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Logistics Structure Analysis for Selayar Tangerine Supply Chain Mapping

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A B S T R A C T

Citrus fruits are in demand not only for their freshness, but also for their fiber content as nutrients and vitamins, especially vitamin C and vitamin A, which are beneficial for health. Selayar Islands Regency is a citrus development area in South Sulawesi Province. The citrus crop developed in Selayar Islands Regency is the tangerine variety. Along with the development of the citrus plant area, the population of citrus plants in Selayar Islands Regency increases every year. This study aims to describe the mapping of the Selayar tangerine supply chain structure through logistics cost analysis to map the distribution of income between supply chains. The number of respondents in this study was 45 people. This research uses descriptive analysis with convenience and snowball sampling methods to get an objective picture. This research uses logistics cost analysis using the Activity Based Costing method. The results showed that the levels involved in the supply chain are farmers, collectors, wholesalers, small traders, and consumers. The results of the logistics cost calculation show material handling costs as the highest cost of the entire Selayar tangerine supply chain cost.

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INTRODUCTION

Horticulture is one of the agricultural subsectors that plays an important role in the economy. One of the horticultural commodities that have high economic value and play an important role in agricultural development is fruits. Fruit horticultural commodities have very good prospects if developed intensively. This bright prospect is the target of fruit marketers to expand market share both locally and internationally. One commodity that has favorable prospects if developed is citrus fruit.

Citrus is a horticultural commodity with high economic value. Citrus fruits are in demand in addition to their freshness, as well as fiber content as nutrients and vitamins, especially vitamin C and vitamin A, which are beneficial for health. Citrus fruits can be consumed directly or processed into processed citrus products. The production of tangerine fruit in Indonesia in 2022 is 2,551,999 tons. The amount of production experienced a production growth of 6.29% from the previous year, where tangerine production in 2021 was 2,401,064 tons. The tangerine harvest area in 2022 experienced a slight decrease of 1.1% from the previous year. (Central Bureau of Statistics, 2023).

Selayar Islands Regency is a citrus development area in South Sulawesi Province. The citrus developed in Selayar Islands Regency is the Keprok variety. Along with the development of citrus crop areas, the population of citrus crops in Selayar Islands Regency increases every year, but productivity is still low with an average value of around 7.72 tons/hectare in a span of 5 years (2018-2022). The tangerine harvest area in that time span has increased on average, except in 2022 the figure remained the same as the previous year, which amounted to 452 hectares. Tangerine production also continued to increase in the 2018-2021 time span, but decreased in 2022 with a total production of 1,705 tons compared to 2021 whose production was 3,410 tons. The low productivity of citrus crops in Selayar Islands Regency is due to the fact that citrus crops are still young and immature (Selayar Agriculture Office, 2023).

The logistics cost structure in the siamese/tangerine value chain is influenced by several key factors. Factors such as warehousing, material handling, transportation and packaging play an important role in determining the total logistics cost per unit (Zhan, 2023). In addition, the infrastructure of the logistics chain, including the type of warehouse used and the associated costs, has a direct impact on overall logistics costs. In addition, improving supply chain management, increasing information accessibility, ensuring alternative reliability and focusing on product quality indicators are important priorities for improving the performance of the siamese/tangerine supply chain (Wiratchai et al., 2018). Addressing these factors through activities such as optimizing storage conditions, improving transportation systems, and collaborating with supply chain partners can help reduce costs and improve the quality of siam oranges/tangerines in a cost-effective way (Liu X. (2016).

The citrus supply chain consists of four main components, namely (1) Farmers, Individuals or entities responsible for cultivating citrus fruits, (2) Distribution Centers, Facilities where harvested citrus fruits are collected and sorted for further transport, (3) Citrus Storage: The location where citrus fruits

are stored to maintain their freshness and quality before reaching the market and (4) Fruit Market: The final destination where citrus fruits are sold to consumers. These components work together in a coordinated manner to ensure the efficient flow of citrus fruit from cultivation to the end consumer. Optimization of activities within each component is essential to minimize costs and maximize profits in citrus supply chain network design (Fakhrzad and Goodarzian, 2021).

Information related to the certainty of raw material supply and the amount of demand for tangerines will determine the efficiency of the supply chain system that works. Weak market information results in business actors in the supply stream relying on information from market traders or retailers. The information needed by the market is not clear in a supply chain such as information related to quality and quantity. Tangerine price information becomes very difficult to add value and control quality standards (Guritno and Khuriyati, 2018, Pratama, 2018). This study aims to describe the structure of the Selayar tangerine supply chain, analyze the logistics cost structure, and develop alternative strategies for the Selayar tangerine supply chain tier, in order to improve more equitable income distribution and increase farmers' income.

LITERATURE REVIEW

Logistics and Supply Chain Management

Currently, logistics services are not only performed by the company concerned (in-house logistics) but also by third-party logistics services (out-source logistics). Many things are considered by companies to use in-house logistics or out-source logistics (Cooke, 1998; Budiman, 2012). However, third-party logistics services have not been a concern for fresh food businesses such as horticulture.

Logistics management is one of the elements in supply chain management. Companies that develop transportation and logistics services are not necessarily part of a managed supply chain, if these logistics companies do not foster cooperation with actors in the supply chain, or only work based on orders received at any time. The risk is that the company is sometimes unprepared for the type of logistics the customer needs, hence the need for a logistics manager. According to Lambert, Garcia-Dastugue and Croxton (2008), logistics managers contribute and benefit when managing cross-functional functions including managing relationships with customers, suppliers, managing demand, managing customer services, fulfilling orders, product commercialization and other functions.

The process of supply chain formation and management can be viewed as an organizational transformation from a conventional system to a new system. Much research has benefited from studying successful supply chains rather than failed ones. Knowledge of how supply chains and logistics go wrong, however, can help develop strategies to minimize risk, assist in repairing supply chains that have gone wrong, and prevent them from failing further.

Logistics for agricultural products including horticulture is quite complex in terms of production, distribution and consumption. This is because the logistics system for horticultural products has certain characteristics that are influenced by the production system, the nature of the product and consumers.

Therefore, the logistics system for horticultural products requires special handling and is different from manufactured products.

Mena and Steven (2010) explain some specific characteristics of agricultural products including horticulture, namely:

1. Seasonality: Agricultural products are seasonal in both production and consumption systems.
2. Safety, nutrition and health: Food products will have a direct impact on the body of the person who consumes them. Therefore, safety, quality, traceability are important issues.
3. Short product life and susceptibility to damage: The biological nature of agricultural products means that they have a short lifespan and are susceptible to damage caused by physical or chemical causes.
4. Impact on the environment: Agricultural systems pose a risk to the environment as they use a lot of land, water, and energy.

Meanwhile, Vorst, et al (2005) explained the logistical characteristics of agricultural products based on the actors in the supply chain, namely:

1. Farmers
   - Long production period
   - Production is seasonal
   - Quality of produce and volume supplied varies

2. Traders (traders/retailers)
   - Varies in quality and volume of supply from farmers
   - Supply is seasonal
   - Requires conditioning for transportation and storage space

3. Industry
   - In-process variables greatly affect the quantity and quality of yield due to the influence of variable biological properties, seasons, weather, pests, and other biological damage.
   - Time needed to wait for quality tests (quarantine)
   - Storage and buffer space must be specialized according to the nature of the raw material or product
   - Requires traceability in the production process given the importance of quality and environmental factors.

Definition of Activity-Based Costing System

Activity-based costing systems have been developed in organizations as a solution to problems that cannot be solved properly by traditional systems. Activity-Based Costing System is a new thing so that the concept is still developing, so there are various definitions that explain the Activity-Based Costing System.

Definition of Activity-based costing system according to Supriyono "The activity-based costing system [Activity-Based Cost (ABC) system] is a system consisting of two stages, namely first tracking costs to various activities, and then to various products".

The definition of Activity-Based Costing System according to Edward J. Blocher, Kung H. Chen, and Thomas W. Lin is as follows:
"Activity-Based Costing (ABC) is a product costing approach that charges costs to products or services based on resource consumption caused by activities". Another definition of Activity-Based Costing System is also stated by Mulyadi6 as follows: "Activity-Based Cost System (ABC System) is an activity-based cost information system designed to motivate personnel to reduce costs in the long term through activity management".

Based on the opinions of several academics, it can be concluded that the Activity-Based Costing System is a cost calculation that emphasizes activities that use more types of cost triggers so that it can measure the resources used by products more accurately and can assist management in improving the quality of company decision making. The Activity-Based Costing System is not only focused on accurately calculating product costs, but is used to control costs by providing information about activities that cause costs.

In the formation of a collection of related activities, activities are classified into several activity levels, namely unit level, batch level, product level and facility level. The classification of activities in several levels will facilitate the calculation because the cost of activities related to different levels will use different types of cost drivers. Cost hierarchy is a grouping of costs in various cost groups (Cost Pool) as a basis for allocating costs. The cost hierarchy in the Activity-Based Costing System is:

1) Costs for each unit (output unit level) are resources used for activities that will increase with each unit of production or service produced. The basis of grouping for this level is the causal relationship with each unit produced.
2) Costs for each specific group of units (batch level) are resources used for activities that will be related to the group of units of products or services produced. The basis of grouping for this level is the cost that has a causal relationship to each group of units produced.
3) product/specific costs (produck/service sustaining level) are resources used for activities that produce products and services. The basis of grouping for this level is costs that have a causal relationship with each product or service produced.
4) Costs for each specific facility (facility sustaining level) are resources used for activities that cannot be directly linked to the products or services produced but to support the organization as a whole. The basis for grouping this level is difficult to find a causal relationship with the products or services produced but is needed for the smooth running of company activities related to the production process of goods or services.

METHODOLOGY

This research was conducted in April-October 2024 in Bontomatene District, Selayar Islands Regency. The research was conducted at each tier or tangerine business actors in the location of tangerine production centers in Selayar Islands Regency. The first stage is making a questionnaire about added value and logistics costs. The second stage is sampling.

The sampling method was convenience sampling and snowball sampling. The convenience sampling method was used because of the ease of conducting interviews with respondents at the research location. The method was used to find the initial respondents and then trace the supply chain starting from the initial tier to the final tier of the supply chain with snowball sampling based on the recommendations of the previous respondents. The third stage is using the Activity-Based Costing (ABC) method to calculate costs based on logistics activities.

This supply chain mapping research used 45 respondents consisting of 30 farmers, 5 collectors, 5 market traders and 5 retailers. Then, this research uses primary data and secondary data. Primary data came from in-depth interviews with each tier based on questionnaires. Secondary data came from the Central Statistics Agency (BPS) and references related to the study topic. Supply chain analysis was analyzed descriptively to obtain an objective picture of supply chain mapping (Amalia and Hairiyah, 2020).

Variable costs change and have a role that affects the production or sales process. In addition, fixed costs are costs that are always incurred and are not affected by changes in production costs. This research uses several formulas, namely:

a. Total cost (Rp/year) = Total fixed cost (Rp/year) + Total variable cost (Rp/year)
b. Production revenue (Rp/kg) = Total production (kg) x Selling price of production (Rp/kg)
c. Profit (Rp) = Total revenue - (Variable cost + Fixed cost)

Pishvaee et al. (2009) and Dharmawati et al. (2020) explained that the Activity-Based Costing (ABC) method is able to identify supply chain costs based on logistics activities. According to Zeng and Rossetti (2003) and Dharmawati et al. (2020), logistics activity components in several forms of components, namely transportation, storage, management, cost, risk, and packaging handling.

RESULTS AND DISCUSSION

Tangerine Supply Chain Mapping

Tangerines are one of the perishable and seasonal agricultural products. The nature of tangerines causes the nature of the supply flow to be different from the supply flow of non-agricultural commodities. The supply chain will become more efficient if post-harvest handling is appropriate. To maintain supply chain efficiency, post-harvest handling must be done properly, strengthen farmer institutions and expand access to financing, design supply chains oriented towards minimizing total costs and maximizing the benefits of the supply chain network (Fakhrzad and Goodarzian (2021)). Based on observations and interviews, the tangerine supply chain can be described as shown in Figure 1. The levels in the tangerine supply chain consist of farmers, village collectors, wholesalers, retailers, and consumers.

The first business actor is the farmer who supplies tangerines to village collectors and large traders. The farmer directly offers the tangerines during the price bargaining process, without classifying the tangerines. The second business actor is the village collector who conducts transactions directly with farmers in

the tangerine garden. Village collectors usually run the business independently. They provide post-harvest care for the tangerines, such as checking the quality and sorting. Sorting affects the price of tangerines, which varies depending on their size. After that, the tangerines are distributed to the next business actor. Some farmers have relationships with village collectors and large traders, who have the role of collecting tangerines from farmers. However, there are also farmers who directly sell their tangerines without going through other actors, in the hope of obtaining greater profits. Buyer and seller ties have been established between collectors and farmers as a result of the lack of marketing information available to farmers.

The third business actor is a large trader who comes from inside and outside Batangmata village. Large traders have a role as business actors who operate to procure tangerines in a number of other areas according to their requests and needs. The fourth business actor is a retail seller or retailer who is generally a small trader. Usually, retailers are scattered in various locations. They sell tangerines both in the form of fresh fruit and in the form of orange juice drinks. The fifth business actor is a consumer who can be an individual or small and medium enterprise. Consumers buy tangerines from business actors such as collectors, wholesalers and retailers. Tangerines are not only consumed in the form of fresh fruit, but also in the form of tangerine drinks.

Before reaching the final consumer, tangerines will enter display stalls in Selayar Islands Regency. End consumers can also obtain tangerines through retailers/market traders around the Selayar Islands Regency. As a retailer, you will do a lot of sales activities, namely handling products after receiving tangerines from large traders. Wholesalers are very risk-averse, with no re-sorting when distributing tangerines to retailers.

The biggest risk burden is on the retailer, which has several possibilities, namely product damage during transportation, pricing based on quality differences, and the risk of rotting due to not good handling during storage, and the length of sales is also a risk for rotting tangerines stored. If the tangerines are of low quality, they will be sold at a low price and if the tangerines are not sold and then rotten, they will be discarded. So the risk to retailers is prone to large losses. Therefore, to minimize the occurrence of these losses, retailers need to do good handling in the form of re-sorting after citrus is received from large traders, grading to determine the price according to quality, storage with the appropriate temperature and temperature to avoid sunlight in order to maintain the quality of tangerines stored, control the rate of respiration and transpiration, control or prevent diseases and changes that are not desired by consumers, reduce respiration and metabolic activity, prevent softening, water loss, and withering, and prevent damage due to microbial activity.

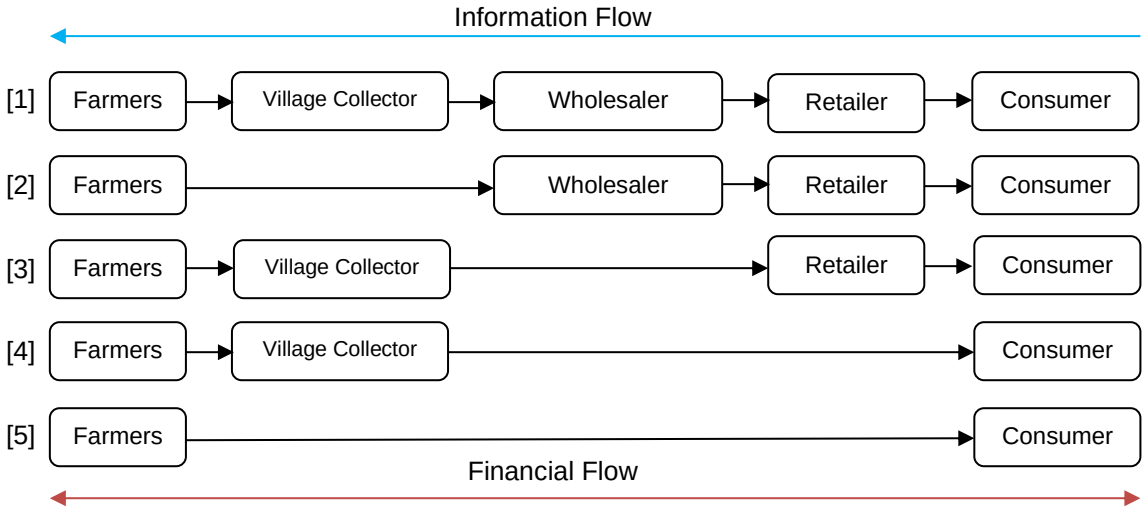

Figure 1. Patterns of tangerine supply flow in Selayar Islands

The financial flow starts with consumers who channel their money to retailers. Then from retailers flowing money to large traders. Large traders will flow money to village collectors to tangerine farmers. Currently, each tier has not borrowed money from the bank if there is an increase in tangerine supply against high consumer demand. The flow of information that occurs in each tier of the supply chain is price. Information about prices occurs between actors involved in the financial flow, the information flows from consumers to retailers to farmers. The government has a role in the flow of information, especially regarding cultivation. The flow of information occurs between institutions such as the flow of information from the government to farmers or vice versa. Farmers inform the government about the constraints of the cultivation process and then the government will try to help provide solutions to farmers.

Logistics Cost Structure Analysis

Based on the results of interviews with respondents, details of logistics cost components and collected data, the proportion of costs from each activity to the overall cost can be seen in Table 1. The results show that material handling activities have the largest proportion of costs, amounting to 52.18% of total logistics costs. The dominant cost component of material handling activities is post-harvest costs with a cost proportion of 24.20% of total logistics costs. This is due to the costs incurred during post-harvest, such as sorting, grading, and packing. In identifying activities with a dominant share of costs, the proportion of costs at each level can be calculated. However, it can be seen that farmers dominate the procurement and material handling costs. As the main tier of the tangerine shortening operation, farmers require substantial costs to handle materials and maintain equipment in order to achieve maximum productivity. Maintenance activities by farmers include tillage, hedging, plant care, and harvesting. (Rizkina and Nalawati, 2022). Traders have a high sales capacity, so the cost per kilogram of tangerines to process is quite low.

The next logistics activity is transportation. In this case, transportation refers to the distribution of the harvest. Retailers and market traders have the highest transportation costs in the tangerine supply chain. This is due to the delivery of tangerines into and out of the city by traders and settlements who have partners in the area, resulting in high transportation costs. The traders are also responsible for distribution from the tangerine farm to the nearest point of sale. The supply chain strategy for tangerines is based on logistics cost measurements and several considerations related to the supply chain system at each level. One consideration is the activities at each level in the tangerine supply chain system. At the farm level, additional post-harvest activities such as sorting or grading are needed to increase revenue and cover the dominant cultivation costs.

Sorting or grading can be done manually by the farmers themselves, thus eliminating the need for additional material handling activities. In addition, collective procurement of agricultural tools, fertilizers, and pest medications among farmers is necessary to lower the unit price of products and minimize the cost of cultivation. In Inventory activity, the proportion of costs is quite high. This is because when purchasing tangerines from suppliers exceeds the demand at this level, causing many oranges to be stored for a long time, resulting in a decrease in the quality of tangerines and an increased risk of loss which is a component of storage costs. Retailers and market traders should take into account the shelf life of each tangerine purchased. At the farm level after harvest, tangerines will be sold directly to collectors, market traders.

Communication with the agreed buyer becomes a key logistics operation. Retailers require the highest expenditure ratio compared to other levels. Farmers have the highest proportion of information activities as they communicate with many buyer partners to sell oranges and conduct the delivery and order fulfillment process. Besides selling to collectors, farmers also try to contact market traders to sell oranges through collectors.

Material handling costs are a component that affects every level of the supply chain. At the farm level, material handling costs are the highest component of total material handling costs. While at the collector, trader and settlement levels, the largest material handling costs are post-harvest costs. To determine the selling price of tangerines, sorting and grading operations are required. However, this requires a lot of labor, especially skilled sorters. High costs in citrus production in Pakistan are mentioned in the cost of production facilities in the field (seeds and fertilizers) and in marketing there are costs of packaging materials and transportation (Deshmukh, Agrawal and Jallaraph, 2021). The problem of high costs for farmers is a common challenge in citrus production and marketing.

At the farmer tier, in order to reduce the high cost of losses at the farmer level, farmer groups should work with the Agriculture and Livestock Service Office of Nagan Raya District to organize workshops or training on effective cultivation and handling methods. Thus, farmer groups can minimize the number of tangerines damaged during cultivation and post-harvest. The government has an important role in implementing these strategies. Although

there has been cooperation between farmer groups and the Agriculture and Livestock Service Office of Nagan Raya District, training on cultivation and post-harvest technology has not been optimally implemented by farmer groups.

Table 1. Details of Logistics Cost Components for Each Supply Chain Business Actor

Logistics Activities	Cost Component	Total Logistics Cost (Rp/Kg)	% Logistics Costs
Procurement	Procurement cost	2350	28,83
	Total	**2350**	**28,83**
Material Handling	Pre-harvest costs	425	5,21
	Transportation costs	482	5,91
	Post-harvest costs	1973	24,20
	Depreciation of equipment	117	1,44
	Loss cost during handling	1257	15,42
	Total	**4254**	**52,18**
Inventory	Storage cost	298	3,66
	Loss cost during storage	368	4,51
	Total	**666**	**8,17**
Transportation	Shipping costs	491	6,02
	Vehicle depreciation	215	2,64
	Loss cost on delivery	84	1,03
	Total	**790**	**9,69**
Information	Communication costs with suppliers and buyers	92	1,13
	Total	**92**	**1,13**
Total Logistics Cost		**8152**	**100,00**

After the farmer group is formed, it is expected to be able to set appropriate grading standards to reduce differences in citrus quality by using clear indicators of citrus quality in each grade. The grading standards are premium oranges and grade 1 (one) oranges. The grading level is determined based on the evaluation of citrus conditions up to grade three, which results in third quality citrus that does not meet consumer needs. Quality tangerines will be distributed to local industries and processed into derivative products with high selling value. Farmer groups are expected to form a supply chain that is responsive to the premium tangerine consumer segment. A supply chain that refers to the ability of the supply chain to meet market demand.

There is often a problem where farmers do not understand adequate procurement time standards, resulting in long procurement times. In addition, farmers have not applied capacity flexibility in procurement because they do not have plans to cope with increased or decreased orders. In addition, increasing the selling price does not consider post-harvest handling costs, which are high at the farm level.

The goal of strategic responsiveness in the supply chain is to meet demand quickly and keep the quality of tangerines fresh. Farmers should understand the short lead time standard and carry out the post-harvest process efficiently, as well as consider capacity flexibility by planning and evaluating the selling price of tangerines to get a greater profit compared to the selling price of other fruits. By implementing responsive strategies, farmer groups can ensure short order lead times by paying attention to post-harvest efficiency, conduct joint planning for capacity flexibility, and build higher margin sales by increasing the selling price of tangerines by 5% from the selling price of collectors.

Implementation of an effective supply chain strategy can be done in the high-quality fruit consumer segment by focusing on meeting consumer demand at affordable prices. This is important in achieving high sales volume with low margins. This strategy can also help reduce the risk of losses due to poor quality tangerines. Farmers also need to implement demand-based supply chains, where they will only fulfill orders if there is demand from consumers.

A pull-based supply chain system at the collector level is the main strategy that should be adopted, where orders to suppliers are only placed when there is demand from consumers (SimchiLevi, 2010). Through the implementation of this strategy, the number of tangerines stored at the collectors is not too large so that it can minimize losses due to a significant decrease in the quality of tangerines. Collectors must also implement an efficient supply chain strategy, where they must apply a low margin to the selling price with a high sales quantity while meeting high consumer demand. For the collector level, an appropriate inventory management approach is delayed inventory where suppliers hold inventory that will be ordered by consumers (collectors) (Wallin, Rungtusanatham and Rabinovich, 2006).

A suitable inventory management approach is forward inventory, meaning that suppliers will hold inventory that will be ordered by consumers in the future. (Wallin et al., 2006). At the wholesaler level, the strategy should include a balanced ratio of post-harvest handling costs and post-harvest losses. Wholesalers must have an efficient supply chain system in order to meet consumer demand in a timely manner. However, they also need to have sufficient inventory in small quantities, obtained through sales, to anticipate possible demand fluctuations (Simchi-Levi, 2010; Dharmawati, Guritno and Yuliando, 2020). By implementing this strategy, wholesalers can reduce their inventories so that they are not overstocked which could potentially lead to losses due to rotten tangerines.

One strategy that can be done is to organize the number of workers in accordance with the capacity of buying and selling activities. At the small business level, there needs to be planning related to the number and type of orders so that tangerines can be sold out without incurring excessive operational costs. The implementation of inventory management and warehousing strategies is also very important, one of which is through inventory speculation, where business actors will buy tangerines and then store them in the warehouse when there is no market demand. In addition, inventory delays can also be applied, where actors try to hold back the purchase of goods until there is certainty of market demand (Wallin et al., 2006).

The characteristics of the constraints faced in the chayote supply chain include several things, such as the difficulty of calculating the prediction of demand for chayote, the pattern of the supply chain that is easy to change, the quantity of chayote that is difficult to predict with certainty for each shipment, the weak bargaining power of chayote, and chayote is only available through a few specific business actors (Guritno, 2016; Guritno and Khuriyati, 2018).

The concept of Vendor Managed Inventory (VMI) needs to be applied in the overall tangerine supply chain system. Vendor Managed Inventory (VMI) is

an activity in the supply flow that involves collaboration with colleagues using information system technology and integrated business processes. An integrated process with a logistics cost base (Santoso et al., 2021) is expected to provide reliable information for stakeholders to develop an efficient logistics system.

CONCLUSION AND RECOMMENDATION

Tangerine supply in Selayar Islands Regency is provided by several businesses. There are several different supply flow patterns, and the first supply chain is the longest compared to the other flow patterns. Logistics activities associated with the supply crisis are dominated by material handling. In total logistics costs, material handling accounts for 53.31%, procurement accounts for 35.49%, transportation accounts for 4.96%, inventory accounts for 5.46%, and information accounts for 0.78%. Based on the logistics cost calculations, there are several recommendations that can be made, such as strengthening post-harvest activities at the farm level and making logistics activities more efficient and responsive at the farm level. The Vendor Managed Inventory (VMI) strategy should be used in all supply chain patterns.

ADVANCED RESEARCH

Based on the findings regarding the tangerine supply chain in Selayar Islands Regency, further research could examine the impact of implementing Vendor Managed Inventory (VMI) across various supply chain patterns to enhance efficiency and responsiveness. Future studies could focus on assessing the effectiveness of VMI in reducing material handling and procurement costs, which currently dominate the total logistics expenses. Additionally, research could explore specific post-harvest improvements at the farm level, such as optimized handling and storage techniques, to reduce spoilage and extend product shelf life. By analyzing how these adjustments affect logistics costs and supply flow patterns, future research could provide a comprehensive approach to improving tangerine supply chain resilience and cost efficiency in Selayar Islands Regency.

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