



## SUPPLY CHAIN ANALYSIS OF PANGASIU (PATIN) FISH USING THE FOOD SUPPLY CHAIN NETWORK (FSCN) APPROACH AND COST-PLUS PRICING IN SAGULING VILLAGE

### ANALISIS RANTAI PASOKAN IKAN PANGASIU (PATIN) MENGGUNAKAN PENDEKATAN JARINGAN RANTAI PASOKAN PANGAN (FSCN) DAN PENETAPAN HARGA BERBASIS BIAYA PLUS DI DESA SAGULING

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#### Abstract

This study aims to determine the optimal strategy for managing the supply chain of Pangasius (catfish) in Saguling Village, West Bandung Regency. The study applies the Food Supply Chain Network (FSCN) approach and Cost Plus Pricing to evaluate supply chain effectiveness and determine appropriate product pricing. Data were collected through observation, interviews, and documentation involving 50 respondents, consisting of fish farmers, middlemen, wholesalers, and market traders. The results indicate that the Pangasius distribution system still involves multiple intermediaries, resulting in relatively weak bargaining power for fish farmers. The distribution process takes approximately 1–2 days and is constrained by limited cold storage facilities, which affects product quality. Cost analysis shows that the cost of production is IDR 20,239.15 per kg, while the ideal selling price is IDR 22,263.06 per kg, with a profit margin of 10%. Improvements in the distribution system, better access to market information, and enhanced logistical support are necessary to increase distribution efficiency and improve farmers' profitability.

**Keywords :** Supply chain, Pangasius (catfish), Food Supply Chain Network (FSCN), Cost Plus Pricing, distribution.

#### Abstrak

Penelitian ini bertujuan untuk mengetahui strategi optimal dalam menentukan rantai pasok ikan patin di Desa Saguling, Kabupaten Bandung Barat. Pendekatan *Food Supply Chain Network* (FSCN) dan *Cost Plus Pricing* untuk menentukan efektifitas rantai pasok dan harga jual suatu produk. Data diperoleh melalui observasi, wawancara, dan dokumentasi terhadap 50 responden yang terdiri atas petambak, tengkulak, pedagang besar, dan pedagang pasar. Hasil analisis menunjukkan bahwa distribusi ikan patin masih melibatkan banyak perantara sehingga posisi tawar petambak relatif rendah. Distribusi membutuhkan waktu rata-rata 1-2 hari dan terkendala keterbatasan fasilitas *cold storage* yang memengaruhi kualitas produk. Analisis biaya menunjukkan harga pokok produksi sebesar Rp. 20.239,15,- /kg dan harga jual ideal Rp. 22.263,06,- /kg dengan margin keuntungan 10%. Perbaikan sistem distribusi, akses informasi pasar, dan dukungan fasilitas logistik diperlukan untuk meningkatkan efisiensi distribusi dan keuntungan petambak.



**Kata Kunci :** Rantai Pasok, Ikan Patin, *Food Supply Chain Network*, *Cost Plus Pricing*, Distribusi.

## 1. INTRODUCTION

The fisheries sector plays a strategic role in Indonesia's economic development, as it supports food security, provides animal protein, and enhances community income (BPS, 2024). The increase in national fish consumption has driven the growth of the aquaculture subsector in recent years (KKP, 2024). On a global scale, FAO (2023) identifies aquaculture as the fastest-growing food subsector due to its ability to sustainably meet protein demands.

One of the freshwater aquaculture commodities experiencing rapid growth is pangasius (patin) fish. This commodity is relatively affordable, rich in protein, and has a faster cultivation growth rate compared to several other consumption fish species (Putri and Ramadhan, 2022). In addition to being marketed as a fresh product, pangasius is also processed into various value-added products such as fillets, shredded fish, and fish balls, thereby expanding its market potential (Sari et al., 2023; Abdullah et al., 2023, 2025; Putri et al., 2024)

In West Java, pangasius farming has developed across various regions with freshwater resource potential, including Saguling Village, Batujajar District, West Bandung Regency. A significant portion of the local community depends on freshwater aquaculture and distribution activities for their livelihoods. The high market demand for consumption fish has made pangasius farming an important source of income for the local population.

Despite its considerable economic potential, the pangasius supply chain system in Saguling Village still faces several challenges. Common issues include low selling prices at the farmer level, lengthy distribution channels, limited market access, and high price fluctuations. These conditions result in inefficient product distribution and reduce the profitability received by farmers.

The bargaining position of farmers against middlemen is relatively weak, as selling prices are generally determined by intermediaries (Nugroho and Kurniawan, 2021). Consequently, the profit margin obtained by farmers tends to be lower compared to other actors within the supply chain.

Moreover, fish is categorized as a perishable product that is highly susceptible to quality deterioration if not distributed quickly and properly (Heizer et al., 2023). Limited cold storage facilities and suboptimal logistics systems can lead to a decline in fish quality during distribution. This highlights the critical role of logistics in maintaining product quality and price stability in the market.

In this context, the implementation of Supply Chain Management (SCM) is essential to improve the efficiency of fisheries product distribution. SCM facilitates the integrated management of the flow of goods, information, and finances from suppliers to end consumers, thereby enhancing value addition and reducing distribution costs (Pujawan and Mahendrawathi, 2022). This study adopts the Food Supply Chain Network (FSCN) approach, as it provides a comprehensive framework to analyze the relationships among supply chain actors, as well as the flows of products, information, and finances within the food supply chain (Vorst, 2021).

In addition to distribution aspects, pricing strategy is a crucial factor in sustaining pangasius aquaculture businesses. Inappropriate pricing that does not reflect production costs can reduce farmers' profits and threaten business sustainability. Therefore, this study applies the Cost Plus Pricing method to determine selling prices based on total production costs plus a predetermined profit margin (Mulyadi, 2021).

Previous studies have generally examined fisheries product distribution in a broad context and have not integrated the FSCN approach with Cost Plus Pricing specifically for pangasius at the local aquaculture level. Most studies focus on general distribution issues without combining supply chain efficiency analysis with cost-based pricing strategies. Therefore, the research gap lies in analyzing the pangasius supply chain using the Food Supply Chain Network (FSCN) approach combined with Cost Plus Pricing in Saguling Village, which remains underexplored in existing literature.



This study is important as distribution inefficiencies and price instability continue to be major challenges in pangasius aquaculture. The supply chain analysis is expected to provide insights into distribution patterns, relationships among stakeholders, and factors affecting distribution efficiency. Furthermore, the findings are anticipated to serve as a reference for farmers and related stakeholders in formulating more effective distribution strategies and determining competitive and sustainable pricing.

## 2. RESEARCH METHOD

### Research Approach and Location

The method used was descriptive, combining qualitative and quantitative data. Qualitative analysis focused on the condition of the catfish supply chain, relationships between distribution actors, and marketing constraints encountered in the field. Quantitative analysis was used to calculate the cost of production and determine the selling price using the Cost Plus Pricing method.

The research was conducted in Saguling Village, Batujajar District, West Bandung Regency. The location was selected purposively because the area is a center for catfish cultivation that actively supplies the demand for fish for consumption in Bandung and the surrounding area.

### Data Types and Respondents

The data used consisted of primary and secondary data. Primary data were obtained through field observations, interviews, and documentation with actors in the catfish supply chain. Secondary data were sourced from books, scientific journals, government reports, the Central Statistics Agency (BPS), and the Ministry of Maritime Affairs and Fisheries (KKP). Respondents were selected using a purposive sampling technique, taking into account their involvement in catfish cultivation, distribution, and marketing. Purposive sampling was chosen because the study required respondents with direct experience in catfish supply chain activities, ensuring that the information obtained was more relevant and aligned with the research objectives.

**Table 1. Respondent Characteristics**

No	Type of Respondent	Quantity	Description
1	Patin fish farmer	30 people	Main actors in cultivation
2	Middleman	5 people	Harvest collector
3	Wholesaler	5 people	Fish distributor
4	Market traders	10 people	Seller to end consumer
<b>Total amount</b>		<b>50 people</b>	

Table 1 shows the total number of respondents, 50 of whom comprised fish farmers, middlemen, wholesalers, and market vendors. This number is considered representative of the main actors in the catfish supply chain in the research area, as it covers all distribution activities, from production to sales to end consumers. Furthermore, this number of respondents is considered sufficient for descriptive research focused on analyzing the supply chain conditions and distribution mechanisms of fishery products.

### Data Collection Techniques

Data collection was conducted through observation, interviews, and documentation. Observations were conducted on catfish cultivation and distribution activities. Interviews were used to obtain information regarding distribution flows, pricing, information flow, and marketing constraints faced by business actors. Documentation was conducted by collecting data on production costs, distribution activities, and other supporting documents.

Data validity was ensured through source and method triangulation techniques. Source triangulation was conducted by comparing information from farmers, middlemen, wholesalers, and market traders. Meanwhile, method triangulation was conducted through observation, interviews, and documentation to improve the consistency and accuracy of the research data.

In addition to collecting distribution and production cost data, this study also collected data related to supply chain efficiency indicators, including distribution lead time, logistics costs, product



storage conditions, and potential fish quality degradation during the distribution process. This data was used to support the distribution efficiency analysis and identify logistical constraints that affect product quality and price stability of catfish.

### Data Analysis Techniques

Data analysis used the Food Supply Chain Network (FSCN) approach and the Cost Plus Pricing method. The FSCN approach was used to comprehensively analyze the structure of the catfish supply chain by identifying supply chain actors, product flows, information flows, financial flows, business mechanisms, risk management, and distribution infrastructure support.

The FSCN analysis in this study was conducted through several stages:

- 1) Identifying supply chain members involved in catfish distribution, from farmers to end consumers.
- 2) Analyzing business mechanisms between supply chain actors, including collaboration patterns, transaction systems, and distribution relationships.
- 3) Analyzing product flows, information flows, and financial flows in the catfish distribution process.
- 4) Identifying supply chain risks such as distribution delays, price fluctuations, product quality decline, and dependence on middlemen.
- 5) Evaluating logistical infrastructure support, such as cold storage facilities, distribution transportation, and market access.

In addition to descriptive analysis, this study also uses several supply chain efficiency indicators to strengthen the distribution analysis, namely:

- 1) Distribution lead time, which is the time required for catfish products from harvest to receipt by the end consumer.
- 2) Distribution logistics costs, including transportation, loading, unloading, and product distribution costs during the marketing process.
- 3) Percentage of product quality loss, observed based on the physical condition of the fish during the distribution process.
- 4) Distribution margins between supply chain actors, to determine the distribution of profits from fish farmers to market traders.

The supply chain efficiency evaluation was conducted quantitatively and descriptively based on observations, interviews, and field documentation to determine the level of distribution efficiency and the challenges faced by catfish farmers.

In addition to the FSCN analysis, this study used the Cost Plus Pricing method to determine the selling price of catfish based on total production costs plus a 10% profit margin. The 10% profit margin was chosen based on considerations of the minimum profit commonly used by freshwater fish farmers to ensure business continuity. The calculation of the Cost of Goods Sold (COGS) uses the following EQ (1).

$$HPP = \frac{\text{Total Production Cost}}{\text{Total Production}} \quad (1)$$

Meanwhile, the selling price calculation uses the Eq 2:

$$\text{Selling price} = HPP + (\text{Margin} \times HPP) \quad (2)$$

The profit margin used in this study is 10% of the total production costs.

## 3. RESULT AND DISCUSSION

### Overview of the Patin Fish Supply Chain

The patin fish supply chain in Saguling Village involves several key actors interconnected in the product distribution process until it reaches the end consumer. These actors include patin fish farmers, middlemen, wholesalers, market traders, and end consumers. Farmers raise the patin fish until harvest, then sell the harvest to middlemen or collectors.

The middlemen purchase fish directly from farmers in large quantities. The fish are then distributed to wholesalers and market traders in West Bandung and the surrounding area. Market traders then sell the fish to end consumers as fresh fish.



Based on field observations, the distribution pattern remains traditional and relies on long-standing cooperative relationships between business actors. Most transactions are conducted directly without written contracts, so the distribution system tends to operate informally. This situation results in a high degree of dependence on middlemen for fish farmers, especially in the marketing process.

In addition to middlemen, a small number of farmers also sell their produce directly to market traders and local consumers. However, this distribution pattern remains limited due to challenges in market access, transportation, and limited distribution networks.

### **Patin Fish Supply Chain Structure**

#### **Product Flow**

The product flow in the patin fish supply chain begins with the fish farmers as the primary producers. After harvest, the fish are sold to middlemen, who then distribute them to wholesalers and market traders before finally reaching the end consumer.

This distribution pattern indicates that the patin fish supply chain in Saguling Village still involves several intermediaries. The longer the distribution channel, the longer the product distribution time and the higher the distribution costs. Furthermore, fishery products are perishable, so fish quality is significantly affected by the speed of distribution and storage conditions during shipping. The patin fish distribution flow in Saguling Village can be illustrated as follows:

**Fish Farmers → Middlemen → Wholesalers → Market Traders → End Consumers**

#### **Information Flow**

The flow of information within the supply chain includes market price information, demand, fish quality, harvest schedules, and product delivery schedules. This information is generally obtained by fish farmers through middlemen or collectors. Research shows that the flow of information is not optimal because fish farmers lack access to comprehensive and integrated market information. Price information is largely controlled by middlemen, so farmers tend to accept prices set by intermediaries. This situation results in low price transparency within the supply chain. Furthermore, communication between supply chain actors is still conducted simply through face-to-face or telephone communication without the support of digital information systems. This limited access to information impacts fish farmers' ability to determine distribution strategies and product selling prices.

#### **Financial Flow**

Financial flow flows from end consumers to market traders, then through wholesalers and middlemen before finally reaching fish farmers. Payment systems are generally cash or deferred payments, as agreed between business actors. In some cases, middlemen also provide capital assistance to fish farmers before the harvest season. This assistance is typically used for operational needs such as purchasing feed and pond maintenance. However, this situation leads to a high level of dependence on middlemen for fish farmers, especially in the sale of their harvest.

#### **Supply Chain Business Mechanisms**

The business mechanisms in the catfish supply chain in Saguling Village still operate traditionally and informally. Most transactions are based on trust between business actors without written contracts. Farmers sell their harvest to middlemen based on the prevailing market price at the time of harvest.

Payment is made in cash or deferred payment, as agreed between the parties. In some cases, middlemen provide business capital assistance to farmers before the harvest. This capital assistance is used to purchase feed, seeds, and other operational needs for fish farming. This situation leads to farmer dependence on middlemen for the marketing of their harvest.

#### **Supply Chain Risk Management**

The catfish supply chain in Saguling Village faces several major risks that impact distribution efficiency and product price stability.

These risks include:

- a. Fluctuations in fish selling prices,
- b. Distribution delays,



- c. Decrease in fish quality during shipping,
- d. Limited cold storage facilities,
- e. Dependence on middlemen,
- f. Changes in market demand.

Catfish is a perishable product, so distribution delays can lead to decreased product quality and economic losses for businesses.

### Logistics Infrastructure Support

Logistics infrastructure support for the catfish supply chain in Saguling Village is still relatively limited. Most distribution is carried out using simple vehicles without refrigeration systems, potentially deteriorating fish quality during shipping. Furthermore, cold storage facilities are not yet optimally available, limiting the storage capacity of fish farmers. This situation forces farmers to quickly sell their harvest even when market prices are low. Limited access to transportation and market information also affects the efficiency of catfish distribution in the research area.

### Problems in the Patin Fish Supply Chain

Based on observations and interviews, several major problems were identified in the patin fish supply chain in Saguling Village.

#### 1) Low Selling Prices at the Farmer Level

Farmers have a relatively low bargaining position because selling prices are largely determined by middlemen. Dependence on intermediaries makes it difficult for farmers to set their own selling prices, resulting in relatively low profits.

#### 2) Lengthy Distribution Channels

Patin fish distribution involves several intermediaries before the product reaches the end consumer. This situation increases distribution costs and lowers farmers' profit margins compared to other distributors.

#### 3) Declining Product Quality During Distribution

The lack of cold storage facilities causes fish quality to decline during the distribution process. This decline in product quality impacts selling prices and consumer satisfaction levels.

#### 4) Limited Business Capital

Some farmers experience limited capital to increase production capacity and improve cultivation facilities. This situation impacts the productivity and efficiency of patin fish farming.

#### 5) Absence of Formal Contracts

Relationships between supply chain actors remain informal, with no written cooperation contracts. This leads to uncertainty regarding prices, distribution, and payment systems among business actors.

#### 6) Limited Access to Market Information

Fish farmers lack widespread access to market price information, resulting in information largely controlled by middlemen. This situation contributes to low price transparency within the supply chain.

### Distribution and Margin Analysis of Supply Chain Actors

Based on field observations, the distribution of catfish from farmers to end consumers takes an average of 1-2 days, depending on demand and transportation conditions. Table 2 shown information about distribution and margin analysis.

**Table 2. Supply Chain Distribution and Margin Analysis**

Perpetrator	Purchase price (Rp/kg)	Selling price (Rp/kg)	Margin (Rp/kg)	Persentase Margin
Fish Farmer	-	20.500	-	-
Middleman	20.500	22.000	1.500	7,3%
Wholesaler	22.000	24.000	2.000	9,1%
Market Traders	24.000	27.000	3.000	12,5%



In Table 2, based on the distribution analysis, market traders obtained the largest profit margin of Rp. 3,000/kg or 12.5%, while middlemen obtained a margin of Rp. 1,500/kg or 7.3%. This condition indicates that the longer the distribution channel, the profit margin received by intermediaries tends to increase. Meanwhile, fish farmers as the main producers obtain relatively lower profits compared to other distribution actors. This indicates that the catfish distribution system in Saguling Village is still inefficient and needs improvements in logistics, market access, and product distribution patterns.

### Cost Plus Pricing Analysis

The selling price of catfish in this study was determined using the Cost Plus Pricing method, which is a pricing method based on total production costs plus a certain profit margin. The calculation of the cost of goods produced (COGS) is based on the total production costs of catfish cultivation, which consist of fixed and variable costs. Cost components include the costs of seeds, feed, labor, medicines and vitamins, transportation, electricity or water pumps, and depreciation of cultivation equipment. Details of catfish cultivation production costs can be seen in Table 3.

**Table 3. Details of Production Costs for Patin Fish Cultivation**

Cost Components	Value (Rp)
Fish seeds	3.500.000,-
Feed	11.250.000,-
Fishpond labor	2.400.000,-
Medicine and vitamins	750.000,-
Transportation	1.000.000,-
Electricity/water pumps	850.000,-
Pond/equipment depreciation	489.575,-
<b>Total Production Cost</b>	<b>20.239.575,-</b>

After all production cost components have been calculated, production volume data is needed to determine the cost of goods sold (COGS). The catfish production data used in this study was obtained from observations and interviews with respondent farmers in Saguling Village. The respondents' average catfish production is presented in Table 4.

**Table 4. Average Respondents' Patin Fish Production**

Description	Value / Description
Number of respondent farmers	30 people
Average pond area	150-200 m <sup>2</sup>
Length of cultivation cycle	5-6 months
Average yield per cycle	1.000 kg
Data source	Field observations and interviews

Based on Table 4, observations and interviews with 30 respondent farmers indicate that the average catfish harvest per cultivation cycle reaches 1,000 kg. This data was used as the basis for calculating the cost of goods sold (COGS) in this study. Furthermore, the COGS calculation was performed by comparing the total production costs with the total catfish yield per cultivation cycle. The COGS calculation used Eq (3a).

$$HPP = \frac{\text{Total Production Cost}}{\text{Total Production}} \quad (3)$$

$$HPP = \frac{20.239.575}{1.000} = 20.239,15/kg \quad (3a)$$



Note:

Total Production Cost = Rp. 20,239,575

Total Production = 1,000 kg of catfish

Based on the total production costs and the harvested yield, the cost of production of catfish can be calculated to determine a selling price appropriate to the farming business conditions. The largest cost component comes from feed, as feed is a major factor in the catfish growth process. In addition, labor, transportation, and electricity for water circulation also affect the total cost of cultivation.

The calculation results show that the cost of production of catfish is Rp. 20,239.15/kg. This value is then used as the basis for determining the selling price using the Cost Plus Pricing method with an additional profit margin of 10% to ensure that the farming business continues to provide a reasonable profit for the farmer. The 10% profit margin was determined based on interviews with fish farmers and traders, who stated that this margin is a common profit level used in small- to medium-scale freshwater fish farming businesses. Furthermore, a 10% margin is considered realistic enough to cover the risks of feed price fluctuations, distribution costs, and potential product damage during the marketing process. Based on these calculations, the data presented in Table 5 is obtained.

**Table 5. Cost Plus Pricing Calculation**

Component	Mark
Cost of goods sold	Rp20.239,15/kg
Profit Margin	10%
Ideal Selling Price	Rp22.263,06/kg

Calculation of selling price using the Eq (4)

$$\text{Selling price} = \text{HPP} + (\text{Margin} \times \text{HPP}(\text{COGS})) \quad (4)$$

The analysis shows that a reasonable selling price for catfish to maintain farmer profits is IDR 22,263.06 per kg. This value is obtained by adding a 10% profit margin to total production costs. The cost-plus pricing method is considered to help farmers determine a more rational selling price that aligns with their production costs. Pricing based on production costs can also help maintain the long-term sustainability of catfish farming and reduce the risk of losses due to market price volatility.

#### **Analysis of Food Supply Chain Network Integration and Cost Plus Pricing**

Research results indicate that the catfish supply chain in Saguling Village still faces various obstacles that impact distribution efficiency and price stability at the farmer level. The relatively long distribution channels result in a larger profit margin being earned by intermediaries than by primary producers. This situation indicates that the fishery product distribution system is still inefficient and requires improvements in logistics and marketing. According to Christopher (2022), logistics efficiency is significantly influenced by distribution integration and information transparency between supply chain actors. Therefore, an integrated distribution system can help reduce logistics costs and accelerate the flow of products to consumers.

In the supply chain structure identified, farmers sell their cultivated products to middlemen before redistributing them to wholesalers and market traders, ultimately reaching the end consumer. This dependence on middlemen weakens farmers' bargaining power, particularly in determining product prices. Furthermore, limited market access and distribution facilities mean that farmers remain dependent on intermediaries in the marketing process.

Based on the Food Supply Chain Network (FSCN) approach, product flow, information flow, and financial flow are not yet optimal. Market price information is still limited and tends to be controlled by middlemen, resulting in relatively low price transparency within the supply chain. Relationships between business actors remain informal, with no clear written cooperation contracts. This situation creates uncertainty in pricing, payment systems, and product distribution.

Another problem identified is the suboptimal availability of cold storage facilities. Fishery products are perishable and therefore require a fast and controlled storage and distribution system to maintain product quality. Aung and Chang (2021) state that food product traceability is a crucial factor



in maintaining the quality and safety of fishery product distribution. A well-monitored distribution system can maintain product quality throughout the shipping process.

Limited storage facilities potentially lead to fish quality deterioration during distribution. Furthermore, lengthy distribution channels increase shipping times and logistics costs, impacting the product's market value. In terms of price competitiveness, this situation leads to higher consumer prices, while fish farmers' profits are relatively low. Cost-plus pricing analysis results in a production cost of catfish of IDR 20,239.15 per kg, with an ideal selling price of IDR 1,000. 22,263.06/kg after adding a 10% profit margin. Pricing based on production costs is considered to help fish farmers achieve more stable profits and reduce the risk of business losses.

This method also provides a more rational selling price based on the cultivation costs incurred during the production process. With a clearer price reference, fish farmers can consider sales strategies that are more appropriate to market conditions.

The findings of this study align with those of Sari et al. (2023), who stated that the efficiency of the fishery product supply chain is significantly influenced by the effectiveness of the logistics system and the length of the distribution channel. The more efficient the distribution, the lower logistics costs, better maintain product quality, and increase business profits.

The implementation of logistics technology and supply chain information systems has the potential to increase price transparency and accelerate the distribution of fishery products. An integrated information system can help fish farmers obtain market information more quickly and accurately, thereby improving their bargaining position in the marketing process. Tian (2022) explains that the use of digital technology and traceability systems can increase the transparency of the food supply chain, accelerate information exchange, and facilitate more effective product distribution monitoring.

Therefore, support from the government, business actors, and relevant institutions is needed to develop distribution systems, provide cold storage facilities, strengthen market access, and utilize logistics information technology. Improvements in these aspects are expected to increase the efficiency of the catfish supply chain, maintain product quality, and boost profits for farmers in Saguling Village.

#### 4. CONCLUSION

The research results show that the catfish supply chain in Saguling Village involves fish farmers, middlemen, wholesalers, market traders, and end consumers. The long distribution structure results in relatively low bargaining power for farmers, and a larger profit margin accrues to middlemen. Based on the distribution analysis, market traders earn the largest profit margin of IDR 3,000 per kg, or 12.5%, while fish farmers sell their harvest at an average price of IDR 20,500 per kg.

A Food Supply Chain Network (FSCN) analysis indicates that the flow of products, information, and finances is not optimal. Key issues identified include limited access to price information, informal distribution relationships without written contracts, limited cold storage facilities, and farmer dependence on middlemen. Furthermore, fish distribution takes an average of 1-2 days and has the potential to lead to product quality degradation due to limitations in the cold storage system during shipping.

Cost Plus Pricing analysis indicates that the cost of production of catfish is IDR 20,239.15 per kg, with an ideal selling price of IDR 20,500 per kg. 22,263.06/kg using a 10% profit margin. Pricing based on production costs can help farmers achieve more stable profits and serve as a benchmark for determining more rational selling prices based on the conditions of their farming operations.

Practically, the results of this study indicate that increasing the efficiency of the catfish supply chain requires prioritizing improvements to the distribution system, providing cold storage facilities, strengthening cooperation between farmers, and utilizing market information technology to increase price transparency and strengthen farmers' bargaining power. These efforts are expected to improve



distribution efficiency, maintain product quality, and improve the welfare of catfish farmers in Saguling Village.

Improving the efficiency of the catfish supply chain in Saguling Village requires strengthening cooperation among fish farmers to improve their bargaining power in determining selling prices. Local government support is also needed, particularly in providing cold storage facilities and developing fishery product distribution infrastructure. Furthermore, implementing a more structured collaboration system among supply chain actors and utilizing logistics information technology can help improve price transparency, accelerate distribution, and maintain product quality throughout the marketing process.

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