

## STRAWBERRY DISTRIBUTION IN CIWIDEY: AN ANALYSIS OF VALUE CHAIN AND PRICE DISPARITY

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Submitted 04 January 2024; Approved 05 July 2024

### ABSTRACT

Strawberries, which are closely associated with the Ciwidey District in West Java, pass through a supply chain that includes numerous stakeholders, from farmers to retailers. This complex chain results in significant price disparities and lowers farmers' profits. This study aims to analyse the value chain and price disparity of strawberry commodities in Ciwidey District, Bandung Regency, West Java. The value chain analysis method is used to understand and improve the way a product or service generates value, and Hayami's analysis is used to calculate the added value for each actor in this supply chain. Based on the results of the analysis, the value chain of strawberry commodities in Ciwidey District obtained parties/actors that play a role in this supply chain, such as farmers, who act as producers of the strawberry cultivation process. Small collectors who collect the strawberry harvest directly from the farmers do the sorting and grading and sell it to large collectors. Large collectors act as traders who collect the strawberry harvest and distribute the sales more widely. Retailers act as traders who sell strawberries to consumers. The added value obtained by farmers is Rp 300.01/kg, small collectors Rp 6,345.67/kg, large collectors Rp 14,799.29/kg, and retailers Rp 18,224.8/kg. In this strawberry commodity value chain, the disparity value from the farmer to the consumer level is Rp 63,550/kg. The implications of this study provide insight into market dynamics and offer a basis for improvements and interventions that can help all parties, especially in improving the economic conditions of farmers. The strawberry supply chain's complexity impacts various actors differently. Farmers suffer reduced profits due to price disparities, while retailers gain from price markups. Consumers experience price variability. This study highlights the need for interventions to streamline the supply chain, reduce intermediaries, and improve farmers' economic conditions.

**Keywords:** *distribution, price disparity, strawberry fruit, value-added, value chain*

### BACKGROUND

Horticultural commodities are widely developed by farmers in Indonesia. Horticultural commodities that have the potential to be developed are fruits (Adam et al., 2022). The tropical climate in Indonesia which is suitable for a variety of fruit varieties makes Indonesia able to produce various types of fruits (Hayami et al., 1987). One of the plants that farmers widely develop is the strawberry or its scientific name, *is Fragaria x ananassa*. Strawberries are a potential fruit crop with high economic value (Conti et al., 2014). Many people love strawberries because of their attractive

colour and fresh taste. Along with the development of agricultural science and technology that is increasingly advanced, strawberries are now receiving more attention in their development. Strawberries contain many phytochemicals, especially phenolic compounds, that are beneficial for health (Asioli et al., 2019). Strawberries can be grown in a wide geographical range from the tropics to the arctic regions (Fathallahi et al., 2020). Strawberries were first discovered in Chile, Latin America. The journey of Chilean strawberries to France in 1714 was the most important event in modern strawberry history (Capocasa et al., 2021). Strawberries are also one of the fruits that are commonly consumed in society.

Strawberry production in Indonesia has increased over several periods due to improvements in agricultural practices, and growing market demand. Strawberries grown in Ciwidey are unique due to the region's ideal climate and soil conditions. Ciwidey's cool temperatures, high altitude, and volcanic soil produce sweeter, juicier, and more flavorful strawberries than those grown in other areas. According to the Central Bureau of Statistics (BPS), Indonesia's strawberry production in 2020 was 8,350 tonnes, reflecting a 10.17% increase from the previous year's 7,501 tonnes. West Java emerged as the leading strawberry production centre, producing 5,955 tonnes in 2020. Notably, Bandung Regency's Ciwidey District, with its 12 hectares of strawberry farms, is one of the top production areas in West Java. However, the past three years have seen a decline in strawberry productivity in the province. BPS data shows that from 2017 to 2018, West Java's strawberry production dropped by 6.67% (450 tonnes), and from 2018 to 2019, it fell by 24.43% (1,538 tonnes). Ciwidey District also saw a significant decline, with production dropping from 2,210 tonnes in 2018 to 1,961 tonnes in 2019, a decrease of 11.28% (249 tonnes).

Strawberry farming in Ciwidey has great potential due to ideal growing conditions, leading to high demand and premium prices. However, farmers face challenges like price disparities from intermediaries, high input costs, pest issues, post-harvest losses, and limited market access. Several factors cause a decrease in the productivity of strawberry production, especially in the Ciwidey sub-district. The abundance of strawberry production in Indonesia is not directly proportional to the income of strawberry farmers (Férine et al., 2023). This raises the question of how much-added value and profit for each actor in the strawberry value chain in Ciwidey District, Bandung Regency, the process that must be done to increase farmers' profits in the strawberry value chain by utilising existing production in Ciwidey District, Bandung Regency and the price disparity or profit margin received by each actor or actor in the strawberry commodity value chain in Ciwidey District.

In the current context, the value chain concept has received widespread attention as a key principle in business analysis, serving to map and improve the way companies create value for customers. Pearce & Robinson (2007) formulated the value chain as a transformation process from inputs to outputs that add value to customers, emphasising the importance of understanding each company's activities in creating value. Fernandez-Salvador et al. (2021) and Baggio et al. (2021) extend this understanding by describing value chain analysis as a strategic analysis tool that not only uncovers competitive advantage through increasing customer value or reducing costs but also understands the relationships between activities in the industry. Aoki & Akai (2023) further emphasise understanding the activities that make up the final product, from raw materials to after-sales service, to gain strategic insight. On the other hand, Tucker et al. (2002) underline that effective business can be seen as a value chain where revenue minus the cost of all activities is the key to efficiently developing and marketing products or services. Research among academics shows that

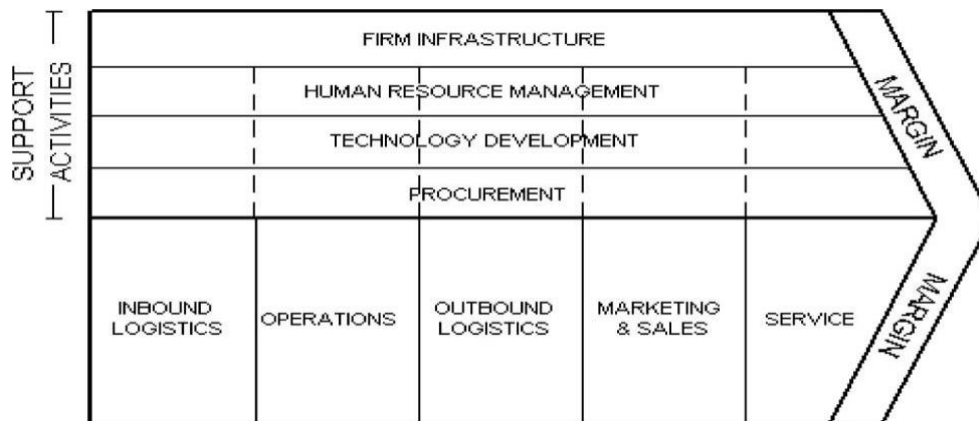
value chain analysis aims to identify areas where the company can increase customer value or reduce costs, strengthening the company's competitive position in the market.

This research proposes a new approach to value chain analysis by integrating Resource-Based View (RBV) principles in greater depth to understand and utilise the firm's internal resources. This approach aims to identify and develop unique capabilities in the value chain that can enhance a firm's competitive advantage, going beyond the traditional approach that focuses on operational efficiency and cost reduction. As such, this study opens up new opportunities in strategic management research by offering a framework that blends internal and external aspects of value creation, providing new insights into how firms can strategically allocate their resources for product or service innovation and differentiation. Previous research has highlighted that value chain analysis helps understand a firm's competitive advantage. However, not many have further explored how certain variables in the value chain (such as operational efficiency, product innovation, or supply chain management) affect competitive advantage specifically. Therefore, we take a position to fill that research gap as a novelty. Therefore, this study aims to analyse the value chain and price disparity of strawberry commodities in Ciwidey District, Bandung Regency, West Java.

## RESEARCH METHODS

This research employs the value chain analysis method to examine the strawberry value chain in Ciwidey Sub-district (Pearce & Robinson, 2007). This approach categorizes company activities into Primary Activities—Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Service—and Supporting Activities—Procurement, Technology Development, Human Resource Management, and Corporate Infrastructure. Data were collected through surveys and interviews with key respondents, including farmers, distributors, retailers, and consumers, as well as secondary sources such as reports from the Central Bureau of Statistics (BPS) and previous studies. Primary respondents comprised farmers directly involved in strawberry cultivation, distributors and retailers handling the product, and consumers providing market insights. This methodology ensures a comprehensive understanding of the strawberry value chain, identifying roles, challenges, and opportunities for value creation and improvement in Ciwidey.

Meanwhile, Supporting Activities play a role in supporting and improving the effectiveness of the main activities. These include Procurement, which is involved in acquiring inputs used in the value chain. Furthermore, Technology Development is not only limited to information technology but also includes all technological innovations supporting the company's operations. Human Resource Management is also crucial, covering workers' recruitment, hiring, training, development, and compensation (Hilma et al., 2023; Sulistianingsih et al., 2022). Finally, corporate infrastructure includes planning, accounting and finance, legal affairs, public relations, government relations, and quality management. These activities can be seen in Figure 1.



**Figure 1.** Value Chain Activities

As illustrated by Pearce & Robinson (2007), understanding and optimizing each element in the value chain enhances efficiency, effectiveness, and profitability while ensuring maximum customer value. This approach emphasizes internal processes and external relationships with suppliers and customers, forming an integrated value system. In agriculture, upstream value addition involves the quality and availability of raw materials, while downstream value addition occurs through processing and packaging, increasing the value and price of products. Hayami et al. (1987) define value-added as the increase in value from processing, transport, and storage, calculated by combining these aspects. Their method offers comprehensive economic insights but is limited to one production cycle, commodity type, and business actor, mathematically describing rewards for labour, capital, and management. In other words, value-added describes the rewards for labour, capital, and management, which can be expressed mathematically as follows:

$$\text{Added Value} = f(P, Rmu, Lu, Lw, O, Rmp, V)$$

Information:

- P : Production capacity
- Rmu : Raw materials used
- Lu : Labour used
- Lw : Labour wages
- O : Output price
- Rmp : Raw material price
- V : Value of other inputs

In the analysis process, the steps taken include creating commodity flows to illustrate the different commodity forms, locations, storage duration, and types of treatment applied. Next, identify each transaction that occurs using a partial accounting approach. The next important step, as described by Gjokaj et al. (2017), is to choose the basis of calculation, i.e., using raw material input units rather than output units. This approach allows for a more accurate and in-depth analysis of the processes and values involved in commodity production and distribution. The following is a table of Hayami Method value-added calculation procedures.

**Table 1.** Value-Added Calculation Procedure

No	Variable	Value
Output, Input, and Price		
1.	Output (Kg)	(1)
2.	Raw Materials (Kg)	(2)
3.	Direct Labour (HOK)	(3)
4.	Commercial Facto	(4) = (1)/(2)
5.	Direct Labour Coefficient (HOK/Kg)	(5) = (3)/(2)
6.	Output Price (Rp/Kg)	(6)
7.	Direct labour wage (Rp/HOK)	(7)
Revenue and Profit		
8.	Raw material price (Rp/Kg)	(8)
9.	Price of other inputs (Rp/Kg)	(9)
10.	Output Value (Rp/Kg)	(10) = (4) x (6)
11.	a. Added Value (Rp/Kg)	(11 a) = (10) – (8) – (9)
	b. Value Added Ratio (%)	(11 b) = (11 a) / (10) x 100
12.	a. Direct Labour Income (Rp/Kg)	(12 a) = (5) * (7)
	b. Direct Labour Share (%)	(12 b) = (12 a)/(11 a) x 100
13.	a. Profit (Rp/Kg)	(13 a) = (11 a) – (12 a)
	b. Profit Level (%)	(13 b) = (13 a)/(10) x 100
Remuneration of Owners of Factors of Production		
14.	Margin (Rp/Kg)	(14) = (10) – (8)
	a. Direct Labour Income (%)	(14a) = (12a) / (14) x 100
	b. Other Input Contribution (%)	(14b) = (9) / (14) x 100
	c. Company Profit (%)	(14c) = (13a) / (14) x 100

Source: Hayami et al. (1987)

## RESULT AND DISCUSSION

### Value Chain Analysis of Strawberries in Ciwidey District

The first value chain is farmers. Farmers have an important role in the strawberry value chain in Ciwidey Sub-district, where farmers are actors or actors who carry out the strawberry cultivation process until it can be harvested. The activities carried out by strawberry farmers in Ciwidey Sub-district include starting from the process of preparing land for the cultivation process, planting strawberries, carrying out the weeding process, carrying out the pruning process, carrying out the care and maintenance process until the strawberries are ready to be harvested.

Small collectors of strawberries in the Ciwidey Sub-district play a vital role in the local strawberry supply chain by purchasing strawberries directly from farmers. They visit the farmers' gardens or homes, using pick-up cars to transport the harvested strawberries. Once collected, the strawberries undergo a sorting and grading process based on size, colour, and quality. Higher-grade strawberries fetch higher prices due to their superior characteristics, although prices can also fluctuate based on supply and demand, seasonality, and market conditions. By aggregating produce from various farmers, small collectors help streamline the selling process, allowing farmers to sell their strawberries more efficiently and often at better prices. Additionally, small collectors act as liaisons between farmers and large collectors. After the sorting and grading, the strawberries are sold to large collectors in the Ciwidey District. This system benefits both farmers and consumers, ensuring a steady supply of high-quality strawberries to the market.

Large collectors of strawberries in the Ciwidey Sub-district serve as intermediaries who collect large quantities of strawberries from small collectors. Using pick-up trucks, they gather strawberries directly from small collectors, ensuring efficient aggregation. Once collected, the strawberries are sorted and graded according to wholesalers' demand specifications. Large collectors also sell their strawberries to local retailers in the Ciwidey Sub-district, ensuring the local market is well-supplied. For distribution to large traders outside the Ciwidey Sub-district, the strawberries undergo a packaging process to maintain their quality during transit. After packaging, the strawberries are distributed to these large traders, expanding the market beyond the local area. Strawberry retailers in the Ciwidey Sub-district are crucial links between wholesalers and end consumers. Local retailers purchase strawberries from wholesalers and sell them directly to consumers, ensuring fresh produce is available in the local markets. This multi-tiered system, involving small collectors, large collectors, wholesalers, and local retailers, creates a seamless supply chain that benefits producers and consumers. It ensures that high-quality strawberries are consistently available to meet the demands of various market segments.

Based on the data processing results, several issues have been identified at each level of the strawberry supply chain in the Ciwidey Sub-district, and proposed improvements can significantly enhance the value chain. Farmers face challenges such as limited access to quality seeds and modern farming techniques, which can be addressed through training and better resource access. Small collectors struggle with transportation and quality consistency, necessitating investments in better transport facilities and handling training. Large collectors encounter variability in strawberry quality and high sorting costs, which can be mitigated through standardised quality control and automated sorting technologies. Wholesalers deal with intense competition and logistical challenges, which can be alleviated by fostering strong relationships with collectors and optimising distribution networks. Local retailers face storage limitations and price fluctuations, which can be improved with better storage solutions and strategic pricing. By implementing these improvements, the strawberry value chain in Ciwidey can become more efficient and profitable, benefiting all stakeholders, from farmers to consumers.

While it can be more profitable for farmers to sell their products directly due to time and opportunity costs, there are several reasons behind this practice. Direct sales provide immediate cash flow, which is crucial for daily expenses and operational costs, and offer higher prices at local markets. Selling directly allows farmers to control quality and presentation, ensuring better prices and customer satisfaction. Building customer relationships through personal interactions can also increase sales via word-of-mouth. Additionally, direct selling offers flexibility in sales timing and quantity, avoiding the constraints of wholesalers (Septya et al., 2024). To upgrade their position in the value chain, farmers can diversify their products. Currently, they mainly sell raw strawberries, limiting their added value. Diversifying into products like frozen strawberries, strawberry jam, pancakes, or strawberry kalpertart can significantly increase the selling price. For instance, producing strawberry jam adds value, as processed products typically command higher prices than raw produce. Diversifying their offerings can enhance farmers' profitability and strengthen their position in the value chain (Tucker et al., 2002).

To realise the achievement of synergy between farmers in seeking product diversification, it must be supported by farmer institutions, which, in this case, are referred to as farmer groups (poktan). Farmer groups in the Ciwidey Sub-district support strawberry farmers by enabling better prices through collective bargaining, pooling resources for high-quality inputs, and sharing knowledge and

training to enhance productivity. They provide access to financing, expand market reach, and manage risks more effectively, ensuring stable incomes. Additionally, they advocate for farmers' needs, leading to improved policies and support systems. These groups significantly boost the economic stability and market presence of strawberry farmers in the region. The formation of farmer groups refers to the Regulation of the Minister of Agriculture of the Republic of Indonesia No. 67/Permentan/SM.050/12/2016 on Farmer Institutional Development. With these farmer groups' existence, upgrading farmers' role in the strawberry value chain becomes easier. This is because farmer groups are a forum for strawberry farmers to develop businesses related to strawberry commodities. In addition, the existence of these farmer groups will shorten the strawberry distribution value chain, reducing the level of strawberry price disparity (Prasetyo & Saefudin, 2023; Threlfall et al., 2007). Farmer groups play an important role in the strawberry cultivation process and the post-harvest handling of strawberries, including fruit collection, sorting, grading, packaging, distribution, and strawberry processing. Table 2 shows each actor in the proposed strawberry commodity value chain.

**Table 2.** Proposed Value Chain for Strawberry Commodities in Ciwidey District

No	Description of Actors/Activities	Activities in the Value Chain
1.	Farmer Group (Poktan)	a. Collection b. Sorting c. Grading d. Packaging e. Distribution f. Processing
2.	Large collectors	a. Distribution
3.	Retailer	a. Collection b. Collection Sales to End Consumers

Based on Table 2, the farmer value chain includes planting, maintenance including weeding, pruning, spraying pests and diseases, fertilising, and harvesting. Planting involves placing strawberry plants in prepared soil to ensure optimal growth. Maintenance includes weeding to remove competing plants, pruning to improve air circulation and sunlight penetration, spraying for pests and diseases to protect the plants, and fertilising to provide essential nutrients. Finally, harvesting involves collecting ripe strawberries at the optimal time to ensure the best quality and flavour. Each stage is crucial for maximising strawberry farming yield, quality, and profitability.

Next is the farmer group. Farmer groups are the proposed value chain formed to accommodate farmers in the Ciwidey Sub-district to be directly involved in strawberry marketing activities and upgrading from the position of producers (level 1) to producers who perform several functions in the chain. The activities of the farmer groups include collection, sorting, grading, packaging, distribution, and processing. Farmer groups in the Ciwidey Sub-district perform essential tasks to enhance the strawberry value chain's efficiency and profitability. They collect strawberries from individual farmers, sort and grade them by quality, and package them to preserve freshness during transport. These groups also manage distribution to buyers like large collectors, wholesalers, and local retailers. Additionally, some farmer groups process strawberries into value-added products such as frozen

strawberries, jams, and pancakes. These activities help improve product quality, reduce waste, and increase the farmers' income by accessing new markets and achieving higher prices. These activities are carried out based on a make-to-order system from large collectors, where when large collectors place orders for strawberries, the farmer groups can provide them according to the amount requested.

For the distribution process, there are two (2) distribution channels in the proposed value chain, namely: farmer groups → large collectors → large traders, and farmer groups → retailers → consumers. Farmers in the first distribution channel seek to establish a cooperative relationship with large collectors. This is to fulfil orders received by large collectors from large traders. When the wholesaler receives an order, the order can be forwarded to the farmer group, which will prepare the order based on the strawberry production. The strawberries will then be sent to the wholesalers and will be forwarded by the wholesalers to the wholesalers. For the second distribution channel, the farmer groups can channel the strawberry production directly to retail traders and forward it to the final consumers.

From the results of this study, it appears that the strawberry value chain in Ciwidey involves various actors with interrelated roles. Proposed improvements such as product diversification and forming farmer groups can increase added value for farmers and efficiency in distribution while ensuring the availability of high-quality products for consumers. Farmers in Ciwidey play a crucial role in strawberry cultivation, managing activities from land preparation, planting, and maintenance to harvesting (Rosyadi & Wijaya, 2023; Octaviani et al., 2020). Their success in these stages directly affects the quality and quantity of strawberries.

Small collectors collect strawberries from farmers by visiting farms or homes, then sort and grade them before selling them to large collectors or directly to the market (Özbek et al., 2019). Large collectors handle larger quantities and conduct sorting and grading based on market demand, which is key in distributing strawberries to large traders or local retailers (Ichsan et al., 2023; Labrie et al., 2020). Retailers then link wholesalers to end consumers by purchasing strawberries from wholesalers and selling them directly to consumers (Pinheiro et al., 2021). Farmer groups encourage product diversification and business development, involving farmers in post-harvest handling and processing. This can shorten the distribution chain and reduce price disparities, ultimately improving strawberry farmers' economic stability and market presence in the region (Kumar et al., 2022).

### **Value-Added Analysis of Strawberries in Ciwidey District**

In the value-added analysis of strawberries in the Ciwidey sub-district, we compared the value-added of each actor in the strawberry commodity value chain. Table 3 displays this comparative data, providing insight into the value contribution made by each actor in the process from production to distribution. This analysis helps in understanding how value is built and distributed throughout the chain and highlights areas where interventions or improvements may be needed to optimise value for all parties involved.



**Table 3.** Comparison of Added Value of Each Actor in the Strawberry Commodity Value Chain

No	Variable	Farmers	Small Collectors	Large Collectors	Retailers
Output, Input, and Price					
1.	Output (kg)	6,000	5,900	5,800	5,700
2.	Input (Trees)/ Raw Materials	5,600	6,000	5,900	5,800
3.	Direct Labour (HOK)	5	2	4	1
4.	Conversion Factor	1.07	0.98	0.98	0.98
5.	Labour Coefficient (HOK/kg)	0.0009	0.0003	0.0007	0.0002
6.	Output Price (Rp/kg)	15,000	30,000	50,000	70,000
Revenue and Profit					
7.	Raw Material Price (Rp/kg)	4,500	15,000	30,000	50,000
8.	Price of other inputs (Rp/kg)	11,249.99	8,054.33	4,200.71	375.20
9.	Output Value (Rp/kg)	16,050	29,400	49,000	68,600
10.	Value Added (Rp/kg)	300.01	6,345.67	14,799.29	18,224.80
11.	Added Value Ratio (%)	1.87	21.58	30.20	26.57
12.	Profit (Rp/kg)	264.01	6,330.67	14,760.79	18,214.80
13.	Profit Ratio (%)	1.65	21.53	30.12	26.55
14.	Margin (Rp/kg)	11,550	14,400	19,000	18,600

Source: Primary Data (2023)

Based on the data processing above, it is known that the amount of added value generated by each actor in the strawberry value chain in Ciwidey District at the farm level produces an average of 6,000 kg of strawberries per harvest season. The average use of raw materials farmers use in 0.91 ha of land is 5,600 kg. The raw materials are manure, NPK, KNO<sub>3</sub>, ZA, Dupon Pesticide, and Prometin Kristalon. The labour coefficient is the ratio between the use of labour and the input value of raw materials, which is 0.0009 HOK/kg. The price of other inputs is the depreciation cost of tools used by farmers in the process of strawberry cultivation, while the equipment used is in the form of hoes, forks, cored, machetes, sprayers, buckets, drums, hoses amounting to 51.47/kg. The output value is the product of the conversion factor with the output price (selling price of strawberries) with a value of Rp 16,050/kg. The added value farmers provide in cultivation is Rp 11,498.53, with a ratio of 71.64%. The profit obtained by farmers is Rp 11,462.53/kg, with a profit rate of 71.42%.

Another benefit of establishing this farmer group is that the strawberry farmers in the Ciwidey Sub-district have a strong position in the value chain, especially in determining the selling price of strawberries. With the existence of this farmer group, it is expected to be able to increase the selling price of strawberries based on the activities in the value chain carried out so that the determination of the purchase price of strawberries is not determined by large collectors (Pinheiro et al., 2021). Farmer groups can also carry out business activities, namely processing strawberries into strawberry jam and frozen strawberries. In the process of processing strawberries into strawberry jam, there are several processes, including fruit selection, fruit cleaning, drying, cutting/refining, cooking, and packaging (Qin & Horvath, 2021) in the process of processing strawberries into frozen strawberries including

selection, washing, drying, separation of leaves from fruit, structuring, and packaging. The following compares the added value of processing strawberries into frozen strawberries and strawberry jam.

**Table 4.** Comparison of Added Value of Processing Strawberries into Frozen Strawberries and Strawberry Jam

No	Variable	Frozen Strawberry	Strawberry Jam
<b>Output, Input, and Price</b>			
1.	Output (Kg)	50.00	75.00
2.	Input (Kg)	50.00	50.00
3.	Direct Labour (HOK)	3.00	2.00
4.	Commercial Factor	1.00	1.50
5.	Labour Coefficient	0.06	0.04
6.	Output Price (Rp/kg)	30,000.00	160,000.00
<b>Demand and Profit</b>			
7.	Raw Material Price (Rp/kg)	15,000.00	60,000.00
8.	Other Input Price (Rp/kg)	7,825.00	10,024.15
9.	Output Value (Rp/kg)	30,000.00	240,000.00
10.	Value Added (Rp/kg)	7,175.00	169,975.85
11.	Added Value Ratio (%)	23.92	70.82
12.	Profit (Rp/kg)	5,375.00	168,775.85
13.	Profit Ratio (%)	17.92	70.32
14.	Margin (Rp/kg)	15,000.00	180,000.00

Source: Primary Data (2023)

Based on the data analysis and suggestions related to the strawberry commodity value chain in the Ciwidey Sub-district, one of the recommendations is the formation of a strawberry farmer group. This group not only focuses on strawberry cultivation activities but also engages in post-harvest activities. Regarding farmers' income, in the current condition (Existing), farmers' net profit from selling strawberries is Rp 300.01/kg. With the formation of farmer groups and product diversification, farmers can benefit from the sale of frozen strawberries at Rp 2,687.5/kg and strawberry jam at Rp 168,775.85/kg. With this proposal, where the farmer group will involve two actors in the Ciwidey strawberry supply chain, the total net profit of farmers can increase to Rp 171,763.36/kg. This shows the potential for a significant increase in farmers' income through farmer group initiatives and product diversification presented in Table 5.

Table 5 shows that strawberry farmers sell their strawberries to small collectors at Rp 15,000 per kilogram. These small collectors then sell the strawberries to large collectors at Rp 30,000 per kilogram, with a marketing margin of RP 14,400 per kilogram. After deducting operational costs for fruit collection and transport, which amount to Rp 8,054.33 per kilogram, small collectors earn a net profit of Rp 6,345.67 per kilogram. Large collectors purchase strawberries from small collectors and then sell them to retailers at Rp 50,000 per kilogram, achieving a marketing margin of Rp 19,000 per kilogram. After subtracting operational costs of Rp 4,200.71 per kilogram, large collectors make a net profit of Rp 14,799.29 per kilogram. Retailers buy strawberries from large collectors and sell them to final consumers at Rp 70,000 per kilogram, with a marketing margin of Rp 18,600 per kilogram. After accounting for operational costs of Rp 378.2 per kilogram, retailers earn a net profit of Rp 18,221.8 per kilogram.

**Table 5.** Marketing Margin Analysis of Strawberry Commodities

	Unit	Description (Rp/kg)	Percentage (%)
1. Farmers			
	Selling Price	15,000	21.43
2. Small collectors			
	Purchase price	15,000	21.43
	Marketing margin	14,400	20.57
	Marketing cost	-	-
	Profit margin	14,400	20.57
	Selling price	30,000	42.86
3. Large collectors			
	Purchase price	30,000	42.86
	Marketing margin	19,000	27.14
	Marketing cost	-	-
	Profit margin	19,000	27.14
	Selling price	50,000	71.43
4. Retailer			
	Purchase price	50,000	71.43
	Marketing margin	18,600	26.57
	Marketing cost	-	-
	Profit margin	18,600	26.57
	Selling price	70,000	100

Source: Primary Data (2023)

It is known that the length of the strawberry value chain in Ciwidey Sub-district is one of the causes of the high disparity in strawberry prices between farmers - and wholesalers or from farmers - and consumers. Another factor that affects the high price disparity is the process of shipping strawberries from large collectors to large traders outside the region using cargo services. Another factor that is also a consideration in the use of shipping using sea transportation is that strawberries are perishable goods that require special handling (Gjokaj et al., 2017).

Based on the above, the researchers would like to propose the application of shipping using sea transportation modes coupled with the use of refrigerated containers or refeeer containers (cold containers), which by using refeeer containers, it is hoped that the strawberries sent will maintain their quality and be able to reduce the price disparity of strawberries at the wholesaler level (Randrianarison et al., 2017). Based on the results of data processing, the proposal made to reduce the level of disparity in strawberry prices from farmers to retailers is by shortening the strawberry distribution value chain so as to emphasise the disparity in strawberry prices at the farmer level to the retailer level of Rp 44,800.

In this study, a value-added analysis of strawberries in Ciwidey District was conducted, comparing the value contributions of farmers, small collectors, large collectors, and retailers in the strawberry commodity value chain. Data tables show the outputs, inputs, prices, and profits of each actor, providing an overview of how value is built and distributed along the chain (Simkova et al., 2023). This analysis reveals that farmers add significant value at the cultivation stage, but there is a greater increase in value-added and profit at the collector and retailer levels (Basak et al., 2022). The formation of farmer groups is proposed as a strategy to strengthen farmers' position in the value chain, increase the selling price of strawberries, and encourage product diversification, such as processing strawberries into jam or frozen strawberries (Mbarushimana et al., 2022; Ngouana et al., 2023).

The study has broad theoretical implications, extending the application of the Resource-Based View (RBV) theory to the agricultural context, highlighting the importance of resource allocation and capability development in improving the competitiveness and sustainability of farmers and collectors. The research also broadens the scope of Value Chain Analysis by applying it to specific agricultural commodities in developing regions, providing a deeper understanding of value creation, distribution, and capture in the context of rural economies (Octaviani et al., 2020). Integrating Value Chain Analysis with Hayami Analysis links micro and macro views, providing a holistic understanding of rural economic dynamics. Practically, the findings of this study guide policymakers and stakeholders to reduce price disparities and improve rural economic sustainability (Anwar et al., 2023). The study also introduces a new framework for analysing agricultural value chains in developing economies, encouraging further research on the intersection between agricultural economics, supply chain management, and socio-economic development.

The novelty of this research lies in its comprehensive analysis of the strawberry value chain within the context of the Ciwidey District in West Java, Indonesia. It offers a unique perspective by integrating the Resource-Based View (RBV) theory, Value Chain Analysis, and Hayami's Analysis to explore the distribution of added value and price disparities along the agricultural value chain. This integrated approach extends the applicability of these theoretical frameworks beyond conventional business sectors to rural agricultural economies, providing valuable insights into the strategic resource allocation, capability development, and economic dynamics within the strawberry supply chain. Furthermore, the study addresses critical gaps in the existing literature by offering actionable recommendations for policy interventions, stakeholder decision-making, and sustainable practices tailored to the specific challenges and opportunities of agricultural value chains in developing economies. By introducing a novel analytical framework and generating contextually relevant insights, this research advances knowledge in agricultural economics, supply chain management, and rural development, setting a precedent for future studies in similar contexts.

## CONCLUSION AND SUGGESTION

Based on the analysis and the identified problems, this study concludes that the strawberry value chain in Ciwidey District involves various actors, including farmers, small collectors, large collectors, and retailers. The chain comprises three main stages: production inputs, the cultivation process, and the distribution process. Farmers engage in planting and cultivating strawberries, while small collectors purchase and sort them before selling them to large collectors, who further process and distribute the strawberries. Retailers then sell the strawberries to consumers. Using the Hayami method, the added value of each actor in the chain was calculated, with farmers contributing Rp 300.01/kg, small collectors Rp 6,345.67/kg, large collectors Rp 14,799.29/kg, and retailers Rp 18,224.8/kg. To increase farmers' profits, the study suggests expanding their role in the value chain, such as diversifying into processed strawberry products like jam and frozen strawberries, which could significantly increase their added value. Calculations also revealed a price disparity of RP 63,550/kg along the chain, highlighting areas for intervention to ensure fairer profit margins for all actors involved.

Research suggestions arising from this study encompass exploring consumer preferences regarding strawberry products, identifying inefficiencies in the supply chain to enhance profitability, investigating the adoption of sustainable agricultural practices, examining strategies to improve

market access for smallholder farmers, exploring value addition and product diversification opportunities, analysing existing policies and interventions, and promoting cross-sectoral collaboration. These suggestions aim to deepen understanding and address challenges within the strawberry value chain, ultimately contributing to efforts to improve efficiency, sustainability, and inclusivity in agricultural systems, particularly in regions like Ciwidey District, West Java.

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