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MARKET ORIENTATION OF RICE FARMERS IN ACEH BESAR REGENCY

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Abstract. Market orientation is a crucial factor in the success of farmers in the increasingly competitive era of modern agriculture. This study aims to measure the level of market orientation among rice farmers in Aceh Besar Regency using the Crop Specific Marketability Index (CMI) and Market Orientation Index (MOI). Data analysis shows that the market orientation level of rice farmers in Aceh Besar Regency is still in the moderate category. The obtained CMI value of 0.62 indicates that rice farmers in Aceh Besar sell 62% of their rice production. The MOI shows a varied distribution with values ranging from 0 to 0.9. The average MOI value among rice farmers in Aceh Besar is 0.5, meaning that farmers allocate only 50% of their land to produce crops for the market. This indicates that most rice farmers in the study area produce for sale and to meet household consumption needs. Based on these findings, it is recommended that farmers' awareness and capacity to adopt market-oriented agricultural practices through extension services be increased, thereby enhancing productivity and the competitiveness of agricultural products.

Keywords: CMI, consumption, market orientation, MOI

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INTRODUCTION

The food crop sector is one of the agricultural subsectors widely cultivated, especially rice. Rice is a strategic food crop that provides basic food needs. Rice farming is one of the drivers of economic growth in Aceh, and it is expected to increase farmers' income and welfare. According to data from BPS (Central Statistics Agency) of Aceh Province (2023), the rice cultivation area has decreased annually. In 2023, the rice cultivation area was 254,319 ha, a decrease compared to 2022, which was 271,750 ha. This reduction in land area has led to a decline of 7.68% in rice production, from 1.51 million tons of milled dry unhusked rice (GKG) in 2022 to 1.39 million tons in 2023 (BPS Provinsi Aceh, 2023). This is caused by the increasing conversion of agricultural land for housing and industrial development and the growing population (Nurmalinda & Abrar, 2021). The three districts/cities with the highest total rice production (GKG) in 2023 were North Aceh, Pidie, and Aceh Besar. The harvested

area for rice in Aceh Besar in 2022 was 35,498 ha, producing 200,097 tons of GKG (BPS Provinsi Aceh, 2023).

On the other hand, global changes such as rapid population growth, urbanization, and market liberalization have significantly altered the agricultural sector. These changes have pushed agriculture to become more market-oriented and competitive. As a result, farmers must adapt by developing stronger management skills and competencies to succeed in this constantly changing environment. (Kahan, 2013).

Farmers' market orientation is essential for successfully addressing the problems posed by globalization. Access to agricultural markets is essential for purchasing inputs and selling outputs. Market-oriented agricultural enterprises get inputs to cultivate products and subsequently sell the outputs to generate revenue. Agricultural commercialization entails the shift from subsistence farming to market-oriented agriculture by enhancing production via superior inputs. (Omiti, Otieno, McCullogh, & Nyanamba, 2007).

Commercial agriculture not only involves marketing production but also includes selecting inputs aimed at maximizing profits. The issues in agricultural commercialization go beyond increasing trade in inputs and outputs; they also involve changes in production systems, institutions, activity scales, and decision-making opportunities. (Quan, 2009). Commercialization shifts the goal of the agricultural system from merely meeting food needs to focusing on income and profit. (Pingali & Rosegrant, 1995). This shift affects farming patterns, input usage levels, and resource management choices. In addition, developing high-value agricultural products becomes a key element in the commercialization process, forming more complex agribusiness supply chains. (Davis, 2006).

Farm households need surplus production to meet family consumption needs and market demand. Therefore, farmers are required to produce in sufficient quantities. Small-scale farmers with limited production tend to have low commercialization levels because they face difficulties selling their harvests at more profitable prices. Access to agricultural markets generally favors large-scale suppliers, limiting opportunities for small farmers to compete.

Small farmers are those who practice a combination of market-oriented and subsistence farming. (Narayanan & Gulati, 2002). This is because they have limited resources, especially land ownership. Small farmers can improve their livelihoods or income status through market orientation. Several studies have proven that market orientation is one of the key factors in competitive advantage. Small farmers tend to use quality inputs such as better seeds, fertilizers, and chemicals when shifting to a more significant market orientation. (Leavy & Poulton, 2007). This shows that market orientation is positively correlated with profit. (Narver & Slater, 1990).

The significant market opportunities for rice commodities are believed to be unmatched by the market orientation of farmers. Rice farmers in Aceh Besar, like many other farmers in different regions, still adhere to a semi-commercial production pattern. This pattern shows that market signals or profit opportunities do not drive farmers' production decisions entirely. Some rice farmers in Aceh Besar still prioritize their harvests for household consumption before deciding to sell the remainder. Low market orientation may limit farmers' competitiveness in local and global markets. Given the importance of encouraging farmers to continue producing rice to maintain national food security, understanding farmers' market orientation is necessary. By knowing the farmers' market orientation level, policymakers can design more targeted programs or interventions to improve farmers' market orientation through increased productivity while expanding market access.

Agricultural commercialization is a two-stage process, where in the first stage, small farmers decide to participate in marketing their agricultural products. Afterward, farmers determine the extent of their involvement in the market, which is measured based on the percentage of total harvest sold (Mpombo, Chegere, & Osoro, 2022). Based on the background above, this study will analyze the Crop Specific Marketability Index (CMI) and Market Orientation Index (MOI) of rice farmers in Aceh Besar

to determine the extent to which farmers allocate their land for commercial purposes and the level of commercialization of rice farmers in Aceh Besar.

METHOD

The object of this research is rice farmers in Aceh Besar Regency, with the scope of the study focusing on the Market Orientation Index of rice farmers in Aceh Besar Regency. The primary data source is from direct interviews with rice farmers in Aceh Besar using a questionnaire.

The research location was purposively selected, namely Aceh Besar Regency, considering that it is one of the rice production centers in Aceh Province. This study was conducted in 2 districts: Indrapuri and Seulimum district. Four villages were selected from these two districts. The criteria for choosing the villages were those with the highest productivity and the most significant number of rice farmers. In the Indrapuri District, the selected villages were Grot Blang and Reukih Kupula village, while in the Seulimum District, the selected villages were Lambada and Lamteuba village. The sample for the villages selected is as follows:

Table 1. Distribution of the sample population in the study area

No.	Village Name	Population	Sample (Farmer)
1	Lambada	82	25
2	Lamteuba	105	25
3	Grot Blang	126	32
4	Reukih Kupula	76	20
	Total	389	102

Source: BPP (Agricultural Extension Center) Seulimeum and Indrapuri

The population in this study consists of all rice farmers in Aceh Besar Regency. The sample was taken using random sampling. Random sampling is a technique in which every individual in the population has an equal chance of being selected as a sample member. This sample is chosen randomly to ensure the results are unbiased and can reflect the existing population. The total sample in this study is 102, consisting of 50 samples from Seulimum District and 52 from Indrapuri District. When the research was conducted, some farmers were still in the planting season, so the data collected was based on the harvest from the previous period.

Farmers who use different resource allocation patterns will have different market orientations. The table below describes and measures variables.

Table 2. Description and measurement of variables

No	Variable	Description	Unit
1	MOI	Farmer market orientation considering the land allocation pattern of farm households.	
2	CMI	Proportion of the amount sold to the amount produced	
3	Total of Production	Total rice production of farmers	Tons
4	Production Sold	Amount of rice sold by farmers to the market	Tons
5	Rice Field Area	Amount of land allocated for rice cultivation	Ha
6	Total Area of Crops Operated	Total land owned by farmers for rice farming and other crops	Ha

Source: (Mpombo, Chegere, & Osoro, 2022)

CMI is used to determine the proportion of production sold to the market. The formula for CMI is as follows:

$$\textbf{CMI} = \frac{\sum_{i=1}^{N} X_{ji}}{\sum_{1}^{N} Y_{ji}} ; Y_{ji} \geq X_{ji} \text{ and } 0 \leq CMI_j \leq 1$$

CMI = Crop Specific Marketability Index
X_{ji} = Amount of rice sold by farmers (tons)
Y_{ji} = Total rice production (tons)

The value of CMI ranges from 0 to 1, where a value close to 0 indicates that the crop is subsistence-oriented and mainly produced for household consumption. In contrast, a value close to 1 indicates that the crop is commercial and made for sale in the market. (Osmani & Hossain, 2015).

Farmers generally produce a variety of crops and participate in the market to different extents, depending on their level of commercialization. (Osmani & Hossain, 2015). The status of market participation (sales of agricultural products) alone is not enough to understand small farmers' commercialization level. This is because production decisions influence commercialization, and production decisions vary depending on the market orientation of the farmers. Market-oriented small farmers tend to produce commodities that are easier to consume and market. Rice farmers in the study area generally also cultivate other crops that are easier to market, such as vegetables and chili peppers. Therefore, using the MOI, it can be determined how small farmers allocate their resources (land, labor, and capital) to commodities that are easier to market. When farmers' resource allocation patterns differ, their level of market orientation will also vary.

After the CMI value is determined, the MOI value is then calculated using the following formula:

$$\textbf{MOI}_i = \frac{\sum_{j=1}^{j} CMI_j X L_{ji}}{L_I^T} ; L_i^T > 0 \text{ and } \leq MOI_i \leq 1$$

MOI = Market Orientation Index
L_{ji} = Amount of land allocated for rice cultivation (ha)
L_I^T = Total area of crops operated in the production year (ha)

According to (Osmani & Hossain, 2015), the MOI value ranges from 0 to 1, indicating that the household allocates a larger proportion of agricultural land to produce crops that are easier to market. The classification of CMI and MOI values is determined using the following range and interval values:

Value Range = Highest Score Value - Lowest Score Value
= 1 – 0
= 1
Interval Length = Value Range: Number of Class Intervals
= 1:3
= 0.33

Table 4. Criteria of CMI and MOI

No	Interval Value	Criteria
1	0,00 – 0.33	Low
2	0.34 – 0.66	Moderate
3	0.67 – 1.00	High

Source: Primary Data Processed (2024)

RESULT AND DISCUSSION

Respondent Characteristics

The characteristics of farmers are related to market orientation. Farmers with better resources tend to have broader access to markets and quality inputs and the ability to improve their farming operations. The results of this study show that the age of rice farmers is dominated by those in the productive age group, namely 41-60 years, making up 49.5%, while younger/millennial farmers aged 21-40 years account for only 36.6%. There are also rice farmers over 60 years old, accounting for 13.9%.

Table 3. Age Distribution of Farmers

Min	1st Qu.	Median	Mean	3rd Qu.	Max.
21	38,25	47,50	47,18	57	83

Source: Primary Data Processed (2024)

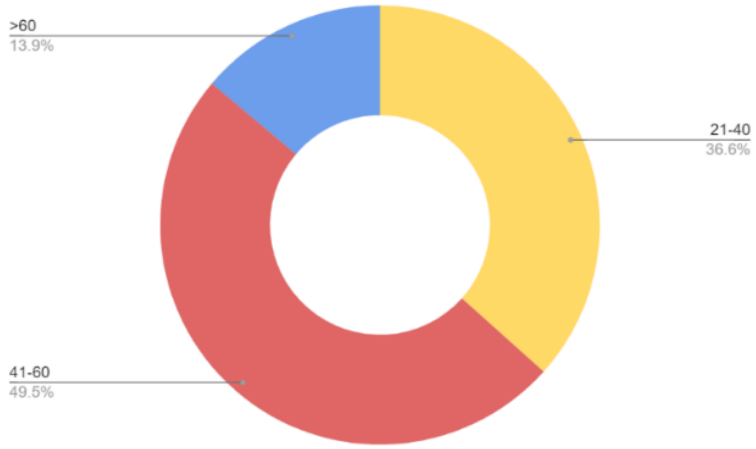

Figure 1. Age of Respondent
Source: Primary Data Processed (2024)

The table above shows that the respondents' ages range from 21 to 83. The youngest farmer is 21 years old, and there are only 14 young farmers. Young farmers' interest in rice farming is very low. Economic and socio-cultural factors cause the low rate of farmer regeneration. (Sudrajat, Ega Agista, & Rohmah, 2020). There are also farmers over 60 years old, and their physical condition hinders farming activities and the adoption of new technologies and innovations. This age difference not only affects the productivity of farmers but also influences their mindset in farming.

Based on the respondents' education, 1% of farmers have not received formal education, and 30.4% are only elementary school graduates. 37.3% of the respondents graduated from high school, and 8.8% were university graduates. Generally, these university graduates are generally educated farmers who consider rice farming a side business. Research on market orientation among small farmers is essentially about production decisions concerning what to produce to maximize profits. The decision on which commodities offer the most profit for small farmers is difficult, as each region has a different geographical structure. (Jaworski & Kohli, 1993) Suggested that market orientation is related to the individual characteristics of farmers, such as age, education, and gender. Age affects a person’s creativity; the older they get, the more mature their creativity becomes. Formal education is one way to improve a person's knowledge and abilities, especially in technology applications. However, formal education alone is not enough; non-formal education, such as courses or training focusing more on business management skills, is also necessary.

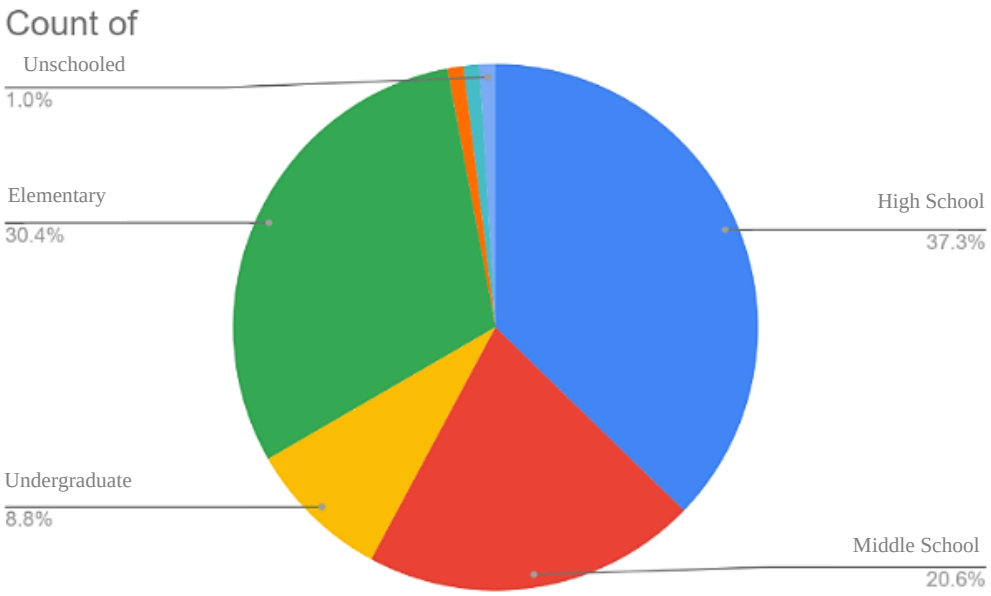

Figure 2. Education of Respondents
Source: Primary Data Processed (2024)

Based on the type of business, 86% of farmers consider rice farming as their primary source of income, while 14% treat it as a side business. The status of this farming operation is believed to influence farmers' decisions in their farming activities, primarily related to the use of farming inputs. (Musilah, Putri, & Utami, 2021). This indicates that most farmers rely heavily on rice farming to meet their family's economic needs. Farmers who depend on rice farming as their primary income source are generally more motivated to improve their production output and quality. However, even though rice is the primary source of income, farmers still prioritize it to fulfill household consumption needs before selling it to the market. This indicates that the primary income from rice farming does not always align with market orientation if farmers face high market risks or limitations in accessing broader markets.

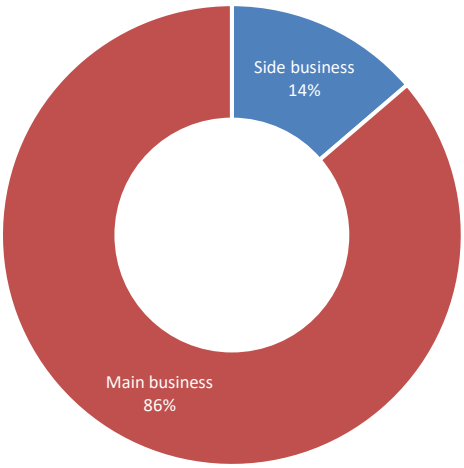

Figure 3. Type of Rice Farming
Source: Primary Data Processed (2024)

Based on land area, the average land size of farmers is 1.1 ha, with 91% of farmers owning land between 0-3 ha, 7% owning 3-6 ha, and only 1% owning 6-9 ha and 9-12 ha. Rice farmers generally have relatively small landholdings. The land size they own will influence their decisions regarding the sale of their production. Farmers tend to prioritize household consumption needs before selling to the market. Additionally, small land sizes result in suboptimal economies of scale. Farmers are inclined to remain subsistence because market risks are lower.

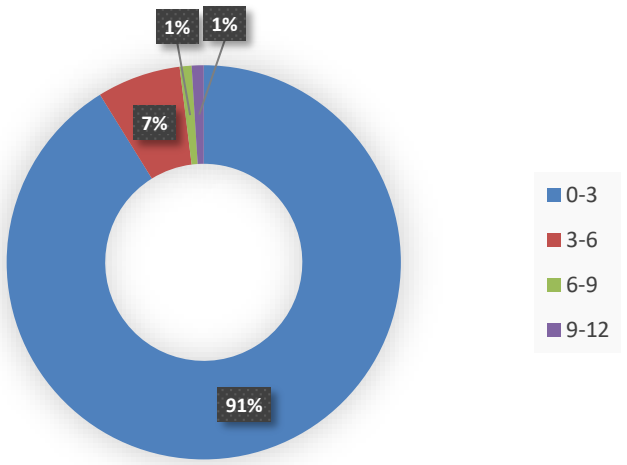

Figure 4. Rice farming land area
Source: Primary Data Processed (2024)

CMI of Rice Farmers in Aceh Besar Regency

Farmers produce various types of crops and participate in the output market according to their level of commercialization. Looking only at the level of participation or the sale of output is not enough to assess the level of commercialization among smallholder farmers. This is because farmers' production decisions vary according to their different levels of market orientation. Smallholder farmers with a market orientation produce commodities that are consumed and marketed in a planned manner according to market signals. (Osmani & Hossain, 2015).

CMI is used to determine the proportion of production sold. The CMI value of rice farmers in Aceh Besar Regency is 0.62, indicating that 62% of the farmers' rice production is sold, while their families consume the remaining 38%. Farmers in Aceh Besar prioritize ensuring their family's rice supply before selling all their harvests. The practice of storing harvests in large quantities as a family food reserve and also as an asset that can be sold for emergency financial needs is common. Farmers store rice in its un-hulled form at home or in rice mills. Storing it at rice mills is considered safer from damage risks. Farmers take rice from the storage in its milled form as needed. It is not uncommon for farmers to sell stored rice when they need money.

Research by (Osmani & Hossain, 2015) Shows that although rice is grown by almost every farmer in the study area, the CMI value is only 44% of rice production. This indicates that rice farmers are still in a moderate position, as the crop is primarily produced to meet household consumption needs. Research by (Benson, 2020) This shows that the commercial orientation of smallholder farmers in Nigeria is low. One-third of farmers only sell one-third of their harvest. Selling harvests by farmers is one way to get cash, not a commercial production strategy. Subsistence orientation still dominates smallholder farmers.

The analysis results show that the CMI value ranges from a minimum of 0 to a maximum of 1. Data indicates that 10.78% of farmers in Aceh Besar Regency grow rice only to meet their family's rice

needs. This reflects that some farmers still practice subsistence farming, where the entire harvest is used for household consumption. This condition is caused by the lack of capital, leading to small land areas being cultivated. The small production leads farmers to prioritize ensuring food availability for their families rather than taking the risk of marketing their harvest.

Farmers with a CMI value of 1 make up 5.88%, which indicates that 5.88% of farmers sell all of their production. This suggests that there are farmers who have transitioned to entire commercial agriculture. Farmers with a CMI value of 1 have better access to markets, adequate capital, and supporting infrastructure such as irrigation and transportation. Farmers who sell all their harvests have shown a high market orientation and have the potential to increase their income through agriculture significantly. These results indicate that there is still a gap in the level of commercialization among rice farmers in Aceh Besar Regency. Therefore, there is a need for policy interventions to support farmers who are still subsistence-oriented so they can increase their participation in the market.

Tabel 5. Crop specific marketibility index petani padi di Kabupaten Aceh Besar

Indicators	Obs.	Mean	Std.Dev	Min	Max
Crop Marketability Index (CMI)	102	0.62	0.28	0	1

Source: Primary Data Primer Processed (2024)

MOI of Rice Farmers in Aceh Besar Regency

Based on the CMI results, the MOI value was obtained. The MOI assesses the market orientation level of rice farmers in Aceh Besar Regency. MOI calculates the total land area farmers own to reflect land allocation for household decisions aimed at maximizing profits. Of the land owned by farmers, 76% is used for rice farming, while the remainder is planted with other crops such as candlenuts, cucumber, chili, and corn.

The histogram data shows that MOI has a varied distribution with a minimum value of 0 and a maximum value of 0.9. The average MOI value for rice farmers in Aceh Besar Regency is 0.5. This value indicates that, on average, rice farmers in the study area allocate 50% of their farmland to produce marketable crops. An average market orientation index of 0.5 suggests that small-scale farmers in the region have a moderate market orientation. This aligns with the research by (Osmani & Hossain, 2015), who also found that the market orientation index for small farmers was only 0.59.

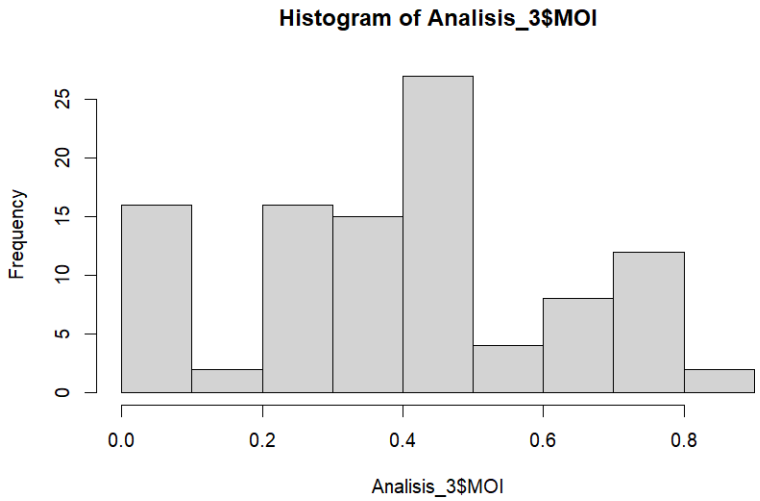

Figure 5. Histogram Market Orientation Index
Source: Primary Data Primer Processed (2024)

Table 4. Market orientation index of farmers in Aceh Besar Regency

Indicators	Obs.	Mean	Std.Dev	Min	Max
Market orientation index (MOI)	102	0.5	0.5	0	0.9

Source: Primary Data Primer Processed (2024)

Farmers are considered commercial if they sell more than 75% of their total production. (Ohen, Etuk, & Onoja, 2013). The MOI value of 0.5 in this study suggests that the market orientation of farmers is at a moderate level. This moderate MOI value indicates a balance in land allocation for planting marketable commodities and those consumed by the family. However, this also implies that farmers have not fully embraced market orientation, meaning the opportunity to increase income through agricultural sales has not been optimized. This aligns with the study by (Osmani & Hossain, 2015), which found that rice farmers are less commercialized because this crop is primarily produced to meet the farmers' own consumption needs. Furthermore, farmers do not make production decisions aimed at the market during the production period. (Mkuna & Wale, 2022).

Farmers in Aceh Besar generally still prioritize family needs. For thousands of years, farmers have continued traditional agriculture to provide food for the farmer's family. Conventional agriculture is not a business but the main livelihood of the family. Decisions in agriculture are closely tied to household decisions. Therefore, the goals of agriculture are primarily driven by the objectives and aims of the household. (Kahan, 2013).

An increase in market orientation among farmers not only influences their income but also the overall well-being of the household and contributes to more inclusive and sustainable local economic development. However, it is essential to note that this commercialization should not undermine household food security, particularly in the context of small farmers who remain vulnerable to market price fluctuations and the risks of crop failure.

CONCLUSIONS

Based on the CMI values, it was found that only 5.88% of farmers are entirely commercial, and 10.78% of farmers are subsistence farmers in Aceh Besar Regency. Although some farmers show high market orientation, most still focus on fulfilling family consumption needs. This can be seen from the average CMI value of 0.62, meaning only 62% of production is sold in the market. The average Market Orientation Index of rice farmers in Aceh Besar Regency is 0.5. This value indicates that, on average, rice farmers in the study area allocate 50% of their total land to produce marketable crops. This value suggests that farmers' market orientation is at a moderate level. Therefore, to encourage commercialization, it is necessary to provide support through policies, infrastructure, and appropriate education to increase farmers' market participation. Extension programs should not only focus on improving productivity but also on enhancing the understanding of market orientation. Farmers must be educated on market opportunities, marketing strategies, and risk management to motivate them to commercialize their production.

This study is limited to the market orientation index of farmers. Thus, the scope of the analysis should be expanded, and a more diverse set of methods should be employed to provide a comprehensive picture of the factors influencing the commercialization of farmers in Aceh Besar.

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