farmers and the amount of land cultivated has different amounts, which affects the production produced.

Table 2. Organic Rice Production and Conversion into Organic Rice, Banyumas District in 2021

Location	Production (Kg)	Net Conversion	Net Rice Production	Rice Conversion	Rice Production (Kg)
Kalisube	10,075	0.826	8,232	0.632	5,203
Dawuhan	18,832	0.826	15,555	0.632	9,831
Banyumas	**28,907**		**23,787**		**15,034**

Source: Secondary Data Analysis (2023)

Based on Table 2, it can be seen that the production of organic dry milled grain in Kalisube Village reached 8,232 kilograms, while in Dawuhan Village, it reached more than 15 thousand tons of rice in the form of milled dry grain. Rice production in Banyumas District reached 15 thousand tons of organic rice, which was divided into the Kalisube area with a record of five thousand tons, and Dawuhan Village reached more than 9 thousand tons. This figure is quite good considering that organic rice cultivation is still new for farmers and can already provide harvests for farmers. Of course, farmers also want a higher price compared to non-organic rice.

Table 3. Banyumas District Organic Rice Needs

Location	Total population	Rice Consumption Per Week (Kg)	Rice Consumption Per Planting Season (Kg)	*Assumption of the number of people consuming organic (%)	The Need for Organic Rice (Kg)
Kalisube	3,933	1.565	86,172	15	12,925
Dawuhan	4,575	1.565	100,238	15	15,035
Banyumas	52,878	1.565	1,158,556	15	173,783

Source: Secondary Data Analysis (2023)

Based on Table 3, it can be seen that the population in Kalisube Village reached 3,933 people, while in Dawuhan, it reached 4,575 people. The community's weekly rice consumption reaches 1.5 kilograms every week, so if organic rice takes up to 3.5 months to harvest, Kalisube Village's rice consumption reaches 86 thousand tons. In contrast, Dawuhan Village reaches 100 thousand tons. According to the Ministry of Foreign Affairs, the number of people who have started consuming organic food has reached 15 percent (Ministry of Foreign Affairs, 2021). Of course, this is projected to increase as public awareness increases. The need for organic rice in Kalisube Village per planting season, based on Table 3, is 12,925 kilograms, while in Dawuhan Village, it is 15,035 kilograms.

Table 4. Banyumas District Organic Rice Food Reserve

Location	Rice Production	Consume Organic Rice	Food Reservesi
Kalisube	5.203	12.925	(7.722)
Dawuhan	9.831	15.035	(5.204)
Banyumas	15.034	173.783	(158.749)

Source: BPS Data Processed (2023)

Table 4 informs that food reserves, if it is assumed that 15 percent of the total population in the study area consumes organic rice, will fall into the food insecure category. This is due to the unavailability of food stocks due to a lack of production from the area concerned. Table 4 states that Kalisube Village requires organic rice production of 7,722 kilograms. While Dawuhan Village needs an additional 5,204 kilograms of organic rice.

Based on the research results, it was found that the contribution of organic rice production in Kalisube Village and Dawuhan Village was quite good. However, there was a need to increase production considering that if it was assumed that people who were aware of organic rice consumption were 15% of the total community, then both regions experienced a food shortage of organic rice. This has of course been attempted by the two regions by increasing the area of organic rice planting they have. In fact, in 2023, Dawuhan Village added organic treatment to rice cultivation, covering an area of 10 hectares. Most of the 10 hectares in question have started using 100 percent organic and non-pesticide fertilizer (Yandip, 2023). Apart from expanding planting, it is also necessary to form a system between regional locations called a communal system. The system in question is a system that can accommodate organic rice products originating from various regional clusters of organic rice, which are starting to emerge

in several areas of Banyumas Regency. It would be difficult if each organic rice farmer had to fight alone on behalf of the group. However, it would be easier if there were communal cooperation that forms interactions between farmers in each cluster in the Banyumas Regency. The simplicity of the communal introduction system, if implemented by organic rice farmers in Banyumas, will be depicted in the following diagram.

The contribution of this research lies in the anticipatory steps that can be taken by farmers in Bayumas Regency to face the large demand for organic rice. The problem arises with the assumption that if all people change their perception of consuming food in the form of organic rice, more production is needed. This can also be seen from Table 1 to Table 4 that the needs and consumption of the community in Banyumas have been well mapped to provide information on the amount of consumption and rice needs of the community in Banyumas Regency. The contribution of this research produces the fruit of thought from researchers by reviewing various existing literature reviews to present a concept, namely the integration of communal systems. With the existence of communication efforts with a centralized system, organic farmers who already have certificates can collaborate with various farmers in Banyumas Regency who have implemented an organic farming system on the rice they cultivate. Providing assistance and collecting output at the same point will facilitate marketing and efforts to meet the demand desired by the community. It is noted that several farmers in Banyumas Regency have started farming organically but do not yet have a certificate, as shown in Figure 1. Figure 1 illustrates how this introduction system can be implemented.

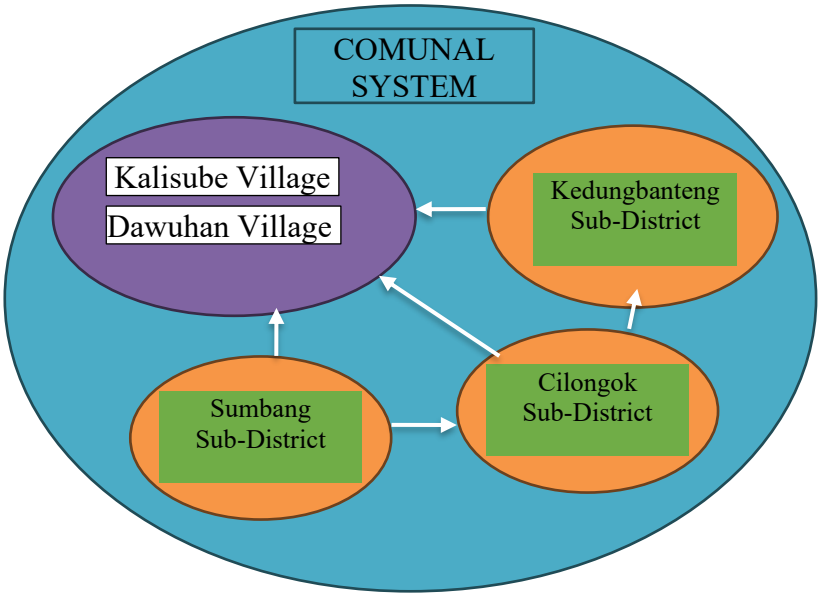

Figure 1. Introduction to the Communal System for Organic Rice
Source: (Dewati & Saputro,2023)

Based on Figure 1, it can be seen that there are other locations where there are farmers who cultivate organic rice but do not yet have organic certification. Three locations include Sumbang District, Cilongok District and Kedungbanteng District, with several farmers who have started developing organic rice. Kalisube Village and Dawuhan Village in Banyumas

District can become a trend center for the three regions and other regions that want to develop organic rice production, and in extreme cases, they can even supply cultivation packages to other farmers who want to cultivate organic rice. Seeing the high demand for organic rice, if we rely only on production from Dawuhan and Kalisube Villages, we will not be able to meet market needs as shown in table 4. The inability to meet market demand can later be supported by the three other regions that have started producing organic rice so that the four regions can interact with each other. Farmers need to embrace each other so everyone can achieve prosperity at the same level. Of course, the hope of farmers growing organic rice is to get a high selling price so that it will be different from the selling price for inorganic rice. A system like this has been implemented by organic vegetable farmers on the slopes of Mount Merbabu. Organic vegetable farmers form a community, namely a communal system with a team that will distribute orders to farmers so that all the harvest will be adequately absorbed in the market. The organic certification you have will also be one considering that obtaining organic certification is not easy apart from the high price but also requires consistency so that the cultivation land is sterile and organic. Therefore, there is also a need for assistance from farmers who are already adept at cultivating organically to local farmers or new farmers with an advanced enthusiasm for cultivating organic plants. This communal system has a weakness: it is prone to conflict. However, this is usually anticipated by the existence of a good and transparent institutional system, so special figures are needed to handle it. This way, farmers' trust in these figures can be used as role models, and the communal system will run well. The hope is that if this system is implemented, production constraints will no longer be an obstacle. The communal system will open organic markets outside the region when it can meet domestic needs.

Strengthening the introduction of communal business models must also be balanced with the role of good institutions. The strategy for developing farming activities cannot run well if the role of good institutions does not support it. The role of interaction between farmers, farmer groups, and combinations of farmer groups is important to continue organic farming activities. Institutions are also needed to advance the economic structure by regulating the potential of which regions can be maximized to meet each other's needs for organic rice consumers. Strengthening institutions will also affect farmer welfare. The existence of institutions can also accommodate various things ranging from capital and preparation of production facilities to marketing of farmers' organic product production. The contributions and benefits of strengthening institutions will undoubtedly encourage this communal system to run over time. The institutional aspect can also reduce conflicts between farmers by having clear rules and operational standards for organic rice production so that the quality of organic rice produced between farmers between regions remains of the best quality. Institutions can also encourage groups to move forward together so that internal and external strengthening occurs over time. The existence of institutions will also make farmers more efficient in carrying out their farming activities. Institutional-based social capital will also increase the enthusiasm for interaction within the organization, which will continue the sustainability of the communal organization that will be formed.

A well-organized and well-running communal system will certainly help other farmers who are starting or pioneering organic will be helped by the many mentoring. In addition, this

communal system is also a unified system that overcomes the limited capital owned by farmers. The communal system that is formed must, of course, have good quality control so that it will be in line with the products produced both from farmers who are accustomed to growing rice organically and other supplier farmers, both new and those who already have experience growing organic rice. This will be good because the quality standards of the products produced are the same. The same product yield standards will certainly facilitate the product marketing system, especially in the target market. The implementation of this communal system also requires support from the local government in its implementation. Products produced with the same brand with quality control and quality control must also be produced with maximum production. Moreover, organic rice is currently in quite good demand in Banyumas.

The communal introduction system formed in the creation of the same brand production will certainly become an icon or production advantage of a region. Maintaining the brand with this communal system also needs to be supported by strong capital, considering that organic cultivation is not cheap. The strength between woven farmer groups must also be strengthened from the institutional side that is formed so that the orientation of all farmers who are members of the communal system is mutually beneficial. This institutional strengthening is also an effort to maintain long-term existence from the onslaught of competitors. The similarity of products and quality with the same branding in the communal system must also be regulated so that it does not cause disputes between farmers. The rules must be conceptualized and systematic, both legal rules and intellectual property in them. All farmer members need to know this so that they understand the limitations that are allowed and so that the communal concept that is implemented can run as it should.

Competition is commonplace, especially in the free market era. Competition between similar products occurs because products such as organic rice are widely produced. The communal system must also have a trusted organic institution so that consumers will be more confident in buying the products sold. The emphasis of the communal system is not only on unifying products with one brand but also on marketing. Guarantees of marketing networks must also be adequately formed for the Banyumas regional food share and expansion outside the region. The communal system can also establish this clarity by collaborating with various supermarkets and shops that sell organic rice (Farida & Trihastuti, 2021). The ease of marketing from a communal system with a wide network will make the costs incurred more efficient. Moreover, if the communal system that is formed is able to find end consumers directly, this will make it easier for goods to be distributed directly with the cost efficiency that occurs. Large-scale packaging carried out with a communal system should also be able to make the packaging costs incurred more efficient. Uniform packaging with the same brand and measurable quality can be a successor in the development of organic rice that is being pursued in Banyumas. The communal system also provides many benefits, such as resource efficiency, economic empowerment, and technological innovation. By combining resources such as organic-based production facilities and equipment, farmers can reduce operational costs. Economic empowerment for new farmers who want to join or to switch to an organic system is an additional benefit of the existing communal system. The communal system also provides ease of technology transfer and innovation among group members, thereby increasing productivity. Despite its many advantages, the communal system faces challenges, such as

coordination between members and dependence on coaching. Coordination between members requires good communication to resolve problems that arise in joint management. The success of this system often depends on support from extension agencies and the government to provide training and technical assistance. Overall, the communal system in organic rice farming is a collaborative approach that can improve the sustainability of farming efforts but requires good management to overcome existing challenges.

CONCLUSION AND RECOMMENDATION

Based on the research results, two locations in Banyumas Regency, namely Kalisube and Dawuhan villages, reached 10,075 and 18,832 kilograms of rice production per year. The demand for organic rice in the Banyumas Regency has not been optimally met, so strategic steps are needed through the implementation of a communal system for organic rice farmers in the Banyumas Regency. The implications of this system, if implemented, will be to open up interaction and cooperation between other farmers to start implementing organic rice cultivation with Kalisube and Dawuhan farmers as mentors. Many areas in Banyumas Regency have planted organic rice but still need further assistance. By embracing farmers from outside the region and creating a communal system, each region will meet each other's needs. The development of an organic farming system, in addition to being supported by implementing a communal system, must also be supported by strengthening existing institutions. The role of institutions can improve farmer welfare by providing a forum for various things such as lending, preparing production equipment, and assisting in marketing organic rice produced by farmers in Banyumas.

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