



Supply Chain Management and Value-added Analysis of Sambal Sagela in Gorontalo

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Abstract

This research aims to determine the supply chain's condition and value-added of sambal sagela. This study case focus on small and medium enterprise in Gorontalo. Descriptive qualitative method by Asian Productivity Organization and Hayami's method was applied as the data analysis. The Primary participants of the sambal sagela supply chain consist of fishermen as suppliers, halfbeak fish smoking businesses as processors, retailers as distributors, small and medium enterprises as processors for halfbeak fish into sambal sagela, gift store as retailers, and consumers. The supply chain business process that is carried out is a cycle view with procurement, manufacturing, replenishment, and customer order cycles. Sambal sagela is marketed to both online and at Gorontalo gift stores. The partnerships between supply chain actors are based on trust. The stores's payment system for gift stores to industry processing halfbeak fish into sambal sagela was settled in cash and on consignment. Sambal sagela has a value-added of IDR 72,759.44, or 50.37% of the product's value, with a profit of IDR 47,389 or 32.81% of the product's value.

Keywords: halfbeak fish, supply chain management, value-added

1. INTRODUCTION

Indonesia is the largest archipelago state in the world, consisting of 17,499 islands and a total land area of about 7.81 million km². Its sea area is about 3.25 million km², with 2.55 million km² being the Exclusive Economic Zone (EEZ). This condition makes the fisheries sector a potential industry in Indonesia (Pratama, 2020).

Gorontalo has mostly rocky or sandy beaches that stretch for approximately 80 kilometers. Its EEZ covers around 587.6 km² and spans 3 districts and 21 coastal villages.

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Gorontalo's fishing industry is dominated by capture fisheries, with a small portion of aquaculture in Lake Limboto (2,400 ha) and freshwater ponds (with a potential of approximately 580 ha). As a province that borders Tomini Bay, Gorontalo plays a significant role in the fishing industry. The *Hermihamphus sp*, locally known as "Halfbeak" fish, is a notable species in Gorontalo, North Sulawesi, and Maluku. The Ministry of Marine Affairs and Fisheries reported that the catch of halfbeak fish in Gorontalo in 2018 was 552.34 tons.

Fish is highly perishable due to its high water content. Smoking is a popular method to preserve fish, delay spoilage, and add a unique flavor and aroma (Patty et al., 2015). Wood fuel used in smoking imparts fish a unique aroma and flavor due to the compounds produced during combustion, such as acids, phenols, and aldehydes (Sukainah et al., 2014). Smoking is also widely used to preserve Halfbeak fish, commonly known as "*sagela*" in Gorontalo, and is highly sought after due to its savory taste. *Sagela* is commonly sold in traditional markets and supermarkets in Gorontalo and is often served as a complement to food, such as in *sambal sagela* - a condiment usually served with Tinutuan, a typical porridge from Manado. *Sagela* offers an opportunity for local entrepreneurship and can contribute significantly to the development of home industries (Haryanto & Rauf, 2017).

In Gorontalo, the home industry producing *sambal sagela* from Halfbeak fish has become more profitable than just selling smoked ones. Processing the fish into *sambal sagela* adds value and extends its shelf life. However, small and medium enterprises face challenges in improving and expanding the business. These include limited smoked Halfbeak fish and distribution through souvenir shops. Improving supply chain management is necessary to overcome these issues.

Several previous studies have examined Halfbeak fish. Dotulong et al. (2018) investigated the quality of Halfbeak fish sold at the Bersehati Market in Manado. Katili et al. (2020) analyzed the supply chain management of fresh Halfbeak fish in Kumu Village, Tombariri District. Manguma et al. (2020) studied the value-added of Halfbeak fish processed into "*sambal* Halfbeak fish" in Usman Tedjo Household Industry, Marowala District, Sigi Regency. However, research on the supply chain management of processed Halfbeak fish products, particularly *sambal sagela*, is still limited. This study aims to determine the supply chain for *sambal sagela* and to identify the value-added of smoked Halfbeak fish processed into *sambal sagela*.

2. LITERATURE REVIEW

Supply chain management integrates suppliers, entrepreneurs, warehouses, and storage places to distribute products with the right quantity, quality, location, and time to satisfy consumer needs and minimize costs (Pujawan & Mahendrawathi, 2017). Managing



agro-industrial supply chain risks reduces losses and ensures continuity of production, product availability, and meeting consumer demand for quality products at stable prices (Melly et al., 2019). Value-added is a concept in supply chain management that refers to an increase in the value of a commodity due to input processing, which can result in higher process value or price (Marimin & Maghfiroh, 2013; Indriani et al., 2019a).

The supply chain structure described the members and their roles in the supply chain, while the supply chain objectives referred to the goals of the actors, such as market and development targets. The management of the supply chain explains the management structure used between the links, partnerships, contractual agreements, transaction systems, and government support in the supply chain. The resources of the supply chain explain the resources that can be used in every process at each member of the chain. The business process of the supply chain explains the processes that occur within the supply chain and the level of integration of the existing processes in the supply chain (Marimin & Maghfiroh, 2013).

Supply Chain refers to the sequence of processes (decision-making and execution) and flows (materials, information, and money) that occur within and between different stages from production to final consumption, involving producers, transporters, service providers, logistics, retailers, and consumers (Courtonne *et al.*, 2015).

3. RESEARCH METHOD

The study focused on the *sambal sagela* supply chain in Dungaliyo Subdistrict, Gorontalo. The primary and secondary data were used in this study. Primary data was collected through field observations and in-depth interviews with small and medium-sized business owners, while secondary data was gathered from various sources such as the Statis Indonesia, the Department of Agriculture, journals, theses, and dissertations. The primary data collection was limited to interviews with SME owners and did not include interviews with fishermen who supply raw halfbeak fish and traders in the traditional market who supply smoked halfbeak fish.

3.1 Descriptive Analysis of the Sambal sagela Supply Chain

This study employed a descriptive-qualitative method developed by the Asian Productivity Organization to analyze the general condition and model of the supply chain for *sambal sagela* by considering both quantitative-numeric and qualitative data and expert opinions. The analysis focused on the supply chain structure, objectives, resources, management, and business processes (Slamet et al., 2011). Supply chain performance is not explained due to research limits. It measures the chain's ability to meet customer needs



based on relevant performance indicators at specific times and costs (Vorst, 2005). The descriptive analysis framework of supply chain management can be seen in Figure 1.

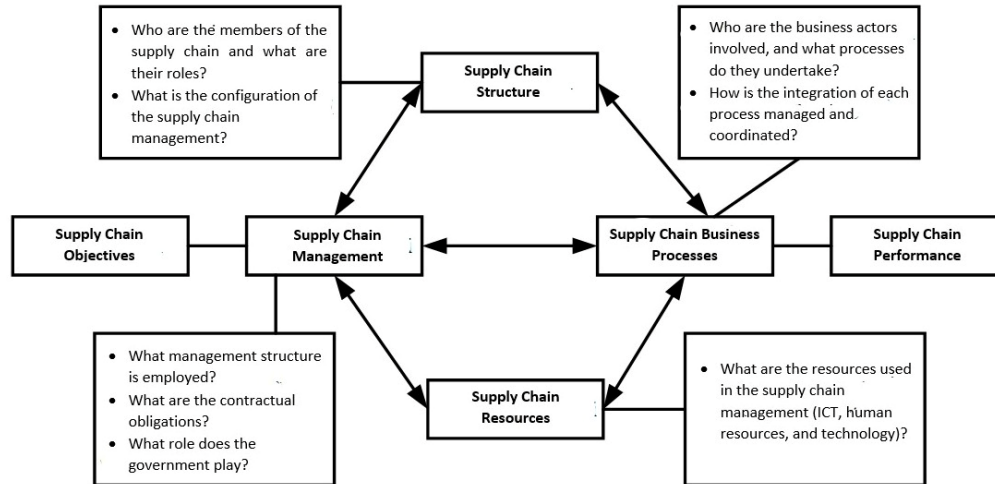


Figure 1. Descriptive Analysis Framework of Supply Chain Management (Vorst, 2005)

3.2 Value-added Analysis

The value added of *sambal sagela* is analyzed using the Hayami method (Hayami et al., 1987). The calculation can be seen in Table 1.

Table 1. The Procedure of Value-Added Calculation using the Hayami Method

No	Variable	Value
Output, Input and Price		
1.	Output (Kg)	(1)
2.	Raw Material Input (Kg)	(2)
3.	Direct Workers (Man-Day)	(3)
4.	Conversion Factor	(4) = (1) / (2)
5.	Direct Workers Coefficient (Man-Day/Kg)	(5) = (3) / (2)
6.	Output Price (Rp/Kg)	(6)
7.	Direct Workers Wage (Rp/Man-Day)	(7)
Revenue and Profit		
8.	Raw Materials Cost (Rp/kg)	(8)
9.	Other Inputs Cost (Rp/kg)	(9)
10.	Output Value (Rp/kg)	(10) = (4) × (6)
11.	Value Added (Rp/kg)	(11a) = (10) - (8) - (9)

No	Variable	Value
	Value Added Ratio (%)	$(11b) = (11a) / (10) \times 100$
12.	Direct Worker Income (Rp/kg)	$(12a) = (5) \times (7)$
	Direct Worker Share (%)	$(12b) = (12a) / (11a) \times 100$
13.	Profit (Rp/kg)	$(13a) = (11a) - (12a)$
	Profit Margin (%)	$(13b) = (13a) / (10) \times 100$

Source: Marimin and Magfiroh (2013)

Sambal sagela is measured in cardboard boxes and sachet packaging. A production batch of *sambal sagela* includes 25 cardboard boxes, with each box containing 5 sachets of sambal weighing 100 grams each. Therefore, the total weight of 25 cardboard boxes is 12.5 kilograms. In one production cycle, about 30 pieces of smoked halfbeak fish weighing approximately 9 kilograms are used as raw materials. After removing the fish skin and head and pounding it, the raw materials yield approximately 12.5 kilograms of *sambal sagela*.

4. RESULT

4.1 Supply Chain Structure

The supply chain structure of *sambal sagela* is analyzed based on its participants and their roles. The stakeholders are those who involve in the flow of products, money, and information from fishermen to consumers. The primary participants of the halfbeak fish supply chain in Gorontalo are fishermen, halfbeak fish smoking industries, suppliers (retailers), *sambal sagela* enterprises, gift stores, and consumers. The secondary members include Community-Based Organizations, Banking institutions, Transportation service providers, Packaging industries, Social Media account owners, and Delivery Service Providers. The structure of the *sambal sagela* supply chain can be seen in Figure 2.

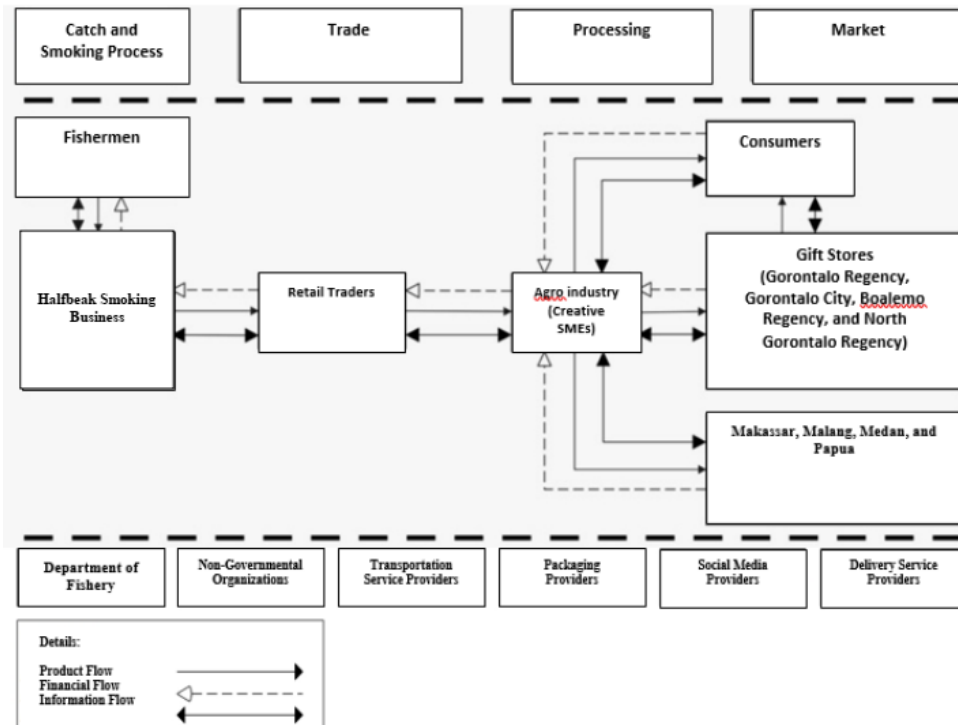


Figure 2. The Supply Chain Structure of *Sambal sagela* in Gorontalo

In the supply chain, fishermen sell their halfbeak fish to nearby fish smoking industries near the Fish Auction Place (TPI). The smoked halfbeak fish is distributed to the market in which the *sambal sagela* enterprise purchase it from retail traders. The smoked halfbeak fish is processed into *sambal sagela*, which is packaged in sachets as the primary packaging and cardboard boxes as the secondary packaging. The enterprise sells its products to gift stores, online resellers, and consumers.

Sambal sagela is marketed through three channels: direct sales to consumers, sales through gift stores, and online sales to customers outside the city. These marketing channels are short, which benefits the *sambal sagela* producer by reducing risks and allowing them to retain a larger share of the profits compared to other supply chain actors. A long marketing channel involving multiple industries can result in lower profits and higher risks of losses. According Saputra *et al.*, (2018), long marketing chain in a supply chain network increases the vulnerability of the supply chain and the products to potential losses. This poses risks for producers and impacts other associated supply chain industries. Taking into account the allocation of profits and risk factors involved, it is crucial to establish a balance between the profits obtained by each supply chain participant as well as the risks they encounter.

4.2 Supply Chain Target

The market target encompass gift stores located in the Limboto and Telaga districts, Boalemo Regency, as well as North Gorontalo. *Sambal sagela* is also marketed online by reseller. *Sambal sagela*'s current development objectives include improving production and quality. This involves increasing the workforce's skills and numbers to enhance efficiency through technology adoption and faster processing. Furthermore, expanding the reseller network is necessary to reach a bhalfbeakder market.

4.3 Supply Chain Management

The supply chain management discussed in this study encompasses partner selection, contractual agreements, transaction systems, financing, and government policy support.

a. Partner Reference

The *sambal sagela* enterprise in Gorontalo serves as the primary driver of the smoked halfbeak fish supply chain. The company's partners are retail traders of smoked halfbeak fish in the traditional market, who serve as regular suppliers of smoked halfbeak fish to the enterprise. This enterprise's relationship with its resellers is based on trust, mutual reliance, and benefits. It has also partnerships with retailers and gift stores that have lasted more than ten years.

b. Contractual agreements.

The *sambal sagela* enterprise in Gorontalo does not have written agreements with the market fish traders that sell smoked halfbeak fish or with its retailers. Written contracts are merely implemented with gift stores in Gorontalo. These contracts specify the quantity, price, and quality of the products.

c. Transaction System

The transaction system between the *sambal sagela* enterprise, smoked halfbeak fish traders in the market, and the retailers is conducted directly and in cash. The customer who purchase the *sambal* directly from the company is also paid in cash. However, orders from outside the city are settled through bank transfers. The payment is completed by the customers after the seller finished the delivery process and provide evidence of delivery via communication media or social media. A cash payment system has the benefit of its immediacy and the absence of any possibility of debt in the *sambal sagela* supply chain. A cash payment system has limitations in terms of impracticality and security. However, Munte & Syahwier (2017) stated that many individuals still prefer cash transactions for their comfort. Moreover, non-cash transactions necessitate users to have understanding of technology.

d. Government Policy Support

The support includes training or mentoring programs conducted by the Department of Cooperatives, Industry, and Trade (Diskoperindag) of Gorontalo for MSME owners, equipment assistance, organization of exhibitions showcasing the products of MSMEs by inviting all MSMEs in Gorontalo to sell their products, and the establishment of the Gorontalo MSME Association as an organization for communication between MSME actors and the government.

4.4 Supply Chain Resources

The resources include physical, technological, human, as well as financial resources. *Sambal sagela* supply chain's resources are restricted to a case study of a creative MSME that produces *sambal sagela*. This study does not discuss the resources from other supply chain participants. Nonetheless, the majority of Halfbeak fisherman, own their own boats or rent boats from other fishermen. Subsequently, the catch is sold to Fish Auction Places, which provide facilities for fishermen and fish wholesaler to gather. Further, the fish transported to smoked halfbeak fish processing businesses, which have their own facilities to carry out their operations. Similarly, the fish retailer in the market has their own rented stalls. Meanwhile, the Creative MSME's resources are as follows:

Sambal sagela enterprise's physical and technological resources include the factory building for the processing and the equipment utilized in the production process. Meanwhile, the packaging materials in the form of sachets and cardboard boxes, are purchased from suppliers outside of Gorontalo. *Sambal sagela* company also possesses transportation facilities for product distribution and internet-based communication tools.

The human resources in the *sambal sagela* supply chain involve multiple interrelated parties that interact with each other, facilitating the flow of products, information, and money. As the key player in the supply chain, *sambal sagela* enterprise typically employs permanent workers for company management and contract workers for production activities. The human resources also include fishermen, workers at the TPI, traders in the market, resellers, and sellers in gift stores.

A capital is a fundamental prerequisite for carrying out supply chain business process. The *sambal sagela* enterprise in Gorontalo obtained initial capital from a Non-Governmental Organization (NGO) in Gorontalo. Subsequent capital is acquired by *sambal sagela* entrepreneurs through borrowing from banks.

4.5 Supply Chain Business Process

In the procurement cycle of the smoked halfbeak fish supply chain, the business process involves purchasing smoked halfbeak fish from retail traders in the traditional market in Gorontalo, who act as suppliers. In the manufacturing cycle, the business process entails processing fresh halfbeak fish into smoked halfbeak fish and processing the smoked halfbeak fish into *sambal sagela*. In the replenishment cycle, the business process involves inventory control carried out by the Fish Auction Place (TPI), traditional traders in the market, and the *sambal sagela* enterprises. This is achieved by considering reserve stocks each time production takes place. In the customer order cycle, the business process includes the ordering of *sambal sagela* from gift shops and resellers to the *sambal sagela* enterprise.

4.6 Value-added Analysis of Halfbeak Fish to *Sambal sagela*

The value-added analysis of *sambal sagela* in Gorontalo can be seen in Table 2.

Tabel 2. Value-added analysis of Hayami's *sambal sagela* production by UKM Kreatif (Creative Industry) in 2021.

No.	Variable	Value
	<i>Output, Input and Price</i>	
1	Output (boxes/week)	75
2	Raw material input (kg/week)	27
3	Workers input (man-day/week)	13.7
4	Conversion factor	2.78
5	Worker coefficient	0.51
6	Product price (Rp/box)	52000
7	Worker wage (Rp/man-day)	50000
Penerimaan dan keuntungan (Rp/kg <i>Sambal sagela</i>)		
8	Input material cost (Rp/kg)	69000
9	Other input contributions (Rp/kg of output)	2685
10	Product value (Rp)	144,444.44
11	Value added (Rp/box)	72759.44
	Value added ratio (%)	50.37
12	Worker income (Rp/box)	25370,37
	Worker share (%)	34.87
13	Profit (Rp/box)	47389.07
	Profit rate (%)	32.81

Details: A box weighs 500 grams of *sambal sagela*

A weekly supply of 27 kg of smoked halfbeak fish yields 75 boxes or 37.5 kg of *sambal sagela*/week. The required workers input to process 27 kg of smoked halfbeak fish into *sambal sagela* is 13.7 man day/week, (10 female workers (0.8 ME), the number of working 3 days/week, with 4 hours/day, divided by 7 hours). The processed *sambal sagela* products are marketed at a price of Rp52,000/box, with the weigh of 500 grams/box. With a conversion factor of 2.78, the product value amounts to Rp144,444.44. The value added per box of *sambal sagela* is Rp72,759.44 or 50.37% of the product value. The workers income from the products amounts to Rp25,370.37, with the workers share accounting for 34.87% of the processing. The profit margin is 32.81% of the product value, which is Rp47,389. This indicates that for every 100 boxes of the product value produced, a profit of 32.81 will be obtained.

4.7 Managerial Implications

The *sambal sagela* company is anticipated to enhance supply chain management as it drives the smoked halfbeak fish supply chain. Priority should be given to improving production, operations, and distribution processes of *sambal sagela* to ensure consumers receive the proper quality in terms of quantity, time, and location. Emphasizing continuous production is crucial for long-term success. Moreover, Creative SMEs can achieve consistent production and focus on these products, as well as have stable supplier and long-term sales partners. The research findings expected that the Creative SMEs owners able seek the potential benefits and value-added of the enterprise. Furthermore, converting raw materials such as smoked halfbeak fish into the finished product (*sambal sagela*) and delivering it to consumers serves as a strategy to mitigate damage or quality deterioration of the halfbeak fish. Therefore, to augment value-added and minimize losses in the *sambal sagela* processing agro-industry in Gorontalo, it is essential to establish direct colworkersations with smoked halfbeak fish processing enterprises to secure cost-effective raw material prices and further enhance cooperation with distributors. Additionally, it is hoped that management of the production and distribution of *sambal sagela* will improve, particularly in terms of hiring administrative staff and expanding the resellers, as well as intensifying promotion on social media. Optimizing the flow of products, finances, and information through effective management and supervision is vital for supporting the of supply chain actors in offering their products.

5. DISCUSSION

There are three main flows in the Gorontalo *halfbeak* fish supply chain: product, financial, and information flow. The product flow is fishermen who catch halfbeak fish using

fishing gear and nets provided by the Gorontalo Fisheries Department. Subsequently, the fishermen supply the fresh halfbeak fish to the fish smoking industry nearby to the Fish Auction Center. The industry's transportation services deliver smoked halfbeak fish to the market which is sold to retailers. The *sambal sagela* enterprise purchases smoked halfbeak fish from the market to process it into *sambal sagela*. *Sambal sagela* is packaged in 100-gram sachets, with 5 sachets/carton. The packaging materials are supplied by third-party business. *Sambal sagela* is offered for sale to customers both directly and through online resellers and gift stores.

The financial flow involves the exchange of money within the supply chain. It includes the costs incurred and the profits earned by each participant (Indriani et al., 2019b). Consumers pay cash for *sambal sagela* at gift stores or directly from the enterprise Creative SMEs, with a price of Rp52,000/carton. Through a consignment system, the gift store pays the *sambal sagela* enterprise Rp50,000/box or Rp10,000/sachet. The *sambal sagela* enterprise purchases smoked halfbeak fish from retail fishmongers in the market at Rp23,000 /clip or Rp69,000/kilogram, paying in cash.

In general, consignment is a sales system that involves an agreement between the first party (product owner) and the second party (seller). The first party agrees to consign and sell their products through the second party, with a predetermined profit sharing arrangement. In this case, the first party (Creative SMEs) consigns and sells their products through a gift stores (second party), with a price of Rp50,000/box of "Olamita" brand *sambal sagela* or Rp10,000/sachet. The gift store earns a profit of Rp2,000/box or Rp3,000/sachet, resulting in a selling price of Rp52,000/box or Rp13,000/sachet to consumers. The consignment system benefits creative SMEs as consignor by reducing their marketing costs, including sales personnel and transportation expenses. Additionally, since the *sambal sagela* is directly shipped to the consignee (a gift shop), they do not require a physical store or warehouse. The disadvantage of the consignment system is that creative SMEs cannot innovate in marketing strategies as they are entirely dependent on the consignee for promotion. Additionally, although it's a rare case, the gift store returns the remaining products to Creative SMEs. The Creative SMEs supplies the stores every two weeks, yet they must wait until the end of the month to be paid for their profits.

There are two directions in the financial flow; first, the flow from suppliers, which includes accounts receivable, delivery costs, purchases, and revenue. Second, reverse flow, which involves payments (Pujawan & Mahendrawathi, 2017). Key indicators in this process include payment accuracy, satisfaction with the payment system, and satisfaction with prices (Amir et al., 2014).



Information flow involves communication process among the supply chain participants (Marimin and Magfiroh, 2013). Horizontal flow occurs at the fishermen level, sharing fishing techniques. Vertical flow occurs among the participants within the halfbeak fish supply chain. Information flows from fishermen to the halfbeak fish processing enterprise regarding catch quantities, selling prices, and transaction processes. The processing enterprise provides information to the fishermen about the purchase prices for their halfbeak fish. Additionally, the processing enterprise shares information with retail halfbeak fish traders about the availability of smoked halfbeak fish and delivery schedules. Information flows from retail smoked halfbeak fish retailers to the halfbeak fish processing enterprise, including the purchase price of smoked halfbeak fish based on market rates. This information is communicated directly using telecommunications. Information from retail traders to the *sambal sagela* enterprise includes the quantity of available and the selling price of smoked halfbeak fish. The *sambal sagela* enterprise provides information to consumers, resellers, and gift stores on the price and quality of the product, including production and expiration dates. Vice versa, they share information with the enterprise about their product orders and delivery status. Consumers and resellers communicate utilizing communication and social media platforms like WhatsApp, Instagram, and Facebook. The information shared among stakeholders is accurate and transparent, particularly regarding pricing and product quantities. Communication tools are essential for efficient information flow, especially considering the fluctuating prices of halfbeak fish based on fishermen's catch prices.

Pujawan & Mahendrawathi (2017), state that information flows in two directions in supply chains. First, the flow from suppliers, which includes production capacity, delivery scheduling, and promotional activities. Second, the reverse flow, which includes sales reports, inventory information, and promotional progress reports. Key indicators of information flow include information frequency, transparency, and accuracy among involved parties (Amir et al., 2014).

Supply chain target refer to the goals pursued by all of the supply chain participants, including market target and development objective (Sari & Nuralina, 2013). Market target specifically outline the goals of the *sambal sagela* supply chain in Gorontalo. Supply chain management involves coordinating and structuring decision-making processes and execution among supply chain participants (Pujawan & Mahendrawathi, 2017).

Partner reference, as explained by Marimin & Magfiroh (2013), is the process of selecting compatible partners for successful cooperation in a business endeavor. Choosing successful partners is crucial to achieving supply chain objectives, particularly in meeting consumer needs. The selection should align with the specific requirements of the supply





chain participants. The selection is based on proximity and trust, as this partnership is intended for long-term colworkersation. According to Slamet *et al.*, (2011), Strong relationships among supply chain participants, facilitate convenient partnerships. Agreements are often based on references from long-term working relationships with trusted partners.

Contractual agreements specify the agreed-upon terms between formal and informal partners. These agreements define responsibilities and restrictions for the parties involved and can be long-term or as mutually agreed (Sari & Nurmalina, 2013). Sales and purchases require agreements to guarantee fairness between the cooperating parties.

The transaction system between *sambal sagela* enterprise and the gift store operates on a consignment basis. Consignment system involves a sales agreement in which the *sambal sagela* enterprise supplies its products to the gift store, and the store is obligated to return any unsold *Sambal sagela* within a specified timeframe as stipulated in the contractual agreement. On a monthly basis, the gift store pays the *sambal sagela* enterprise for the sales of the products. For the product owner (consignor), the benefits of the consignment system include expanding market reach, saving on promotional costs, minimizing human resource and service costs, and enabling for a greater focus on product quality. However, the consignment system have the disadvantage of potential risks or losses. Moreover, if the product owner chooses a seller who is unable to produce effective sales, the product will take a period of time to be sold, promotional efforts will not meet the owner's expectations, and product may not be paid immediately (Pinti & Indrajaya, 2013). Contrarily, the benefits of a cash payment method in *sambal sagela's* supply chain include immediate payment without the risk of debt, allowing supply chain actors to experience the benefits and enabling capital reinvestment. The disadvantage of cash payments its impracticality and lack of security, as individuals require to carry a significant amount of cash when purchasing large quantities of smoked halfbeak fish or *sambal sagela*, which result a potential of theft, particularly in the crowded market.

According to Indriani *et al.* (2020), government support is crucial for the development of agro-industrial supply chains, particularly in formulating supply chain policies for MSMEs. The growth of MSMEs that produce *sambal sagela* has received significant support from the Gorontalo administration.

The role of the government as a facilitator, regulator, and motivator is crucial in creating a conducive business environment and establishing a well-functioning supply chain structure. The government's provision of market information, policies regulating agricultural commodity supply chains, adequate infrastructure, assistance and mentoring from expert Agriculture Extension Workers (PPL) in the field of agricultural commodities, as





well as the organization of agricultural product exhibitions, able to improve the supply chain's competitiveness (Marimin & Maghfiroh, 2013).

Sambal sagela supply chain's resources are essential to support, develop, and streamline all of its operations. The supply chain is endowed with a variety of resources, including technological, human, and financial resources (Slamet *et al.* (2011). The business process of the supply chain, as viewed from the cycle perspective, includes procurement, manufacturing, replenishment, and customer order cycle (Suud *et al.*, 2021). The business process of the *sambal sagela* supply chain is limited to a case study on a Creative MSME (that produces *sambal sagela*). From the cycle view perspective, the Creative MSME fulfills all cycles.

According to Armand (2004), value-added can be measured through value processing or price increase. The purpose of measuring value-added is to assess the remuneration obtained by inputs from the process' output (Indriani *et al.*, 2019a). This analysis employed the Hayami method, which the advantage is able to determine the remuneration value to the owners of production factors (Armand, 2004). Supply chain management research suggests that Creative SME businesses can improve their future development by focusing on increasing *sambal sagela* production, particularly during the holiday season and the Hajj season, as there is a higher-than-regular demand for *sambal sagela*. Moreover, recruiting more workforce to increase production, seeking, and expanding alternative market share beyond social media platforms and gift shops, as well as targeting new customers from out-of-town areas. Hence, there is a need for a significantly intensified social media promotion of *sambal sagela* products. Moreover, Creative SMEs are expected to hire additional administrative staff for efficient management of sales and financial records, and have stable suppliers and long-term sales partners. The research's implications is expected that Creative SMEs owners to be able to seek the potential benefits and value-added from their enterprise. Currently, Creative SMEs rely on purchasing raw materials from market retailers, without establishing direct partnerships with smoked halfbeak fish processing businesses. Thus, colworkersation with smoked halfbeak fish processing businesses is crucial in order to to increase value-added and reduce losses for the *sambal sagela* processing agro-industry in Gorontalo, as well as to acces affordable raw material prices and strengthen cooperation with distributors. By implementing optimal management and supervisory efforts, the three flow patterns (product, money, and information flow) in the *sambal sagela* supply chain mechanism in Gorontalo are improved in order to support the performance of supply chain actors in offering their products, as previously mentioned.



6. CONCLUSION

The supply chain structure of sambal sagela in Gorontalo encompasses fishermen, smoked halfbeak fish businesses, retailers, sambal sagela industries, gift shops and consumers. This supply chain's target markets include gift shops and online marketing outside of the city, and its development goal is to boost sambal sagela's production and quality. The partnership between Sambal sagela industries and smoked halfbeak fish retailers as suppliers is established through verbal agreements and trust, without a written contract. However, shop partnerships with resellers as distributors are carried out with a written contract. Except for sambal sagela enterprises and gift shops, which employ a consignment system, all transactions between supply chain participants are settled in cash. The Creative SMEs possess adequate capital, human resources, and physical-technological resources. Sambal sagela's supply chain business process cycle involves procurement, manufacturing, replenishment and customer order.

Each carton of Sagela sambal contributes an value-added of IDR 72,759.44 or 50.37% of the product value. The processing process generates a profit of 32.81% of the product's value or IDR 47,389. This indicates that a profit of 32.81 boxes will be generated for every 100 boxes of product value produced. It is important to conduct further research on the flow of products, money, and information within the supply chain mechanisms, as well the performance of the supply chain for processed halfbeak fish.

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