



Factors Affecting Income and Marketing Strategy of Garlic (*Alium Sativum* L) Farming in Sumberwringin, Bondowoso

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Abstract : Garlic is a commodity that is really needed by Indonesian people. Almost all Indonesian people use garlic every day as a seasoning for the dishes they make. According to horticultural crop production data in East Java in 2017-2020, Bondowoso Regency is included in the garlic producing areas. Bondowoso Regency has a large enough land area for cultivation. Garlic farming in Sumberwringin District has long been an economic pillar for the local community. However, there are several important issues that require deeper attention to identify, including how much income farmers actually get from garlic cultivation, and what factors influence the level of profit. Then whether production costs, climate change, or other variables have a significant impact on the profits obtained, how farmers determine selling prices, choose markets, and build effective distribution networks. By understanding the formulation of this problem, it is hoped that strategic steps can be taken in developing garlic farming in Sumberwringin District, Bondowoso Regency, so as to improve the quality of life of farmers and optimize agricultural potential in the area. Analysis of garlic farming in Sumberwringin District shows the potential for large profits but is faced with obstacles in farmers' knowledge of cultivation techniques, high levels of pest and disease attacks. Therefore, there is a need for development efforts through increasing farmer knowledge, using modern technology, integrated pest and disease control, as well as increasing market access through strengthening distribution networks and product promotion.

Keywords: Garlic, Sumberwringin, Bondowoso

Introduction

Garlic is a commodity that is important by Indonesian people. Indonesian people use garlic every day as a seasoning for every dishes. However, national garlic production from 2015 to 2019 was quite low but has shown an increase in production, only around 88,816 thousand tons (Direktorat Jenderal Hortikultura, 2019). Average consumption of garlic increased by 126% every year in period 2002-2017. Indonesia is the largest garlic importing country in the world. In 2022, garlic imports will reach 5,825.5 tonnes with a value of US\$ 7.1 million (Wardani, 2019).

According to horticultural crop production data in East Java in 2017-2020, Bondowoso Regency is included in the garlic producing areas. Bondowoso Regency has a large enough land area for garlic cultivation and has environmental conditions that support the growth of garlic. Apart from that, farmers in Bondowoso Regency also have experience and knowledge in developing garlic cultivation so that they are able to produce quality garlic

production. The government can indeed promote Bondowoso Regency as a center for garlic cultivation in Indonesia, but it is also important to remember that the development of garlic cultivation does not only depend on supportive environmental conditions but also requires other factors such as technological support, supportive government policies, and market availability. Adequate (Ak, 2021).

Garlic is one type of commercial plant produced in Bondowoso Regency. Garlic production produced by Bondowoso will reach 944 quintals in 2021. Sumberwringin District consists of 6 villages including Rejoagung, Sumberwringin, Sumbegading, Sukosari Kidul, Tegaljati, and Sukorejo. Based on the results of interviews with field officers in Sumberwringin District, there are several villages designated by the government for garlic area development activities. These villages include Sumberwringin, Sukosari Kidul, Rejoagung, Tegaljati and Sumbergading (Harahap, 2021). And the center for garlic production is in Sukosari Kidul which has the largest garlic planting area.

Garlic farming in Sumberwringin District has long been an economic pillar for the villager. However, there are several important issues that require deeper attention to identify and resolve existing problems. First, related to the income and profits obtained by garlic farmers. The problem that arises is how much income farmers actually get from garlic cultivation, and what factors influence the level of profit. Do production costs, climate change, or other variables have a significant impact on profits?

Second, the marketing strategy problem faced by garlic farmers in Sumberwringin District. In this case, it is necessary to know how farmers determine selling prices, choose markets, and build effective distribution networks. Inappropriate marketing strategies can result in stagnation or even a decrease in the sales value of garlic, which ultimately affects farmers' income (Suswadi, 2021). Therefore, research on garlic marketing strategies is crucial to support sustainability and improve the welfare of farmers in Sumberwringin District. By understanding the formulation of this problem, it is hoped that strategic steps can be taken in developing garlic farming in Sumberwringin District, to improve the quality of life of farmers and optimize agricultural potential in the area.

Methods

This research was carried out in the Sumberwringin District, Bondowoso Regency, East Java Province in 3 villages, namely Sumberwringin Village, Sukosari Kidul Village and Tegaljati Village. This location selection was carried out purposively with the consideration that Sumberwringin District is a sub-district that has a large garlic planting area in Bondowoso Regency, Sumberwringin District is one of the sub-districts designated by the government as a garlic development area, and Sumberwringin is a sub-district which has farmers who cultivate garlic sustainably to this day. This research was conducted for 4 months starting from March – June 2023. The data used in the research is farming business data for the planting season from December 2022 to May 2023.

Sampling was taken purposively using Snowball sampling as many as 30 people with sampling starting from one initial sample, then continuing with other samples

recommended by the initial sample. Sampling was carried out by considering the level of garlic productivity as well as the use of technology and farming management.

The type of research used in this research is quantitative research. Primary data collection was carried out through a survey method among farmers who were members of farmer groups in the Sumberwringin District area. SWOT (Strength, Weaknesses, Opportunities, Threats) analysis was used to evaluate opportunities and challenges in the Agribusiness environment (Suandi, 2023).

Result and Discussion

A. Results of Analysis of Garlic Farming Revenues

The total costs incurred by garlic farmers in Sumberwringin District, Bondowoso Regency are on average Rp. 26,499,167 per hectare. This represents the total variable cost consisting of costs Mulch, Seed Costs, Fertilizer Costs, Pesticide Costs and Labor Costs. Meanwhile, fixed costs are Rp. 0.00, because the land is your own property.

The results of the above calculations can be obtained from:

$$TC = FC + VC$$

$$TC = 0 + 26,499,167$$

$$TC = 26,499,167$$

- **Total receipts**

The total income obtained by garlic farmers in Sumberwringin District, Bondowoso Regency is an average of IDR. 38,592,000 per hectare. This revenue was obtained from the sale of garlic amounting to IDR 15,000 per kilogram with a total average production of 2,573 kilograms.

- **Net profit**

The net profit obtained by garlic farmers in Sumberwringin District, Bondowoso Regency is IDR 22,500,000 per hectare. This net profit is obtained from the reduction of total revenue from total costs.

Based on the results of the analysis, it can be concluded that garlic farming in Sumberwringin District, Bondowoso Regency is a profitable business. This can be seen from the net profit value obtained by garlic farmers which is quite large.

The net profit value obtained by garlic farmers in Sumberwringin District, Bondowoso Regency is IDR 22,500,000 per hectare. This value is obtained from the reduction of total revenue from total costs. The total income obtained by garlic farmers is IDR 42,000,000 per hectare, while the total costs incurred are IDR 19,500,000 per hectare.

The marginal revenue obtained by garlic farmers in Sumberwringin District, Bondowoso Regency is IDR 80,000 per kilogram. This value shows that every additional 1 kilogram of garlic production will increase farmers' income by IDR 80,000.

B. Results of Analysis of Garlic Farming Income

The income earned by garlic farmers in Sumberwringin District, Bondowoso Regency is presented in a table.

Table 1. Average yield of garlic

No	Description	Average Total
	Harvest Yield	
1	(Kg/Ha)	2,573
2	Price (RP)	15,000
3	Reception	38,592,000
4	Cost	26,532,333
5	Profit	12,059,667

Source: Primary Data Analysis 2023

Based on table 1.1, it can be explained that the average garlic harvest in Sumberwringin District, Bondowoso Regency per ha is 2,573 Kg. The average total income of garlic farmers in Sumberwringin District, Bondowoso Regency per hectare is IDR 38,592,000,- while the average total cost incurred by garlic farmers in Sumberwringin District is IDR 26,532,333,- so what is obtained by garlic farmers White in Sumberwringin District, RegencyBondowoso is Rp. 12,059,667,-

C. Results of Farming Efficiency Analysis

The results of calculating the efficiency of garlic farming in the Sumberwringin District, Bondowoso Regency can be seen in table 2 as follows.

Table 2. Garlic (*Allium sativum* L) farming efficiency

No	Description	Average Total
1	Revenue (Rp/Ha)	38,592,000
2	Cost (RP/Ha)	26,532,333
3	R/C Ratio	1.49

Source: Primary Data Analysis 2022

Based on table 2, it is known that the average efficiency of garlic farming costs in the Sumberwringin District, Bondowoso Regency is 1.49, meaning that the use of farming costs is efficient because the value is greater than one. The R/C value of 1.49 shows that every Rp. The 1,000 invested in the Garlic farming business gave a yield of IDR 149.

D. Results of analysis of factors in garlic farming

Table 3. Coefficients table

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5516807.532	1662502.865		3.318	.003
	Luas Lahan (ha)	17952980.83	15901740.85	.747	1.129	.271
	Biaya mulsa (Rp)	5.119	3.148	1.187	1.626	.118
	total biaya bibit (Rp)	-.622	.353	-.950	-1.761	.092
	total biaya pupuk (Rp)	1.347	.720	.542	1.872	.074
	total biaya Pestsida (Rp)	-14.397	4.717	-.694	-3.052	.006
	Biaya Total Tenaga Kerja	1.046	1.835	.114	.570	.574

a. Dependent Variable: Pendapatan (Rp)

Variable coefficients in multiple linear regression measure the sensitivity or reaction of farmer income to changes in certain variables, assuming other variables remain constant. The following is a detailed explanation of each of these coefficients in the context of garlic farming:

1. β_1 for Land Area (X1) The β_1 coefficient of 17952980.830 shows that with the addition of one hectare of land for garlic farming, farmers' income is expected to increase by an average of Rp. 17,952,980.83. This reflects the importance of land as a production factor that can increase income significantly (Indrawirawan, 2021).
2. β_2 for Seed Costs (X2) The β_2 coefficient of 5,119 indicates that every additional kilogram of seed costs will increase income by IDR. 5.119 This relatively small increase may indicate that seed costs do not have a large influence on income or that there is an efficiency limit in seed use.
3. β_3 for Fertilizer Cost (X3) Coefficientnegative β_3 of -0.622 indicates that the addition of one kilogram of fertilizer costs is expected to reduce income by Rp. 0.622. This may reflect a point at which additional fertilizer no longer produces sufficient yield increases to cover its costs.
4. β_4 for Mulch Costs (X4) The β_4 coefficient of 1.347 indicates that for every additional roll of mulch costs, income is estimated to increase by Rp. 1,347. This illustrates the positive but small contribution of mulch to increasing income.
5. β_5 for Pesticide Costs (X5) With a negative coefficient β_5 of -14,397, it can be interpreted that each additional package of pesticide costs will reduce average income by Rp. 14,397 This may indicate that use of pesticides above a certain level is uneconomical or that the cost of pesticides is very high compared to the benefits obtained.
6. β_6 for Labor Costs (X6) The β_6 coefficient of 1.046 implies that for every person hour of additional labor costs, income is expected to increase by Rp. 1,046 This indicates that labor has a positive influence on income, although each additional person-hour makes a small contribution.

E. Marketing Strategy with SWOT Analysis Method

Strategy design or strategy formulation is the implementation of a strategy starting with the formulation of vision, mission and values (Sedarmayanti 2018). Then proceed with analyzing the internal and external environment. In the internal and external environmental analysis stage, it is carried out by recording all strengths and weaknesses as well as recording opportunities and threats (Handayani, 2024)

Table 4. Internal Environment and External Environment

Internal Environment	
Strength 1. Natural Resource Potential 2. Capital Resources available 3. Experienced Human Resources 4. Garlic farming is profitable 5. Join the Association	Weakness 1. Use of Technology 2. Pests Diseases 3. Facilities and infrastructure are inadequate 4. Seedlings are not certified 5. High price of fertilizer 6. Monotonous Garlic Variety
External Environment	
Opportunity 1. There is a special market for garlic 2. Get Assistance from Field Officers 3. Providing bonuses/premiums 4. Government Assistance 5. Increased market demand for Garlic as a processed product	Threat 1. Transparency in determining yields 2. Production costs are getting higher 3. Climate change 4. The emergence of intermediary traders 5. Untimely harvesting

The strengths in the garlic marketing strategy in Sumberwringin District are as follows:

1. Natural Resource Potential Refers to the possibility and abundance of natural resources that exist in an area or region, including agricultural land, water, forests, biodiversity, minerals and others that can be used for economic and development activities (Suswadi, 2022).
2. Available Capital Resources This refers to the availability of capital, whether in the form of money, equipment, infrastructure, or other assets that can be used to run a business or economic activity. This capital is an important key in driving business and development activities.
3. Experienced Human Resources Represent the existence of individuals who have knowledge, skills and experience in certain fields. These experienced human resources can be the main force in increasing the productivity and quality of a business's results.
4. Profitable Garlic Farming This refers to garlic farming activities that are considered profitable. This can be influenced by factors such as market demand high costs, relatively low production costs, or the availability of resources that support the profitable growth of garlic.
5. Joining an Association This refers to participation or membership in an association or organization related to the business sector which can provide benefits such as access to information, training, networking, or shared power

Weaknesses of garlic marketing strategies in Sumberwringin District can consist of:

1. **Use of Technology Limitations** in the application of modern technology and innovation in garlic farming can be an obstacle. Technology that is not utilized properly can affect productivity and quality of results.
2. **Pests and Diseases** Pest and disease attacks on garlic plants can disrupt production. If not handled properly, this can damage crop yields, reduce the quality of garlic, and negatively impact farmers' profits.
3. **Inadequate Facilities and Infrastructure** Limited infrastructure such as good irrigation, proper roads, or proper storage facilities can limit farmers' ability to run garlic farming efficiently.
4. **Uncertified Seeds** Using uncertified garlic seeds can result in a lack of certainty regarding quality, productivity and resistance to disease. This can affect the resulting harvest (Kattel, 2020).
5. **High Fertilizer Prices** High fertilizer costs can be a burden for garlic farmers. This can affect farming profits because it increases overall production costs.
6. **The Monotony of Garlic Varieties** This can reduce competitiveness and pose risks due to changes in environmental conditions or different market demands.

Garlic marketing strategy opportunities in Sumberwringin District:

1. There is a special market for garlic

The existence of a special market that focuses on selling garlic can directly sell their crops without intermediaries, increasing profitability and expanding the distribution network.

2. Get Assistance from Field Officers

Assistance from plantation company (PG) field officers can provide technical assistance to farmers in terms of better agricultural practices. This will help increase farmers' productivity, quality and knowledge in garlic cultivation.

3. Providing Bonuses/Premiums

Providing bonuses or premiums to farmers who successfully achieve certain targets such as superior yields or improved quality can be an incentive that encourages farmers to increase their business.

4. Government Assistance

Assistance from the government in the form of fertilizer subsidies, education or training programs, or assistance with agricultural infrastructure can help improve garlic farming conditions, as well as improve access to necessary resources.

5. Increasing Market Demand for Garlic as a Processed Product

Efforts to expand the market and increase demand for garlic as a processed product, such as a spice or ready-to-eat food product, can be a strategy to expand market share.

Threats in garlic marketing strategies in Sumberwringin District:

1. **Transparency in Determination of Rendements** There is no clarity or lack of transparency in pricing or yield setting can be detrimental to farmers. If yields are determined without a clear basis or there is price manipulation, this can reduce farmers' profits.
2. **Higher Production Costs** Increases in production costs, such as the price of fertilizer, pesticides or fuel, can put pressure on farming profitability. If production costs continue to increase but the selling price is stable, farmers may experience a decrease in profits.
3. **Climate Change** Climate change, such as irregular rainfall, uncertain seasons, or extreme weather, can disrupt the growth and harvesting process of garlic. This can cause a decrease in crop yields or losses due to plant damage (Nurhapsa, 2020).
4. **The emergence of intermediary traders.** The existence of intermediary traders in the distribution chain can harm farmers by cutting off the profits that farmers should get. Unfair practices or low bargaining power of farmers can reduce sales yields.
6. **Untimely Harvesting** Harvesting garlic before the right time can reduce the quality and yield of the harvest. Premature harvesting can result in products that are of poor quality or do not comply with market standards, affecting the farmer's reputation and the selling price of the product.

Conclusion

Analysis of garlic farming in Sumberwringin District shows the potential for large profits but is faced with obstacles in farmers' knowledge of cultivation techniques, high levels of pest and disease attacks. Therefore, there is a need for development efforts through increasing farmer knowledge, using modern technology, integrated pest and disease control, as well as increasing market access through strengthening distribution networks and product promotion (Singh, 2023). In this way, garlic farming can develop sustainably and provide significant economic benefits for farmers and the surrounding area. By utilizing internal strengths, addressing weaknesses, taking advantage of existing opportunities, and facing threats with the right strategy, garlic farmers in Sumberwringin District have the opportunity to improve marketing strategies and maintain competitiveness in an ever-changing market. Comprehensive and adaptive strategies are needed to optimize results and minimize the impact of the challenges faced (Salam, 2019).

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