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Research article

Analysis of Profit in Organic and Conventional Paddy Farming in Two Adjoining Villages

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Abstract: In Java Island, where half of Indonesia's population resides, increasing rice farming efficiency to increase rice production becomes the alternative approach. Despite some regions being vulnerable to flooding, East Java Province is one of Indonesia's top paddy producers. Compared to non-organic paddy, organic paddy produces less and is less productive. The time it takes to switch from conventional to organic farming and the significant impact of input use are the barriers to organic paddy production and productivity. This study analyzes the farmers profit from conventional and organic paddy farmers in East Java Province. The research was conducted in Mulyo 2 group with 34 conventional farmers; meanwhile, the Sumber Makmur 1 group with 32 organic farmers was used as samples. The data used in this research was data from farming during the rainy season of 2023-2024. The data was analyzed by using SPSS statistics version 26.0. The results showed that the profit farmers in Sumber Makmur 1 group made from selling their organic paddy was more than the profit farmers in Mulyo 2 group made from selling their conventional paddy. The lower variable and fixed costs incurred in the Sumber Makmur 1 farmer group support the higher profit. Compared to conventional paddy, organic paddy produces more and sells for a higher price, spending less on variable, fixed, and total costs.

Keywords: Conventional farming; Organic farming; Production paddy; Welfare

1. Introduction

Global market changes and other trends and events, like climate change, have recently put agricultural resilience to the test and raised societal concerns about environmental issues and climate change. Many people in Indonesia, an agricultural nation, live as farmers [1]. One of the industries with a significant impact on the Indonesian economy is agriculture. As a source of income, creating jobs, reducing poverty, and ensuring food security, the agricultural sector is crucial to economic growth [2]. In Indonesia, rice plants are grown in every province, and the production quantity varies. For the 2019-2022 period, ten of Indonesia largest rice-producing provinces, i.e., Aceh, North Sumatra, West Sumatra, South Sumatra, Lampung, West Java, Central Java, East Java, Banten, and South Sulawesi [3].

Both conventional and organic farming methods are being employed to maintain the resilience of Indonesia's agricultural sector, particularly in rice

production. Conventional farming systems employ more chemical pesticides and fertilizers, which raises input costs and promotes production over environmental sustainability. In organic system farming, natural ingredients are used instead of chemicals, fertilizers, and pesticides, and environmental sustainability is considered while maximizing quality and productivity [4]. Input costs are typically lower than those of conventional systems because the fertilizers and pesticides used are non-chemical and are made from plant and animal waste and nitrogen-fixing cover crops. Variations in how production inputs are used will affect both the environment and output [5]. Compared to traditional farming, organic farming will produce more rice, improve product quality, and boost farmers income [6],[7]. On the other hand, the other research claims that rice production is lower in organic systems than in conventional ones [8],[9].

In 2022, total land in Indonesia was only 0.1 percent (87.195 hectares) of organic farming. Therefore, it is evident from the statistics that the majority of farmers in Indonesia continue to employ conventional farming as their primary strategy [10]. In 2023, the largest producer of paddy in Indonesia is East Java, with a total production of 9,591,422 tons [11]. In this province, there are two villages designated for paddy planting: Sumber Ngepoh village and Mulyoarjo village. Paddy is planted conventionally by every farmer in Mulyoarjo village. In the meantime, farmers in the village of Sumber Ngepoh plant rice organically. Conventional farming can have an adverse long-term effect on the environment by using chemical fertilizers, which can lower soil productivity, and pesticides, which can upset the ecosystems delicate balance. Moreover, increased chemical pesticides and fertilizers can affect crop productivity and worsen natural resource quality [12]. This claim makes it evident that conventional and organic farming profits differ. Conventional farmers prioritize their bottom line over organic farming. Consequently, every conventional farmer should thoroughly and carefully compare the profits earned switching from organic to conventional agriculture in light of the shift in profits [13].

According to the analysis of income disparities, all of these studies conclude that farmers using organic systems earn more than those using conventional systems. Regarding the various tests for income and production, they both demonstrated notable distinctions between the income and output of rice farmers using organic and conventional systems [14,15]. The findings of these investigations demonstrate that rice production in conventional and organic systems results in varying conditions in various regions and eras. This suggests a production irregularity. Farmers should practice organic farming since farming aims to make a lot of money, and organic rice farming yields higher profits than conventional rice farming. In the context of achieving sustainable livelihoods in organic and conventional farming, little is known about the difference in profits between conventional and organic paddy farming. Additionally, limited studies have analyzed the income of conventional and organic rice farming. This study compares farmers' profit margins in Sumber Ngepoh village organic paddy farming with conventional paddy farming in Mulyoarjo village. The entire cost of production serves as the foundation for the analysis (variable, fixed, and total cost) and the revenue from selling the paddy.

2. Materials and Methods

This study employs a quantitative descriptive approach, which analyzes organic and conventional paddy farming data to provide a comprehensive overview of the profits gained by farmers from their paddy farming. The research was conducted in Malang district, a rice production center in East Java province. Respondents were selected from two farmer groups: Mulyo 2 in Mulyoarjo village, consisting of 38 conventional paddy farmers, and Sumber Makmur 1 in Sumber Ngepoh village, which comprises 35 organic paddy farmers. Since this study is quantitative, the sample size from the total of farmers in each farmers group is determined using the formula developed by Krejcie and Morgan [16]. The formula is written as follows:

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)} \tag{2.1}$$

Where:

s = Required sample size

X^2 = The table value of chi-square for 1 degree of freedom at the desired confidence level (1.960 x 1.960 = 3.841)

N = The population size

P = The population proportion (assumed to be 0.50 since this would provide the maximum sample size)

d = The degree of accuracy expressed as a proportion (0.05)

According to the formula, thirty-four conventional paddy farmers from farmer group Mulyo 1 and thirty-two organic paddy farmers from Sumber Makmur 2 are the respondents in this study. According to Cohen et al. [17], a minimum sample size of 30 is required for quantitative research that uses statistical analysis of the data gathered. These sample sizes meet their requirements. Furthermore, it was confirmed by Hogg et al. [18] that a sample size larger than 25 or 30 would typically yield a good approximation. Data from farming during the 2023–2024 rainy season served as the basis for this study.

Data from respondents was gathered through in-depth interviews with farmers using a structured questionnaire. The questions posed to farmers were regarding their demographic characteristics (specifically gender, age, education, marital status, and number of family members) and their paddy farming practices (specifically land area, paddy seed usage, fertilizer and pesticide application, labor usage, paddy yield, and paddy selling price). The validation process for the questionnaire was conducted by asking an expert with expertise in organic and conventional paddy farming to review and provide input on the questionnaire. A pilot testing was also conducted by piloting the questionnaire to 7 respondents to ensure that the questions can be understood and answered well.

The data was analyzed by using SPSS statistics version 26.0. The following procedures were carried out in processing data using SPSS: (a) determining the null and alternative hypothesis to test data normality and to test two farmer group means for production costs, production, revenue, and profit, (b) entering data from farmer's interview into SPSS, and (d) processing data, specifically testing data normality and also conducting the t-test.

According to Debertin [19], the costs of production that change depending on the amount of output the farmer produces are referred to as variable costs in this study, while fixed costs are those that the farmer must pay whether or not production occurs. The fixed costs in organic paddy farming are the tax of the paddy field and organic certificate issued by the Organic Certification Body (LeSOS (LSO-005-IDN)), and in conventional paddy farming is only tax on paddy fields. Meanwhile, the costs involved variable costs in organic paddy farming are the cost to rent tractors for land preparation, pay workers that plant paddy seedlings, replace dead-paddy plants, weeding, and chasing birds away as well as harvesting paddy. Meanwhile, the costs that are involved into the variable costs in conventional paddy farming are the cost of purchasing farming input (paddy seeds, fertilizers, pesticides, and bird nets) and labor payments (land preparation, planting paddy seedlings, replacing dead-paddy plants, and weeding, as well as harvesting). Since farmers in both groups only use hoes and sickles for farming activities and rent tractors for plowing, equipment depreciation was not calculated because it is not applicable in this context. Total costs are the result of adding fixed costs to variable costs. Debertin (2012) also explained that total revenue was the sale of all the output farmers produce at the going market price. Hence, the farmer's profit equals total revenue minus total cost.

Since each respondent in the two villages has a different amount of land for farming, the information about farming inputs, production costs, yields, selling prices, and profit was standardized on a per-hectare basis. The following conversion factors were used to facilitate comparison: 1 hectare is equivalent to 10,000 square meters (m^2), 1 ton is equivalent to 1,000 kilograms (kg), and 1 quintal is equivalent to 100 kg.

Given that this research employs parametric statistical analysis, the data are assumed to be normally distributed. Therefore, the Kolmogorov-Smirnov test was used in this study. This is because the Kolmogorov-Smirnov test, with a significant value of more than 0.05 ($p \geq 0.05$), was employed to test whether or not a sample representing a population is normally distributed [20]. This study employs t-tests, which assume that the samples are normally distributed. The t-tests were used to compare two farmers' group means for variable

costs, fixed costs, total costs, production, revenue, and profit. The acceptance and rejection of the null hypothesis (H_0) in this test is based on a significance level (α) of 5% (0.05). If the value of t calculated is greater than that of the t table, the null hypothesis (H_0) will be rejected. The t-test's outcome will be utilized to identify the more lucrative farming.

3. Results and Discussion

3.1 Demographic characteristics of respondents

The demographic characteristics of organic farmers in the Mulyo 1 farmer group and Sumber Makmur 2 farmer group, including age, education, marital status, and household size, are essential for understanding their background characteristics. Table 1. summarizes the demographic characteristics of organic farmers in the Mulyo 1 farmer group and conventional farmers in the Sumber Makmur 2 farmer group.

Table 1. The Demographic Characteristics of Farmers

Characteristics	Organic		Conventional	
	Frequency	%	Frequency	%
1. Gender				
a. Male	100	100.00	100	100.00
b. Female	0	0.00	0	0.00
2. Age class				
a. 40-44 years old	0	0.00	2	5.88
b. 45-49 years old	5	15.63	2	5.88
c. 50-54 years old	7	21.88	4	11.76
d. 55-59 years old	8	25.00	7	20.59
e. 60-64 years old	4	12.50	6	17.65
f. 65-69 years old	6	18.75	8	23.53
g. 70-74 years old	2	6.25	4	11.76
h. 75-79 years old	0	0.00	1	2.94
3. Level of formal education				
a. Elementary school	27	84.38	20	58.82
b. Junior high school	5	15.63	10	29.41
c. Senior high school	0	0.00	2	5.88
d. Diploma in 3 years	0	0.00	1	2.94
e. Bachelor	0	0.00	1	2.94
4. Marital status				
a. Single	0	0.00	1	2.94
b. Married	31	96.88	31	91.18
c. Widower	1	3.13	2	5.88
5. Household size				
a. 1 person	0	0.00	1	2.94
b. 2 people	9	28.13	7	20.59
c. 3 people	13	40.63	11	32.35
d. 4 people	8	25.00	9	26.47
e. 5 people	2	6.25	4	11.76
f. 6 people	0	0.00	2	5.88

According to Table 1., it can be seen that all of the respondents are male. This indicates that as heads of households, they have a responsibility to manage their paddy fields as a source of income to meet the living needs of their household members. Furthermore, most respondents in both farmers groups fall within the age range of 50 to 69. This shows that respondents are approaching an unproductive age period. This finding is consistent with Utari et al. [21], who stated that humans are considered productive between the ages of 15 and 64.

Referring to Table 1, most respondents in both farmers groups have completed elementary or junior high school education. In terms of marital status, the majority of respondents in both farmers groups are married. Additionally, most farmers' households comprise 2-4 family members. All respondents in both farmers groups own only paddy field land. They do not have any side area farms. Additionally, respondents in the Sumber Makmur 1 farmer group rear livestock, such as cows, goats, and chickens, in their yards, where the livestock waste is a source of organic fertilizer for their paddy plants.

3.2 Kolmogorov-Smirnov test

The Kolmogorov-Smirnov test results show that all of the data collected from respondents are typically distributed. Significant (Sig.) values demonstrate that all data have values greater than 0.05. Table 2. displays the Kolmogorov-Smirnov test results.

Table 2. Tests of Normality: Kolmogorov-Smirnov test

A. Organic paddy farmer group

The data of	Statistic	df	Sig.	Std. Deviation	Mean	
					Statistic	Std. Error
Variable Cost	0.138	32	0.125	1079031.579	7099299.50	190747.637
Fixed Cost	0.139	32	0.118	68186.034	244868.06	12053.702
Total Cost	0.130	32	0.186	1100309.600	7344167.53	194509.095
Production	0.124	32	0.200	915.478	7121.81	161.835
Revenue	0.124	32	0.200	4577358.001	35609270.84	809170.221
Profit	0.114	32	0.200	4287642.882	28265103.25	757955.339

B. Conventional paddy farmer group

The data of	Statistic	df	Sig.	Std. Deviation	Mean	
					Statistic	Std. Error
Variable Cost	0.103	34	0.200	8670702.828	17122722.74	1487013.267
Fixed Cost	0.080	34	0.200	177933.109	430034.74	30515.276
Total Cost	0.101	34	0.200	8758935.743	17552757.38	1502145.087
Production	0.142	34	0.080	2390.048	6015.26	409.890
Revenue	0.144	34	0.072	10971596.461	27738962.21	1881613.270
Profit	0.139	34	0.095	7202387.264	10186204.79	1235199.225

3.3 T-test

The T-test result demonstrates differences in the means for variable costs, fixed costs, total costs, production, revenue, and profit between the two farmer groups. The findings based on Table 3. indicate that the Significant (Sig.) values are less than 0.05 in the Sumber Makmur 1 and Mulyo 2 farmers' groups. It suggests that a notable distinction exists in the economic performance components between the organic paddy farming practiced in Sumber Makmur 1 and the conventional paddy farming practiced in the farmer group of Mulyo 2.

Table 4. presents a comparison of the mean values for variable costs, fixed costs, total costs, production, revenue, and profit between the two farmer groups. The mean difference is caused by the different ways of planting paddy that respondents applied: planting paddy organically and planting paddy conventionally. The different ways lead in agricultural inputs, namely organic fertilizers and pesticides used in planting paddy organically, and chemical fertilizers and pesticides used in planting paddy conventionally. This causes differences in production expenses that need to be paid by among the respondents and the total paddy that they harvest. The sale of conventional and organic paddy in different quantities and prices causes the difference in revenue and profit earned by organic and conventional farmers.

Table 3. T-tests Results

A. Organic paddy farmer group

Mean of	Unit	N	Mean	Std. Deviation	Std. Error	t	df	Sig. (2-tailed)
Variable cost	IDR	32	7099299.50	1079031.579	190747.637	-6.686	34.085	0.000
Fixed cost	IDR	32	244868.06	68186.034	12053.702	-5.644	42.987	0.000
Total cost	IDR	32	7344167.53	1100309.600	194509.095	-6.740	34.106	0.000
Production	KG	32	7121.81	915.478	161.835	2.511	42.979	0.016
Revenue	IDR	32	35609270.84	4577358.001	809170.221	3.843	44.707	0.000
Profit	IDR	32	28265103.25	4287642.882	757955.339	12.475	54.330	0.000

B. Conventional paddy farmer group

Mean of	Unit	N	Mean	Std. Deviation	Std. Error	t	df	Sig. (2-tailed)
Variable cost	IDR	34	17122722.74	8670702.828	1487013.267	-6.686	34.085	0.000
Fixed cost	IDR	34	430034.74	177933.109	30515.276	-5.644	42.987	0.000
Total cost	IDR	34	17552757.38	8758935.743	1502145.087	-6.740	34.106	0.000
Production	KG	34	6015.26	2390.048	409.890	2.511	42.979	0.016
Revenue	IDR	34	27738962.21	10971596.461	1881613.270	3.843	44.707	0.000
Profit	IDR	34	10186204.79	7202387.264	1235199.225	12.475	54.330	0.000

Table 4. The mean of Cost, Production, Revenue, and Profit

Mean of	Unit	Organic	Conventional	Percentage
				Organic to Conventional
Variable cost	IDR	7,099,299	17,122,723	-141
Fixed cost	IDR	244,868	430,035	-76
Total cost	IDR	7,344,168	17,552,757	-139
Production	KG	7,122	6,015	16
Revenue	IDR	35,609,271	27,738,962	22
Profit	IDR	28,265,103	10,186,205	64

3.4 Economics Analysis of Paddy Production

The analysis of farmers' variable costs, fixed costs, total costs, production, price, revenue, and profit is shown in Table 4. In the Sumber Makmur 1 farmers group, the total cost to operate organic rice farms is 139 percent less than the total cost required in the Mulyo 2 farmers group. This indicates that the low total cost of organic paddy farming was caused by the low variable and fixed costs experienced in the Sumber Makmur 1 farmers group. This aligns with the study by [18], which states that inputs can be obtained on the farm, but input costs are frequently lower than conventional farming in organic farming.

The lower cost components of organic paddy farming than conventional paddy farming result in organic paddy farming being a more profitable option for farmers, particularly in production costs. This finding has encouraged Sumber Makmur 1 farmer group respondents to switch to planting organic paddy.

Using natural farming inputs, namely animal manure (cow, goat, and buffalo) for organic fertilizers, is why responders in the Sumber Makmur 1 farmers group reported lower variable costs than those in the Mulyo 2 farmer group to operate conventional paddy farming. Throughout the paddy planting season, a group of Mulyo 2 farmers feeds organic paddy seedlings using animal dung. Using animal manure as an organic fertilizer can reduce the expense of purchasing fertilizers, such as chemical fertilizers. Production costs can be decreased by using organic fertilizer [19]. This follows a study by [20] stating that livestock is a kind of savings. In Mulyo 2 farmers group, variable costs must incur purchasing chemical fertilizers, such as urea (N) fertilizer, za (nitrogen (N) with sulfur (S) fertilizer), NPK Phonska (compound (nitrogen (N), phosphorus (P), and potassium (K) fertilizer), and also TSP (triple super phosphate fertilizer).

Besides that, respondents in the Sumber Makmur 1 farmers group also reported that the use of organic fertilizer positively impacts the soil in their paddy fields, making it more easily cultivated. Farmers asserted that the soil became easier to cultivate since the 3rd planting season at the end of 2000, a year after they started switching from planting rice conventionally to planting rice organically, namely in the first planting season at the beginning of 1999.

Sumber Makmur 1 farmer group mentions using beneficial plants as a component of organic pesticides because they are cheaper than synthetic pesticides [21]. The grading KB (*Dioscorea composita*) is used by farmers to manage the rat (*Rattus argentiventer*), and tuber is only used to manage rat reproduction. The farmers use the daun sirsak (leaf of *Annona muricata*) and dringu daun (leaf of *Acorus calamus*) to control the sundep (*Scirpophaga innotata*). The farmers have successfully lowered the cost of purchasing pesticides by using these beneficial plants, which lowers the cost of production. The purchase of chemical pesticides, such as Decis (which is utilized to eliminate wereng (*Nilaparvata lugens*), Furadan (which is used to eradicate penggerek batang (*Tryoiryza innotata*), and also Ally (a herbicide), is the variable cost in farmers group of Mulyo 2 must bear.

In the context of tax, the average cost of IDR 218.677 to be paid in the Sumber Makmur 1 farmers group is lower than the tax of farming land that is to be paid in the Mulyo 2 farmers group, i.e., IDR 430,035. This is the reason for the lower fixed costs incurred in the Sumber Makmur 1 farmer group to run organic paddy farming as compared to fixed costs to run conventional paddy farming in the Mulyo 2 farmers group. The fact that the farmers in Sumber Makmur 1 live farther away from Lawang City, the sub-district capital, is the reason for their low tax value. Naturally, farmland is worth less when compared to the high-value farmland owned in the Mulyo 2 farmer group, which is close to Lawang City. This is in line with the study by [22], which states that land prices increase closer to the city center.

Besides the tax, Sumber Makmur 1 has the payment of an organic certificate as the fixed expense required to incur, namely IDR 33 million, and the certificate has a three-year validity period. As a result, in Sumber Makmur 1, the farmer group contributes roughly IDR 26.191 per month to the cost of the organic certificate. For the farmers, the cost of the organic certificate is mitigated by paying it jointly. Additionally, the organic certification helps improve customers' perception of their organic paddy. This is following the [23] organic certificate assures consumers that the products are free from synthetic chemicals, pesticides, and genetically modified organisms (GMOs), thereby building trust and confidence in the brand.

3.5 Estimated Production, Selling Paddy, Revenue and Profit

Based on Table 3, compared to conventional paddy produced in the farmers group of Mulyo 2, the production of organic paddy from the Sumber Makmur 1 farmers groups was higher. The production of paddy disparity between the two villages reaches 16%. It is because the quantity of production of organic paddy gotten by Sumber Makmur 1 is higher than the farmer group of Mulyo 2, namely:

1. The farming land area owned by the Sumber Makmur 1 farmers group, measuring an average of 6.313 square meters, is comparatively more significant than the agricultural land area owned by the Mulyo 2 farmers group, which measures an average of 2.735 square meters. This regard follows a study by [24] stating that the wider the cultivated land area, the higher the production.
2. The wereng (*Nilaparvata lugens*) that come into farming land owned by the farmer group of Sumber Mulyo 2 and then damage paddy plants lead to a decrease in the quantity of conventional paddy production. This aligns with the study by [25], which states that pest attacks on plants can disrupt production, reduce paddy abundance production, and lead to economic losses.

The selling price of the conventional paddy grain harvested in the farmers group of Mulyo 2 was sold for 8% less than the organic paddy grain harvested in Sumber Makmur 1 farmer group. The selling price of organic paddy is higher than that of conventional paddy. This regard is in line with a study by [26], which states that organic paddy sells for a higher price than conventional paddy. All the farmers who are members of the Sumber Makmur participate in group meetings every four months, on April 15, August 15, and December 15, to decide on the selling price for organic paddy. All the Mulyo 2 farmers group members participate in group meetings every four months, on April 15, August 15, and December 15, to decide on the

selling price for organic paddy. Two to three farmer group members surveyed the prices of paddy in the central markets of the Lawang and Malang cities before the meeting. The price obtained from the survey farmers is the cost of conventional paddy. The Sumber Makmur farmers group determines the selling price of their paddy beyond the surveyed price based on the price provided by the farmers. The farmers sell the organic paddy to the head of the Sumber Makmur farmers group. The head of the group mills the paddy grain to be rice. Furthermore, the rice is sold to loyal consumers of organic rice who can purchase the rice at a purchase price above the purchase price for conventional rice. In the meantime, the Mulyo 2 farmer group farmers sell their paddy at the central market in the cities of Lawang and Malang, paying the same price as conventional paddy.

In Sumber Makmur, there is 22% more paddy grain revenue than in Mulyo 2, and the revenue generated by paddy grain is influenced by its production and selling price. Farmer earnings within each farmer group are influenced by the amount of paddy produced and the price at which it is sold. The increased output and selling price of organic paddy can be partially attributed to the higher revenue earned in Sumber Makmur. Both this higher revenue and the farmer in Sumber Makmur spending less on total production costs contribute to their increased profit. This finding follows a study by [7],[27], which shows that organic farming yields higher profit than conventional farming. The difference in profit between the two villages is 64%. Organic paddy farming is less expensive overall, and farmers receive a higher selling price for their paddy grain. To maintain the sustainability of receiving profits for all farmers, the Sumber Makmur farmer group members should comply with the group agreement that requires each of them to sell their paddy to the head of this farmer group. Paddy sold by each farmer to the head of the farmer group will be purchased above conventional paddy's selling price. Selling their paddy only to the head of the farmer group means that all farmers only face one buyer so that they can control their paddy directly.

Conversely, the farmer group of Mulyo 2 uses a different way to sell the paddy that they harvest from their paddy fields. In this regard, they sell paddy to collecting traders, who come to Mulyoarjo village to buy conventional paddy from the farmer, or they sell paddy to owners of paddy mill, who support farmers financially by giving borrow money to them during planting season and purchase farmer paddy at harvesting season with buying price for paddy determined by the mill owners. By doing this, the farmers are forced to accept the paddy's selling price, which is determined by the collecting traders or the owners of paddy mills. This follows a study by [28],[29], where smallholder farmers are generally price takers. As price takers, farmers cannot set their own selling price for paddy that accommodates the production cost. Therefore, by receiving the selling price of paddy, which is determined by the collecting traders or the owners of the paddy mill, as a basis to sell their paddy, they receive the low revenue and, in turn, the low profit. Moreover, if the price of farming inputs increases, such as the increase in the price of chemical fertilizers or pesticides caused by scarcity in the market, then the farmer can receive a decrease in revenue and profit. This is in line with a study by [23]. As a price taker, farmers are potentially affected by an increase in farming production costs.

4. Conclusions

The profit that farmers in the Sumber Makmur 1 farmer group made from selling their organic paddy was more than the profit that farmers in the Mulyo 2 farmer group made from selling their conventional paddy. The lower fixed and variable costs incurred in the Sumber Makmur 1 farmer group support the higher profit. Furthermore, compared to conventional paddy, organic paddy produces more and sells for a higher price. This study confirms previous research results that profit from organic farming is higher than conventional farming. This study is also an early investigation of farmers' profit in organic and conventional farming. Nonetheless, respondents became disinterested due to the study lengthy questionnaire. Due to the utilization of low-cost organic fertilizers and pesticides by the Sumber Makmur 1 farmer group and the high-priced chemical fertilizers and pesticides purchased by the Mulyo 2 farmer group, the overall cost of organic paddy farming is low. As a result, we suggest that future studies focus on the availability of natural farming inputs as a crucial consideration when switching from conventional to organic farming methods. Planting organic paddy instead of conventional paddy can be accomplished by the farmers group Sumber Makmur in Mulyoarjo village by using more organic fertilizers and fewer chemical fertilizers. Farmers can decrease their use of one kilogram of chemical fertilizer during each planting season and then increase their use of one kilogram of organic fertilizer. In this manner, the full potential of organic fertilizer is realized. To help the farmer group

of Mulyo 2 in Mulyoarjo village transition from planting conventional to organic paddy, the government of Malang district must provide financial support for the purchase of livestock and enable the farmers to attend organic farming exhibitions to assist the farmers in identifying potential buyers for their organic paddy.

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References

[1] Khumairoh, U.; Mancini, H.; Yadav, S.; Schulte, R. P. O.; Ann, M.; Harja, D.; Joy, R.; Agustina, R.; Setiawan, A.; Nurlaelih, E. E.; Purnomo, M.; Groot, J. C. J. Linking Types of East Javanese Rice Farming Systems to Farmers' Perceptions of Complex Rice Systems. *Agric. Syst.* **2024**, *218*, 1–11. https://doi.org/10.1016/j.agsy.2024.104008.

[2] Triyono, T.; Fahmi, M.; Al, F.; Rahmawati, N.; Rozaki, Z.; Kamarudin, M. F. The Role of Organic Rice Farm Income on Farmer Household Welfare: Evidence from Yogyakarta, Indonesia. *Open Agric.* **2024**, *9*, 1–9. https://doi.org/10.1515/opag-2022-0273.

[3] Tamburaka, I. P. Analysis of Organic Rice Farming Income in Kulisusu North Buton District , Southeast Sulawesi. In *IOP Conf. Series: Earth and Environmental Science*, **2020**, 1–5. https://doi.org/10.1088/1755-1315/782/2/022005.

[4] Khoiriyah, N.; Isnaini, M.; Iriany, A.; Forgenie, D. Analyzing the Cost of Paddy Rice Labor in Indonesia: A Case Study in Ten Tons Syngenta Project. *J-SEP J. Sos. Ekon. Pertan.* **2023**, *16*(2), 189–204. https://doi.org/10.19184/jsep.v16i2.38160.

[5] Saliem, H. P.; Susilowati, S. H.; Ariningsih, E.; Agustian, A.; Muksin. Supporting Organic Rice Exports: The Success Story of West Java Organic Rice Exports. In *IOP Conf. Series: Earth and Environmental Science*; 2021; pp 1–8. https://doi.org/10.1088/1755-1315/672/1/012095.

[6] Sardiana, I. K. Strategi Transisi Dari Pertanian Konvensional Ke Sistem Organik Pada Pertanian Sayuran Di Kecamatan Baturiti, Kabupaten Tabanan, Bali. *J. Bumi Lestari* **2017**, *17*(1), 49–57. https://doi.org/10.24843/blje.2017.v17.i01.p06.

[7] Shennan, C.; Krupnik, T. J.; Baird, G.; Cohen, H.; Forbush, K.; Lovell, R. J.; Olimpi, E. M. Organic and Conventional Agriculture : A Useful Framing ? *Annu. Rev. ofEnvironment Resour.* **2017**, *42*, 317–346. https://doi.org/10.1146/annurev-environ-110615-085750.

[8] Anggita, A. H.; Suprehatin. Is Organic Rice Farming More Profitable? Evidence from Pringkasap Village Subang Regency. *JEPA J. Ekon. Pertan. dan Agribisnis* **2020**, *4*(3), 561–592. https://doi.org/10.21776/ub.jepa.2020.004.03.12.

[9] Mahmood, A.; Gheewala, S. H. A Comparative Environmental Analysis of Conventional and Organic Rice Farming in Thailand in a Life Cycle Perspective Using a Stochastic Modeling Approach. *Environ. Res.* **2023**, *235*, 1–11. https://doi.org/10.1016/j.envres.2023.116670.

[10] Adil, A.; Syarif, R.; Najib, M.; Widiatmaka. Organic Farming in Bogor, West Java, Indonesia: Measuring How Far Its Sustainability. *JPSL J. Nat. Resour. Environ. Manag.* **2023**, *13*(4), 671–682. https://doi.org/10.29244/jpsl.13.4.671-682.

[11] Kadarmanto. *Paddy Harvested Area and Production in Indonesia 2023 (Preliminary Figures)*; 2023. https://www.bps.go.id/en/pressrelease/2023/10/16/2037/paddy-harvested-area-and-production-in-indonesia-2023.

[12] Tsvetkov, I.; Atanassov, A.; Vlahova, M.; Carlier, L.; Lefort, F.; Rusanov, K.; Badjakov, I.; Dincheva, I.; Tchamitchian, M.; Rakleova, G.; Georgieva, L.; Tamm, L.; Iantcheva, A.; Herforth-rahmé, J.; Paplomatas, E.; Tsvetkov, I.; Atanassov, A.; Vlahova, M.; Carlier, L.; Christov, N.; Lefort, F.; Rusanov, K.; Badjakov, I.; Dincheva, I.; Rakleova, G.; Georgieva, L.; Tamm, L.; Iantcheva, A. Plant Organic

Farming Research – Current Status and Opportunities for Future Development. *Biotechnol. Biotechnol. Equip.* **2018**, *32*(2), 241–260. https://doi.org/10.1080/13102818.2018.1427509.

[13] Wibowo, R. P.; Raihan, A.; Sumono; Gunawan, D. Comparative Analysis of Technical Efficiency between Organic and Non-Organic Rice Farming in North Sumatera Indonesia. In *IOP Conf. Series: Materials Science and Engineering*, **2019**. https://doi.org/10.1088/1757-899X/648/1/012038.

[14] Prayuginingsih, H.; Muliasari, R. M.; Aulia, A. N. Local Wisdom of Paddy Farmer at Klungkung Village, Sub Dostrict of Sukorambi, Jember Regency to Overcome Subsidy Fertilizer Decreasing Policy. *Mimb. Agribisnis J. Pemikir. Masy. Ilm. Berwawasan Agribisnis* **2024**, *10*(2), 2447–2454. https://doi.org/10.25157/ma.v10i2.14208.

[15] Irfan; Nuraeni; Salim, M. Analisis Komparasi Usahatani Padi Organik Dan Usahatani Padi Konvensional. *Wiratani J. Ilm. Agribisnis* **2019**, *2*(2), 92–105. https://doi.org/10.33096/wiratani.v2i2.38.

[16] Krejcie, R. V; Morgan, D. W. Determining Sample Size for Research Activities. *Educ. Psychol. Meas.* **1970**, *30*(3), 607–610. https://doi.org/10.1177/001316447003000308.

[17] Cohen, L.; Manion, L.; Morrinson, K. *Research Methods in Education*, 8th ed.; Routledge, **2017**. https://doi.org/10.4324/9781315456539.

[18] Hogg, R. V; Tanis, E. A.; Zimmerman, D. L. *Probability and Statistical Inference*, Ninth Edit.; Pearson Education, Inc: United State of America, **2015**.

[19] Debertin, D. L. *Agricultural Production Economics*, Second Edi.; CreateSpace Independent Publishing Platform: New York, **2012**.

[20] Field, A. *Discovering Statistics Using SPSS*, 3rd ed.; Sage Publications Ltd: London, **2009**.

[21] Utari, W.; Eliza, E.; Yulida, R. Analisis Tingkat Kepuasan Dan Tingkat Harapan Petani Padi Terhadap Atribut Tauke Dalam Pemasaran Padi Di Nagari Sungai Rimbang. *J. Ilm. Sosio Ekon. Bisnis* **2022**, *25*(1), 8–19. https://doi.org/10.22437/jiseb.v25i01.20995.

[22] Riar, A.; Goldmann, E.; Bautze, D.; Rüegg, J.; Bhullar, G. S.; Adamtey, N.; Schneider, M.; Huber, B.; Armengot, L. Farm Gate Profitability of Organic and Conventional Farming Systems in the Tropics. *Int. J. Agric. Sustain.* **2024**, *22*(1), 1–13. https://doi.org/10.1080/14735903.2024.2318933.

[23] Etik, P.; Sudarno, S. Analysis of Greenhouse Gas Reduction by Using Organic Fertilizer in Boyolali Regency. *ICENIS 3rd Int. Conf. Energy, Environ. Inf. Syst.* **2018**, *73*, 1–5. https://doi.org/10.1051/e3sconf/20187308005.

[24] Binta BA, A.; Barbier, B. Economic and Environmental Performances of Organic Farming System Compared to Conventional Farming System: A Case Farm Model to Simulate the Horticultural Sector of the Niayes Region in Senegal. *J. Hortic.* **2015**, *02*(04), 1–10. https://doi.org/10.4172/2376-0354.1000152.

[25] Bhattacharjee, T.; Kotame, A. A.; Mahajan, A.; Ghorpade, A.; Kothadia, A.; Mohammadi, A.; Bhandarkar, A. Organic Pesticide from Non-Conventional Natural Resources. *IOP Conf. Ser. Mater. Sci. Eng.* **2023**, *1291* (1), 1–9. https://doi.org/10.1088/1757-899x/1291/1/012038.

[26] Purbalangi, G. A.; Brotosunaryo. Pengaruh Harga Lahan Terhadap Intensitas Pemanfaatan Lahan Di Koridor Jalan Mgr. Sugiopranoto-Siliwangi Semarang. *Tek. PWK* **2014**, *3*(1), 134–144. https://doi.org/10.14710/tpwk.2014.4442.

[27] Dayet, A.; Diepart, J. C.; Castella, J. C.; Sieng, S.; Kong, R.; Tivet, F.; Demenois, J. Can Organic Rice Certification Curb the Pressure of the Agrarian Transition in Cambodia? A Farming System Approach. *Agric. Syst.* **2024**, *217*, 1–14. https://doi.org/10.1016/j.agsy.2024.103953.

[28] Pradnyawati, I. G. A. B.; Cipta, W. Pengaruh Luas Lahan, Modal Dan Jumlah Produksi Terhadap Pendapatan Petani Sayur Di Kecamatan Baturiti. *Ekuitas J. Pendidik. Ekon.* **2021**, *9*(1), 93–100. https://doi.org/10.23887/ekuitas.v9i1.27562.

[29] Zenita, Z.; Hawa, Z. W. M.; Dwinata, C.; Wicaksono, A.; Samiha, Y. T.; Maryamah; Oktiansyah, R.; Aini, K.; Riswanda, J.; Miftahussaadiah. Serangga Hama Pada Tanaman Padi (Oryza Sativa L.) Pada Fase Vegetatif Dan Generatif. In *Prosiding Seminar Nasional Pendidikan Biologi*, **2020**, 98–104.

[30] Permatasari, P.; Anantanyu, S.; Dewi, W. S. Pengaruh Tingkat Adopsi Budidaya Padi Organik Terhadap Keberlanjutan Budidaya Padi Organik Di Kabupaten Boyolali. *Caraka Tani J. Sustain. Agric.* **2018**, *33*(2), 153–168. https://doi.org/10.20961/carakatani.v33i2.22296.

[31] Hazmi, M.; Suparwata, D. O. Comparative Study of Productivity of Organic and Conventional Agriculture in Maize Crops in East Java. *West Sci. Agro*. **2024**, *2*(03), 123–130.

[32] Mabuza, M. L.; Ortmann, G.; Wale, E. Effects of Transaction Costs on Mushroom Producers Choice of Marketing Channels: Implications for Access to Agricultural Markets in Swaziland. *South African J. Econ. Manag. Sci.* **2014**, *17*(2), 207–219. https://doi.org/10.4102/sajems.v17i2.494.

[33] Affandi, M. I.; Handayani, S. Marketing Efficiency of Organic Rice in Lampung Province. In *3rd Forum in Research, Science, and Technology*, **2020**, 1–8. https://doi.org/10.1088/1742-6596/1500/1/012063.