

The Analysis of Transaction Costs and Revenue of Cayenne Pepper Farming: An Empirical Study in Semarang District

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Abstract

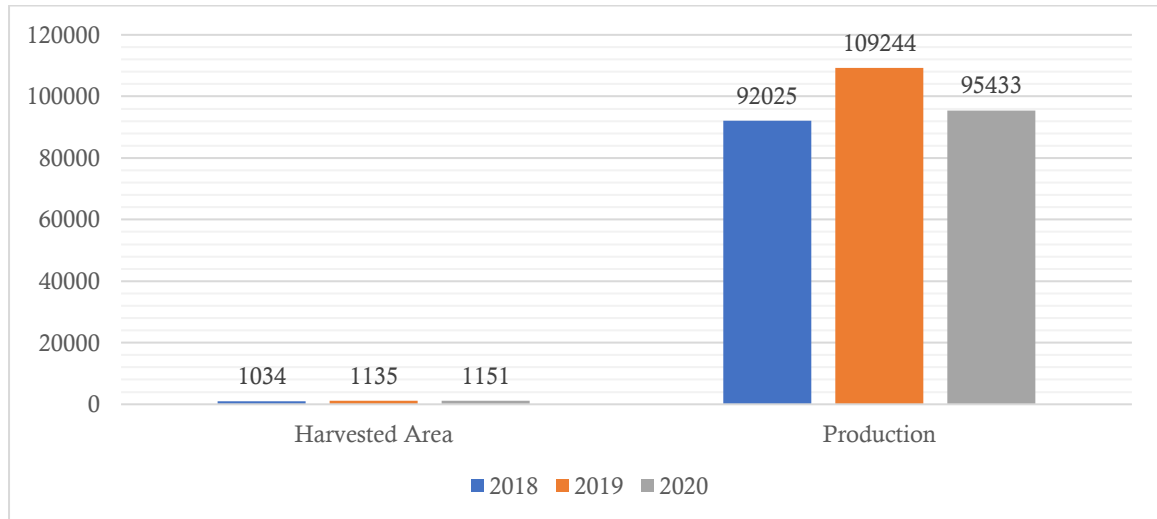
This study aims to analyze transaction costs and its effect on chili farming income in Semarang Regency. This study used a quantitative descriptive approach. The location of this study was in Semarang Regency. The population in this study were all cayenne pepper farmers in Semarang Regency, which amounted to about 1,345 people. The sampling technique in this study was simple random sampling with a total sample of 70 people. This study used two methods of data analysis, namely 1) analysis of transaction costs of cayenne pepper farming, 2) analysis of cayenne pepper farming income. The transaction costs of cayenne pepper farming consist of 4 (four) namely input procurement transaction costs, farming processing transaction costs (farming), output sales transaction costs, and transaction costs for supporting institutions. The highest transaction cost for Cayenne pepper farming is found in the Total Input Procurement Transaction Cost, which is Rp. 452,000 while the lowest is in the farming process of Rp. 197,000. The monitoring cost incurred by farmers is Rp. 45,000. The revenue of Cayenne pepper farming is Rp. 70,000,000/ha with the price of Rp. 35,000/kg. The use of pesticides to prevent pest and disease attacks. In Cayenne Pepper farming, the pesticides used by Cayenne pepper farmers are herbicides and insecticides. Herbicides are used to eradicate weeds and insecticides are used to eradicate pests. Pests that attack Cayenne pepper plants are red mites. The total pesticide cost incurred by farmers is Rp. 300,000/ha. The suggestion that can be given in this study is that the government needs to map and ensure the balance of supply and demand so that the price of cayenne pepper remains stable. It is necessary to conduct socialization with farmers when planting chilies so they do not lose money. There is a need for subsidies, especially for fertilizers, which have a very important role in increasing chili productivity.

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INTRODUCTION

Agriculture is one of the sectors that has an important role and contribution to the national economy. In addition to contributing to Gross Domestic Product (GDP), the agricultural sector also plays a role in national food availability. However, the price of agricultural commodities that are uncertain and often fluctuate can have a negative impact on inflation. One of the agricultural commodities that experience price fluctuations the most is cayenne pepper. This is due to cayenne pepper farming is very risky to various risks. Semarang Regency is one of the areas in Central Java that has great potential in cayenne pepper farming as can be seen in the following Figure:



Source: Central Bureau of Statistics of Central Java, 2022

Figure 1. Harvested Area (Ha) and Production (Kw) of Cayenne Pepper in Semarang Regency for the 2018-2020 Periods

Figure 1 explains that the area of harvested chili in Semarang Regency during the 2018-2020 periods tended to increase. However, the production of cayenne pepper actually decreased. The rise and fall of chili production will certainly affect prices in the market and will have an impact on the income of chili farmers. The income of chili farmers can also be influenced by the size of the transaction costs in chili farming.

Transaction costs are part of institutional economics (Sultan, H., & Rachmina, 2016) which cannot be avoided in the economic activities of farmers, giving rise to economic impacts for farmers such as the transfer of surplus from farmers to other parties. Directly, farmers' income (benefits) can be reduced due to transaction costs (Saidah, 2018). Even though it is unavoidable, transaction costs can be reduced to an efficient level so that the profits obtained are maximized (Haryono et al., 2021). Transaction cost is a factor that affects farming income (Darwanto et al., 2014), this is due to conditions of uncertainty that give rise to a cost of uncertainty. Uncertainty conditions often occur in micro-businesses such as farming (Suchatiningih & Waridin, 2015). Transaction cost is a factor that affects income, this is since there is no concentration of economic activity at one point (agglomeration) resulting in market failure. Transaction costs appear in the input market and output market (Zulkarnain et al., 2021), this is in line with Kurniawan's research, (2021) which states that transaction costs are found in activities such as obtaining financing, obtaining production facilities (inputs) and marketing production results (output). Therefore, it requires fees when exchanging goods or services. The costs incurred are not production costs but non-production costs used to obtain goods or services that meet the criteria as transaction costs (Budiman, 2016).

Transaction costs prevent farmers from obtaining maximum income. Therefore, the challenge for farmers is to reduce transaction costs when obtaining goods or services (Sultan, 2015). Transaction costs in farming activities cannot be avoided. Farming activities are formed in an agribusiness system such as input subsystems, farming subsystems, output subsystems, and supporting subsystems (Dhiarto, 2022). In each stage of the subsystem, there are transaction costs incurred by farmers to obtain a product or service. Transaction costs are costs that are not included in the price of an item or service (Saidah, 2018). The emergence of transaction costs occurs because there is imperfect information (Wicaksono and Sakti, 2016) and limited access to information (Rosanti et al., 2020). Therefore, economic actors are faced with incomplete information or information uncertainty (Fallo et al., 2020). Transaction costs are costs incurred

other than production costs.

The existence of transaction costs can increase the total costs incurred in a business. The high costs incurred by business actors can result in price differences at the consumer level and the producer level (Sultan, 2015). Difficulties in identifying transaction costs can reduce the income of business actors as they do not realize that they have incurred other costs other than production costs that are not considered previously (Setiani and Prasetyo, 2020) so that low transaction costs indirectly increase revenue. The increase in transaction costs reduces the level of income, therefore transaction costs ultimately lead to inefficiency in farming. Transaction costs cannot be eliminated but can be minimized. Minimizing transaction costs to achieve a broader goal, namely community welfare (Zulkarnain et al., 2021). Transaction costs are formed due to transactions in obtaining goods or services (Dhiarto et al., 2021), so that transaction costs need to be included in farming income. Income is obtained from revenues and production costs, where increasing farmers' income is the main key to improving farmers' welfare. Without realizing it, the welfare of farmers has not received maximum results. This is due to transaction costs that are not considered by farmers. Thus, basically, the costs obtained in the field as transaction costs are costs that arise in order for an exchange to occur. This study aims to analyze transaction costs and their effect on chili farming income in Semarang Regency.

METHODS

This study used a quantitative descriptive approach. The location of this study was in Semarang Regency. There were two kinds of data used in this study, namely primary data and secondary data. Primary data were obtained by questionnaires and interviews. Meanwhile, secondary data were obtained from literature studies such as journals, publication reports, and so on. The population in this study were all cayenne pepper farmers in Semarang Regency, which amounted to about 1,345 people. The sampling technique in this study was simple random sampling with a total sample of 70 people.

This study used two methods of data analysis, namely 1) analysis of transaction costs of cayenne pepper farming, 2) analysis of cayenne pepper farming income. The analysis of the Transaction Costs of Cayenne Pepper Farming. The transaction costs experienced by farmers differ according to the conditions of farming management. These differences are caused by several things, namely social conditions, property rights, and market conditions (Saidah, 2018). To get concrete transaction costs for Cayenne pepper farming, it is necessary to look at transaction costs starting from input, farming, output, and support. Systematically, transaction costs (TrC) according to North and Thomas (1973), are as follows:

$$\text{TrC}_{\text{total}} = \text{TrC1}(\text{input}) + \text{TrC2}(\text{farming}) + \text{TrC3}(\text{output}) + \text{TrC4}(\text{support})$$

Explanation:

TrC_{total} = Transaction costs of Cayenne pepper farming (Rp.)

TrC1(input) = Input procurement transaction costs (Rp.)

TrC2(farming) = Farming process transaction costs (Rp.)

TrC3(output) = Output sales transaction costs (Rp.)

TrC4(support) = Supporting institution transaction costs (Rp.)

Analysis of Cayenne Pepper Farming Income. To find out the income of Cayenne pepper farming, an income analysis is carried out according to the instructions (Soekartawi 2016). Systematically, income analysis (π) is as follows:

$$\pi = \text{TR} - \text{TC}$$

Thereafter, the existence of transaction cost, then systematically, the income analysis (π) is as follows:

$$\pi = \text{TR} - \text{TC}$$

$$\pi = \text{P} \cdot \text{Q} - ((\text{FC} + \text{VC}) + \text{TrC})$$

Explanation:

π = Farming Income (Rp.)

TrC = Transaction Cost (Rp.)

TR = Total Revenue (Rp.)

P = Price (Rp.)

TC = Total Cost (Rp.)

Q = Quantity (Rp.)

The Criteria for R/C ratio

R/C > 1 : Profitable Farming

R/C < 1 : Detrimental Farming.

RESULTS AND DISCUSSIONS

The Analysis of Transaction Costs for Cayenne Pepper Farming

Cayenne Pepper farming transaction costs consist of 4 (four) namely input procurement transaction costs, farming processing transaction costs, output sales transaction costs, and transaction costs for supporting institutions. The total transaction costs of Cayenne pepper farming are presented in Table 1 as follows:

Table 1. Transaction costs of cayenne pepper farming in Semarang Regency

Transaction Costs of Cayenne Pepper Farming	Unit	Total
I Input Procurement Transaction Costs		
Transaction Costs for Procurement of Farm Seeds, Fertilizers, and Pesticides		
a. Information Cost	Rp	35000
b. Coordination Cost	Rp	95000
Total Transaction Costs	Rp	130000
Transaction Costs for Procurement of Farming Workers		
a. Negotiation Fee	Rp	96000
Total Transaction Costs	Rp	96000
Total Input Procurement Transaction Costs	Rp	452000
II Transaction Costs for Farming Process		
Farming Planning Transaction Costs		
a. Coordination Cost	Rp	89000
b. Information Cost	Rp	43000
Total Transaction Costs for Farming Implementation	Rp	132000
a. Monitoring Cost	Rp	45000
b. Transportation Cost	Rp	20000
Total Transaction Costs	Rp	65000
Total Transaction Costs for Farming Process	Rp	197000
III Output Sales Transaction Costs		
Cayenne Pepper Sales Transaction Costs		
a. Information Cost	Rp	60000
b. Transportation Cost	Rp	35000
c. Negotiation Fee	Rp	86000
d. Contract Enforcement Cost	Rp	79000
Total Transaction Costs	Rp	260000
Total Output Sales Transaction Costs	Rp	260000
IV Supporting Institution Transaction Costs		
Credit Transaction Costs (Farming Capital)		
a. Information Cost	Rp	32000
b. Implementation Cost	Rp	78000
c. Monitoring Cost	Rp	64000
d. Coordination Cost	Rp	25000
e. Contract Enforcement Cost	Rp	36000
Total Transaction Costs	Rp	235000
Total Transaction Costs for Supporting Institutions	Rp	235000
Total Transaction Costs of Cayenne Pepper Farming	Rp	692000

Source: Primary Data (processed), 2022

Based on table 1, it can be explained that the transaction costs of cayenne pepper farming consist of 4 (four) namely input procurement transaction costs, transaction costs for farming process, output sales transaction costs, and transaction costs for supporting institutions. The total transaction costs of Cayenne pepper farming are presented in Table 1. Table 1 shows that the highest transaction cost for Cayenne pepper farming is found in the Total Input Procurement Transaction Cost, which is Rp. 452,000 while the lowest is in the farming process of Rp. 197,000. According to Tran et al. (2014), the transaction cost incurred by farmers in farming is Rp. 1,545,466, when compared to the transaction cost incurred by farmers in the research location, is still small, which is Rp. 732,725,17. Output sales transaction costs are in the form of sales transaction costs consisting of information costs, transportation costs, negotiation costs, and contract enforcement costs. The cost of information aims to find a place of sale that provides a better price with low refraction, while the places of sale of Cayenne Pepper are stalls, agents, and factories. The cost of information issued is Rp. 60000 in the form of buying pulses to call the place where to sell Cayenne Pepper. Transportation cost aims to go to the point of sale for those that cannot be contacted using two-wheeled vehicles. The transportation cost incurred is Rp. 35000 in the form of vehicle fuel purchases. Negotiation cost aims to get prices and reactions that meet farmers' expectations. The

negotiation cost incurred is Rp. 86,000 in the form of purchases of cigarettes or food, which will later be given to parties negotiating with farmers. In addition, there is a contract enforcement cost incurred by farmers of Rp. 79,000 which aims to strengthen the agreement between farmers and sellers, this is done by farmers with several parties such as agents. The contract enforcement costs are in the form of purchasing stamps and photocopies of documents. Input procurement transaction costs consist of transaction costs for the procurement of seeds, fertilizers, and pesticides; and labor transaction costs. The transaction costs that make the biggest contribution to the input subsystem, the first is the procurement of seeds, fertilizers, and pesticides of Rp. 130,000 and the second is the procurement of labor for Rp. 96,000. For transaction costs for the procurement of seeds, fertilizers, and pesticides, farmers incur transaction costs such as information costs and coordination costs. The coordination cost is the biggest in obtaining production facilities, which is Rp. 89,000, while the transportation cost is the small one incurred by the farmer, which is Rp. 20,000. Coordination costs and information costs aimed at obtaining production facilities in the form of seeds, fertilizers, and pesticides at agricultural stalls or shops in the form of communication costs (phone/short messages), transportation costs (fuel), and consumption costs (eating/drinking/cigarettes).

For transaction costs on labor procurement, farmers incur transaction costs such as negotiation fees. Negotiation fee of Rp. 96,000, which aims to maintain the labor that will be used by farmers who plant, is in the form of communication costs (telephone/short messages) and costs for leaving work. The transaction costs of farming processes consist of transaction costs of farming planning and transaction costs of the implementation of farming. The transaction costs that provide the largest contribution to the farming process are first farming planning, which amounted to Rp. 132,000, and the second is the implementation of farming of Rp. 197,000. Farming planning transaction costs are incurred by farmers in the form of coordination costs and information costs. Of the two costs, the coordination cost is the most incurred by farmers, namely Rp. 65,000, which is in the form of meeting costs for members' meetings to discuss the beginning of the planting season, harvesting, and obstacles in obtaining production facilities, while the information cost incurred by farmers is Rp. 35,000 in the form of purchasing pulses to contact members for meetings. The meeting is held by members 2 times, which is at the time of entering the planting and harvesting seasons. Farming implementation transaction costs incurred by farmers are in the form of monitoring costs and transportation costs. The monitoring cost incurred by farmers is Rp. 45,000 in the form of village fees, which are carried out voluntarily to protect the village and the plants in the village. In addition, there is a transportation fee of Rp. 20,000 which is in the form of purchasing fuel which is used to see the Cayenne Pepper plants that will be harvested.

The Analysis of Cayenne Pepper Farming Income

Table 2. The Calculation of cayenne pepper farming income per hectare

Description	Unit	Physique	Price (Rp)	Value (Rp)
Revenue				
Production	kg	20000	35000	70000000
Production Cost				
1. Cash Fee				
Seeds	bunch	3000	1000	3000000
Urea Fertilizer	kg	180	2500	450000
NPK Fertilizer	kg	150	3500	525000
SP 36 Fertilizer	kg	90	3000	270000
Manure	kg	3	8000	24000
Pesticide	kg			300000
Labour Outside Family	HOK	20	70000	1400000
Plow the Land	Rp			550000
Taxes	Rp			80000
Freight Cost	Rp			1500000
Total Cash Cost				8099000
II. Cost Calculated				
Labour in the Family	HOK	8	65000	520000
Equipment Depreciation	Rp			200000
Land Lease	Rp			5500000
Total Cost Calculated	Rp			6220000
Total Production Cost	Rp			14319000
Profit				
Profit over Cash Costs	Rp			61901000
Profit over Total Costs	Rp			55681000

Description	Unit	Physique	Price (Rp)	Value (Rp)
R/C Ratio				
R/C on cash cost	Rp			8.64
RC/ on the total cost	Rp			4.88

Source: Primary Data (processed), 2022.

Based on table 2, it can be explained that the revenue of Cayenne Pepper farming is Rp. 70,000,000/ha with the price of Cayenne Pepper of Rp. 35,000/kg. The total production of Cayenne Pepper produced by farmers is 20 tons/ha). The total Cayenne pepper production is still not maximized when compared to the national productivity standard of 41 tons/ha (Ministry of Agriculture 2016), 23.87 ton/ha. Demir (2016) Cayenne pepper productivity is low due to the inefficient production input factors used and the influence of the weather. According to Gameiro et al. (2016), increasing the production of Cayenne Pepper through extensification and intensification approaches. Cayenne Pepper farming cash costs consist of transportation costs (21.44%), tax costs (0.87%), plow costs (7.78%), labour costs outside the family (24.86%), pesticide costs (3.15%), fertilizer costs (32.36%), and seed costs (9.54%). The cost of fertilizer is the biggest in the Cayenne Pepper production process. This is because fertilizer can increase soil fertility. Cayenne Pepper farmers have started using organic/manure fertilizers so that they can reduce the use of chemical fertilizers that have a negative impact on the soil. According to (Schmidt, 2019), the provision of organic/manure fertilizers aims to increase commodity production and production quality. Labor activities for Cayenne pepper farming are in the form of land processing, planting, fertilizing, eradicating HPT, weeding, harvesting, and post-harvesting. Harvesting costs are the biggest costs. Harvesting must be done quickly since the Cayenne Pepper plant is bulky (Nandi et al., 2017).

The use of pesticides to prevent pest and disease attacks. In Cayenne Pepper farming, the pesticides used by chili farmers are herbicides and insecticides. Herbicides are used to eradicate weeds and insecticides are used to eradicate pests. Pests that attack Cayenne pepper plants are red mites. Total pesticide cost incurred by farmers is Rp. 300,000/ha. The number of Cayenne pepper seeds used is 3000 bunches for Rp. 1000/bundle. The selection of high-yielding varieties can increase the production of Cayenne Pepper (Ariningsih, 2018) with the seeds used are the cassesa variety and the Thai variety. The calculated costs consist of land leases, equipment depreciation, and labor in the family. The cost of land lease is a calculated cost of Rp. 5,500,000/ha. According to Schmidt, (2019), the cost of land lease is Rp. 3,750,932/ha, the cost of renting the land is still relatively cheap, this is since the location of the land is quite far from road infrastructure. Most of the lands are obtained from parental grants (Zulkarnain et al., 2021). A large planting area can increase production and income (Nandi et al., 2017). In addition to land rental costs, there is labor cost in the family of Rp. 520,000. Then, the depreciation cost of the equipment is Rp. 200,000. Cayenne Pepper Farmers use labor in families more. Cayenne Pepper farmers earn income per hectare on cash costs of Rp. 61,901,000 and for a total cost of Rp. 55,681,000. This condition shows that Cayenne Pepper farming is profitable in line with the research conducted by (Pramesti, Rahayu, and Agustono, 2017). Seen from the ratio of the revenue of Cayenne Pepper farmers to cash costs (R/C) of 8.64. This ratio can be interpreted as every Rp. 1,000.00 cash costs incurred will receive an acceptance of Rp. 8,640.00. The calculation of the revenue ratio on cash costs shows that it is greater than one ($R/C > 1$). This means that the farming carried out by Cayenne Pepper farmers is profitable and in line with previous research.

CONCLUSION

Based on the results and discussions, it can be explained that the transaction costs of cayenne pepper farming consist of 4 (four) namely input procurement transaction costs, farming processing transaction costs (farming), output sales transaction costs, and transaction costs for supporting institutions. The highest transaction cost for Cayenne pepper farming is found in the Total Input Procurement Transaction Cost, which is Rp. 452,000 while the lowest is in the farming process of Rp. 197,000. The cost of information incurred is Rp. 60000. Transaction costs on labor procurement, farmers incur transaction costs such as negotiation costs. The negotiation fee is Rp. 96,000. Farming implementation transaction costs are incurred by farmers in the form of monitoring costs and transportation costs. The monitoring cost incurred by farmers is Rp. 45,000. The revenue of Cayenne pepper farming is Rp. 70,000,000/ha with the price of Rp. 35,000/kg. The total production of Cayenne Pepper produced by farmers is 20 tons/ha). The use of pesticides to prevent pest and disease attacks. In Cayenne Pepper farming, the pesticides used by Cayenne pepper farmers are herbicides and insecticides. Herbicides are used to eradicate weeds and insecticides are used to eradicate pests. Pests that attack Cayenne pepper plants are red mites. The total pesticide cost incurred by farmers is Rp. 300,000/ha. The number of Cayenne Pepper seeds used is 3000 bunches for Rp. 1000/bundle. Cayenne Pepper farmers earn income per hectare on cash costs of Rp. 61,901,000 and for a

total cost of Rp. 55,681,000.

A suggestion that can be given in this study is that cayenne pepper farming is one of the farming that has an important role in meeting basic needs. However, chili farming which has many risks makes the price of cayenne pepper very volatile. Therefore, the government needs to map and ensure the balance of demand and supply so that the price of cayenne pepper remains stable. There needs to be socialization among farmers when planting chilies so they do not lose money. There is a need for subsidies, especially for fertilizers, which have a very important role in increasing chili productivity.

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