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ANALYSIS OF TOMATO SUPPLY CHAIN PERFORMANCE IN PANGANDARAN DISTRICT

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ABSTRACT

The large number of marketing agencies involved in marketing the abundant tomato production resulted in lengthy marketing channels which in turn triggered price reductions. The bargaining position of farmers is getting weaker as a result the large number of farmers selling at the same time. The research was conducted with the aim analyzing the performance of tomato supply chain in Pangandaran Regency. The type research used was a survey of tomato farmers in Sindangjaya Village, Mangunjaya District, Pangandaran Regency which determined by census as many as 37 tomato farmers, while marketing actors involved in marketing tomatoes were determined using snowball sampling, namely by tracing the marketing flow of from tomatoes farmer to consumer. The data analyzed is primary data obtained through structured interviews using a questionnaire. The research objectives were analyzed descriptively qualitatively using supply chain performance analysis. The results showed that performance of tomato supply chain in Pangandaran Regency was based on indicators: delivery performance, order lead time, compliance with standards, order lead time, order fulfillment cycle, supply chain flexibility, cash to cash cycle time, and daily inventory all of which have met the performance standards that are in the good category.

Keywords: Delivery, Tomato farming, Farm

INTRODUCTION

Indonesia, which has a tropical climate, has considerable potential in utilizing business opportunities in the agricultural sector, especially in the horticultural sector, considering that this commodity occupies an important position in meeting the needs of the community and even its contribution to GDP is quite large(Central Bureau of Statistics, 2016; Daniel, 2014). One of the horticultural commodities that many farmers cultivate is tomatoes which have a fairly high economic value. Tomatoes are commonly used as vegetables, juices or used as a mixture of cooking spices and even processed into sauces, cosmetic ingredients and medicines(Fajri, 2009; Paramita et al., 2019). According to Kambey et al. (2016); Nasrun et al. (2022)him, the need for this commodity continues to increase along with the increasing population, increasing people's income, and increasing public awareness of the importance of nutritional and health values.

Tomatoes are one of the leading commodities of Pangandaran Regency developed in Sindangjaya Village, Mangunjaya District, covering an area of 37.2 hectares with a production capacity of 128 tons. (Pangandaran Regency Agriculture Office, 2021)

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The number of marketing agencies involved in marketing abundant production causes prices to fall. According to Nasrun et al. (2022); Paramita et al. (2019)him, the weak bargaining position of farmers is also caused by the number of farmers who make sales at the same time in addition to the length of marketing channels. This is in line with, the efficiency Az Zahra &; Nauly (2021); Purnama et al. (2021) of marketing channels can be seen from the short duration of the marketing channel itself,but a small marketing channel also does not guarantee the efficiency of marketing a product.

Supply chain management of agricultural products is very different from industrial products. According to this difference, agricultural Furqon (2014) products have distinctive characteristics, which are quickly damaged so that they require special handling so that they can reach consumers in fresh condition according to their demand. Thus, it must be a serious concern in designing effective and efficient supply chain management and sustainable.

Based on this, this study aims to analyze the performance of the tomato supply chain in Pangandaran Regency.

RESEARCH METHODS

This research is a case study on tomato farmers in Sindangjaya Village, Mangunjaya District, which is the center of tomato development in Pangandaran Regency. According to , a Arikunto (2013) case study is an intensive, detailed, and in-depth research on a research subject.

The data used in this study are primary data and secondary data. Primary data were obtained through in-depth interviews assisted by questionnaires, while secondary data were obtained through literature studies and documentation studies from agencies and agencies related to this study. The sample of tomato farmers was determined by census as many as 37 tomato farmers in Sindangjaya Village, Mangunjaya District, Pangandaran Regency. The sample of marketing agencies involved in tomato marketing was determined using *snowball sampling* and obtained by collecting merchants, wholesalers, and retailers.

The research objectives were analyzed in a qualitative descriptive manner using supply chain performance achievement criteria using the following indicators:Bollstroff & Rosenbaum (2011)

1. Delivery performance

$$\frac{\text{Total pesanan yang dikirim tepat waktu}}{\text{Total pesanan}} \times 100$$

2. Order fulfillment

$$\frac{\text{Permintaan konsumen tanpa menunggu}}{\text{Total pesanan yang dikirim}} \times 100$$

3. Compliance

$$\frac{\text{Total pesanan sesuai dengan standar}}{\text{Total pesanan yang dikirim}} \times 100$$

4. Order fulfillment lead time

   Is the time needed by farmers in meeting consumer needs expressed in units of hours.

5. Order fulfillment cycle

   Planning time + Packaging time + Delivery time

6. Supply chain flexibility

   Prospecting cycle + Packing cycle + Shipping cycle

7. *Cash to cash cycle time*

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Average length of inventory + Time it takes for a consumer to pay to a merchant – The time it takes for a merchant to pay a supplier for goods already received.

8. Daily inventory

$$\frac{\text{Rata-rata persediaan}}{\text{Rata-rata kebutuhan}}$$

RESULTS AND DISCUSSION

Supply chain performance is an evaluation step in determining the final goal whether it has been achieved or not in a chain that includes all members involved in the supply chain consisting of goods flows, information flows, and financial flows.

The performance of the tomato supply chain in Sindangjaya Village, Mangunjaya District, Pangandaran Regency can be seen in Table 1.

Table 1. Tomato Supply Chain Performance at Every Marketing Institution in Sindangjaya Village, Mangunjaya District, Pangandaran Regency

Indicator	Farmer	Collecting Merchants	Wholesalers	Criterion
Sales to	Collecting Merchants	Wholesalers	Reseller	
Order fulfillment lead time (Hours)	24,12	8,54	5,28	Good
Order fulfillment cycle (Hours)	6,25	23,18	20,35	Good
Supply chain flexibility	0,00	0,00	0,00	Good
Cash to cash cycle time (Hari)	1,00	3,00	1,00	Good
Daily Inventory (Days)	0,00	0,00	0,00	Good
Delivery performance (Percent)	95,15	97,10	99,10	Good
Order fulfillment (Percent)	98,20	100,00	100,00	Good
Compliance (Percent)	99,06	99,32	99,16	Good

1. Performance based on input

a. Order fulfillment lead time

The *average lead time* for fulfilling farmers' orders with sales to collecting traders is 24.12 hours. The results of interviews with farmers revealed that usually farmers contact collecting traders to offer their tomatoes, and usually after there is a price agreement, farmers harvest their tomatoes and then take them directly from the farmer's farm. Thus, farmers do not incur transportation costs because transportation costs are fully borne by collecting traders. This is in line with the results of research Joseph (2022) that the costs incurred by tomato farmers in Pangandaran Regency only incur labor costs for the harvest, while transportation costs are fully borne by collecting traders,

The collecting merchant then sells to the wholesaler after the tomatoes are in the hands of the collecting merchant. However, usually at harvest time, the collector contacts the wholesaler in advance to inform him that he has tomatoes ready for sale. After negotiations and a price agreement is reached, the tomatoes are immediately sent to wholesalers. The results of the analysis show that the *average lead time* of order fulfillment of collecting traders with large traders is 8.54 hours.

The results of the analysis show that theaverage *lead time* wholesalers sell to retailers is 5.28

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hours. This means that judging from the *lead time* is in the good category. When compared with the *superior food SCORE card* value, the lead time value is included in the good category, because the average value of *farmers' lead time* is less than three days or 72 hours.

b. Order fulfillment cycle

The average order cycle of farmer orders is 6.25 hours, collectors sell to wholesalers 23.18 hours , wholesalers sell to retailers 20.35 hours. If the order fulfillment cycle is compared to the *superior food SCORE card*, it is included in the good category because the average value of the order fulfillment cycle is less than 14 days or 336 hours.

c. Supply chain flexibility

The results of the study revealed that each marketing agency does not have the flexibility of the tomato supply chain due to the absence of daily inventory so that it cannot meet unplanned demand. The results of interviews with marketers revealed that the absence of daily supplies is to reduce risk. This is in line with the results of the studyParamita et al. (2019), that tomato marketing agencies in West Lampung Regency also do not have inventory for reasons to reduce risk. This is in line with the results of research that Purnama et al. (2021) cayenne pepper farmers in Tasikmalaya Regency do the same thing on the grounds that the products they produce cannot last long so they must be sold fresh.

d. *Cash to cash cycle time*

The time it takes for collectors to pay to farmers and collectors receiving payments from wholesalers is expressed in days. The results of the study revealed that collecting merchants pay to farmers when tomatoes are finished harvesting and transported by collecting traders. According to Furqon (2014)him, direct payment is one of the efforts to maintain trust. Collecting merchants receive payouts from wholesalers ranging from two to four days with an average of three days. Meanwhile, wholesalers accept payments from retailers, taking up to one day.

e. Daily inventory

The farmers' tomato production is all directly sold to collecting merchants who have placed orders a few days in advance. This indicates that there is no supply of tomatoes stored in advance by farmers. The same is true of collecting merchants and wholesalers. The results of the interview revealed that both collecting merchants and wholesalers were not willing to take risks, so once the goods were received by each of these merchants, they were immediately distributed both by collecting merchants to wholesalers and by wholesalers to retailers. This is in line with stating that vegetable commodities are commodities that Kambey dkk. (2016) are quickly damaged so that more complex handling is needed so that the product reaches consumers in fresh condition.

2. Performance by output

a. Delivery performance

If the delivery performance is closer to 100 percent, the supply chain performance can be

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said to be better, and if it reaches 100 percent, it is said that the supply chain performance is perfect. The results of the analysis showed that the average delivery performance of tomatoes at the farmer level was 95.15 percent, at the collecting merchant level 97.10 percent, at the wholesaler level 97.28, and at the retailer level was 99.10 percent. When compared with the *superior value of the food score card*, the delivery performance value of tomato farmers is in the good category with an average value of ≥ 95 percent.

b. Order fulfillment

The results of the analysis showed that the value of fulfilling orders of collecting traders from farmers was 98.20 percent. Order fulfillment from all marketing agencies involved in distributing tomatoes has fulfilled orders in a timely manner without waiting. According to , Joseph (2022)the seriousness of marketers shows that they think more long-term to maintain customer loyalty The fulfillment of orders at each marketing agency involved on average is 100 percent so that whencompared to the superior value of the *food SCORE card*, the value of order fulfillment is included in the good category.

c. Compliance

Tomato farmers in Sindangjaya Village, Mangunjaya District, Pangandaran Regency always send orders according to the standards determined by collecting traders, which is 99.06 percent. Interviews with farmers revealed that tomatoes that did not match the collectors' orders were usually distributed to neighbors. According to Joseph (2018)him, this is one form of local wisdom of farmers derived from the ethics of subsistence which is still very closely attached among rural communities.

The delivery of orders from thecollecting merchant to the wholesaler is also in accordance with the standards set by the wholesaler with the percentage of suitability is 99.32 percent. Likewise, wholesalers send orders to retailers according to the standards set by retailers with a conformity percentage of 99.16 percent. Based on this, awhen compared with the *superior value of the food SCORE card*, the value of conformity with farmer standards is included in the good category as seen from the average value of conformity to the standards of each marketing agency involved > 99 percent.

CONCLUSION

The performance of the tomato supply chain in Sindangjaya Village, Mangunjaya District, Pangandaran Regency based on indicators: delivery performance, order fulfillment, compliance with standards, *lead* time for order fulfillment, order fulfillment cycle, supply chain flexibility, cash *to cash cycle time*, and daily inventory which all have met performance standards, namely being in the category Ok.

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