



UDC 332; DOI 10.18551/rjoas.2023-06.19

SUPPLY CHAIN MANAGEMENT OF CUTTLFISH (SEPIA SP.) CV. SURYA BARU, TANAH LAUT OF SOUTH KALIMANTAN, INDONESIA

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ABSTRACT

One of the potential marine resources in Tanah Laut Regency which has a very high selling value is the cephalopod fish, namely cuttlefish. One of the companies engaged in the processing and marketing of cuttlefish in Tanah Laut Regency, namely CV. Surya Baru. The research aims to analyze the supply chain management of cuttlefish (*Sepia sp*) CV. Surya Baru, Tanah Laut, Kalimantan Selatan. The research took place at CV. Surya Baru, Tanah Laut Regency. The research location was chosen deliberately because it is a CV. Surya Baru is a fishery product processing company in the export sector. Data analysis techniques to answer the research objectives used descriptive qualitative and quantitative analyzes from producers, marketing agencies, to the final consumers. Cuttlefish supply chain management at CV. Surya Baru, Tanah Laut Regency, South Kalimantan Province which includes socio-economic interactions and contributions between the business actors involved, namely from fishermen, collectors, to CV. Surya Baru. Stages of cuttlefish supply chain management at CV. Surya Baru, Tanah Laut Regency consists of several stages, namely mapping production flows, mapping financial flows and mapping the flow of information on the cuttlefish supply chain.

KEY WORDS

Cuttlefish, supply chain, management, CV. Surya Baru.

One of the potential marine resources in Tanah Laut Regency which has a very high selling value is the cephalopod fish, namely cuttlefish (Batubara et al. 2017). One of the companies engaged in the processing and marketing of cuttlefish in Tanah Laut Regency, namely CV. Surya Baru. The company buys cuttlefish from fishermen and then processes them, freezes them and then markets them again outside the island of Kalimantan. KKP statistical data for 2020 exported 140,036,315 tons of cuttlefish abroad. Measuring the efficiency of supply chain performance has an important role to determine the condition of the company, whether it has decreased or increased and what improvements must be made to improve the company's performance (Sufa et al. 2016).

Several literature studies on supply chains have become the focus of the company because the supply chain is the lifeblood of the smooth running of the company's business. This is because the company's supply chain is a system that connects suppliers, companies and customers (Harisnanda et al. 2012). Wuwung (2013) said the supply chain describes all processes and activities aimed at delivering products to consumers. Ruteri and Qi Yu (2009) said that in the supply chain management of the food industry, strong relationships between members are needed. The key to the level of performance of multinational companies lies in the company's ability to work together with its business partners (Budiman 2013). Danae et al. (2012) said that in a company, performance measurement is needed to provide a structured approach focused on strategic plans, goals, and performance. According to Dinata et al. (2014) supply chain management itself is considered an important factor for companies to serve as a competitive advantage. Every business person will make every effort to increase productivity, efficiency, fast and easy service and continue to create new innovations to remain superior and survive in the market (Ndiba et al. 2016).



Supply chain performance is the result of various efforts made by each member of the supply chain to meet the ultimate goal of the supply chain, namely customer satisfaction (Sari et al. 2014). Important aspects in the development of industrial clusters are supply chain, institutional and market aspects (Nurani et al. 2014). One of the factors that play an important role in determining the quality control process is the supply chain, which is the process of distributing goods, starting from the production of fish on board the ship to the products received by the company. Product handling at each of these stages is a critical point that will determine the quality of cuttlefish products when the product arrives at the company and a quality sorting process (grading) is carried out (Jati et al. 2014). Therefore, the cuttlefish supply chain is highly dependent on external factors from the company and highly dependent on fishermen. The aim of this study was to analyze the supply chain management of cuttlefish (*Sepia sp*) CV. Surya Baru, Tanah Laut, Kalimantan Selatan.

MATERIALS AND METHODS OF RESEARCH

The research took place at CV. Surya Baru, Tanah Laut Regency. The research location was chosen deliberately because it is a CV. Surya Baru is a fishery product processing company in the export sector that produces cuttlefish. The number of research samples is 15 respondents with the following sampling method:

- Fisherman. The census sampling technique is that all fishermen involved in catching cuttlefish are taken as samples by conducting interviews, namely fishermen who catch cuttlefish who sell cuttlefish catches to cuttlefish suppliers;
- Collector. The technique of determining the sample by snowball sampling, namely collectors who are used as samples, is conducted by interview research. Collectors collect, carry and sell cuttlefish commodities to the company CV Surya Baru, Tanah Laut Regency (Sugiyono, 2016).

Data analysis techniques to answer the research objectives used descriptive qualitative and quantitative analyzes from producers, marketing agencies, to the final consumers. The first objective is to analyze the cuttlefish supply chain map in CV. Surya Baru, Tanah Laut Regency, which includes socio-economic interactions and contributions between the business actors involved. Descriptive analysis intended to describe the picture and map of the cuttlefish supply chain in CV. Surya Baru, Tanah Laut Regency, to the final consumer. Data analysis techniques for the analysis of the descriptive model Miles and Huberman in Sugiyono (2017). The aim of the research is to analyze the cuttlefish supply chain management at CV. Surya Baru, Tanah Laut Regency.

RESULTS AND DISCUSSION

The supply chain model is a description of the chain relationships of these actors that can form a chain that is connected to one another. An overview of the cuttlefish supply chain in CV. Surya Baru consists of several supply chain actors. The supply chain actors involved are the main actors and supporting actors. Each supply chain actor performs activities according to their respective roles. Supply chain mapping for cuttlefish in CV. Surya Baru is carried out through four stages, namely mapping actors, mapping product flows, mapping financial flows and mapping information flows. Supply chain mapping is a series of activities in order to obtain raw materials, followed by transformation activities so that they become products in the process then become finished materials which are then passed on to the end consumers (Parwati and Andrianto, 2009).

The flow of cuttlefish involves the flow of physical products from supplier fishermen to CV. Surya Baru. The flow of cuttlefish products starts from fishermen as producers as well as the first main actors in the cuttlefish supply chain. The total production of cuttlefish in Tanah Laut Regency in 2021 is 267.60 tons (KKP, 2022) and the amount of production obtained from fishermen respondents in this study is an average selling price of cuttlefish Rp. 32,600/kg with an average yield catch 1000-1500 kg.

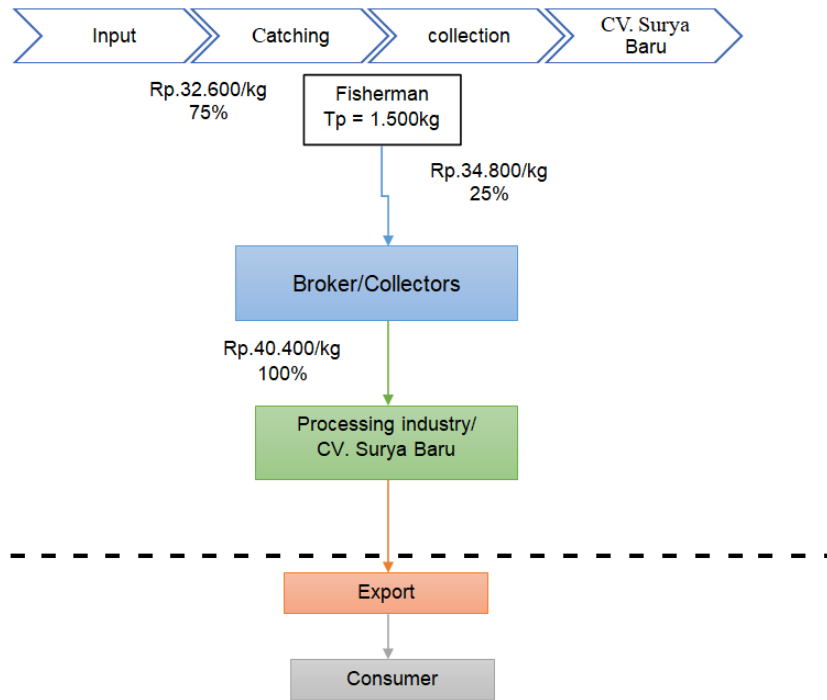


Figure 1 – Cuttlefish Supply Chain Map CV. Surya Baru (Note: TP = Total production)

Cuttlefish are supplied by fishermen to other key supply chain actors, namely middlemen/collectors, accounting for 75% of the total production of cuttlefish catches. Collector traders consist of collector traders. Each collecting trader gets an average supply of 1,800 – 2,000 kg from cuttlefish fishermen. Collectors are level 2 business actors who buy cuttlefish directly from fishermen. Cuttlefish purchased from fishermen are collected first and will later be supplied to CV. Surya Baru. The cuttlefish production supplied by collectors is 25% of the total production. Collectors are able to supply cuttlefish with an average of 8,000 kg/one supply to CV. Surya Baru with a selling price of RP. 40,400/kg. Furthermore, 100% of the total cuttlefish production from collectors is supplied to CV. Surya Baru with an average supply of 8-10 times/month.

The pattern of payment in the sale of cuttlefish from fishermen to collectors is done in cash. This condition is very profitable for fishermen because the cuttlefish caught immediately has certainty of buyers from collectors. Generally, the costs incurred by the cuttlefish fishing infrastructure consist of purchasing diesel fuel, ice cubes, salt, clean water and supplies such as fields while at sea. The boats used by fishermen to catch sea cuttlefish are generally 7-10 GT in size, on this ship they also provide styrofoam crates filled with ice cubes so that the quality of the cuttlefish they catch can last until they land and are in the hands of collectors.

Mapping the production flow in the cuttlefish supply chain is very important to improve operational efficiency and effectiveness of the overall cuttlefish supply chain management. This mapping involves identifying each stage of production, starting from collecting cuttlefish until the product is ready to be sent to the market (Akyuz et al, 2017). This production flow mapping can help stakeholders in the cuttlefish supply chain, in this case CV. Surya Baru to optimize their production process by reducing production time, minimizing production costs, and increasing production efficiency. In this mapping process, information technology such as supply chain management systems and the internet of things (IoT) can be used to monitor every stage of production in real-time and enable fast and accurate decision making (Cruz-Mejia et al, 2019).

The flow of money is a picture of the flow of money that starts from consumers as buyers, then flows in each link and will eventually reach producers to be used as production costs. This flow of funds is unidirectional, meaning that the funds generated from the exchange with products purchased by consumers through several links, will eventually be



received by producers in exchange for the products produced. The flow of money starts from fishermen who sell cuttlefish to collectors Rp. 32,600/kg, when catching cuttlefish in the sea, fishermen incur expenses in the form of boats, diesel fuel (Rp. 5,000/liter), ice cubes (Rp. 14,500/block), salt (Rp. 50,000/sack) and other supplies (Rp. 15,000,000/every time they go to sea). 10,000,000. The financial flow of the next cuttlefish supply chain map is from car fuel (Rp. 10,000/liter), ice cubes (Rp. 14,500/block), 1 employee (Rp. 300,000/transportation) and other facilities (Rp. 2,000,000/per-transit). from the sales of cuttlefish that have been deducted by field fees, the average income of collectors is Rp. 15,000,000/month. The financial flow of the next cuttlefish supply chain map is from collectors to CV. Surya Baru at the agreed cuttlefish selling price of Rp. 40,400/kg, in this case the collectors pay for cars for transporting cuttlefish, car fuel (Rp. 10,000/liter), ice cubes (Rp. 14,500/block), 1 employee (Rp. 500,000/transport) and other facilities (Rp. 5,000 .000/perever transportation) from the sales of cuttlefish CV. Surya Baru.

Financial mapping of the cuttlefish supply chain can involve observing and analyzing the various types of costs and income involved in the production, processing and distribution of cuttlefish (Jayathilaka, 2017). Several important elements in the financial mapping of the cuttlefish supply chain, among others:

- Production costs: Production costs include the costs of producing cuttlefish from the waters, such as fuel, equipment and labor costs. Production costs also include ship maintenance costs, labor costs, operating costs and other costs related to production;
- Processing costs: Processing costs include costs for processing cuttlefish into ready-to-sell products such as raw material costs, electricity costs, water costs, and labor costs. Processing costs also include costs for freezing cuttlefish and transportation costs to distribution centers;
- Distribution costs: Distribution costs include costs for sending cuttlefish products from distribution centers to customers, such as transportation costs, storage costs, and inventory management costs;
- Revenue: Revenue in the cuttlefish supply chain comes from selling cuttlefish products to customers. Income can also come from subsidies or grants from the government or donor agencies;
- Investments: Investments in the cuttlefish supply chain include investments in equipment, vessels, processing facilities, and information technology.

Through financial mapping in the supply chain, cuttlefish can gain a better understanding of their financial health and make better decisions in managing their operations. By understanding the costs and revenues in the cuttlefish supply chain, stakeholders can optimize their operations to maximize profits and increase efficiency (Barua, 2016).

The flow of information that occurs in the cuttlefish supply chain in Tanah Laut Regency shows that the flow of information or communication is well integrated. Communication activities are carried out by telephone or when both parties meet face to face. The information conveyed by fishermen to collectors includes cuttlefish ready for sale and the amount of production ready to be transported as well as the price set by each party. Fishermen only act as cuttlefish catchers, while the selling process outside the port is carried out by collectors up to CV. Surya Baru has communicated this matter well. The quantity demanded for cuttlefish and information regarding price agreements are mutually communicated between the two parties.

Besides that, the collectors also informed the time of sending cuttlefish to the destination location, namely CV. Surya Baru. The flow of information in the cuttlefish supply chain in Tanah Laut Regency also takes place from the fishery field supervisor as a government official whose job is to inform fishermen about the technical aspects of fishery transaction activities. The related fisheries government provides information regarding cuttlefish catching techniques in accordance with good and correct standard operating procedures. In addition, fishermen and collectors so far have also received training from the government regarding fish catching and production, with an average of 4 trainings so far.



This condition is certainly very helpful for fisher collectors and the people who work in the fishing business to continue to develop.

Mapping the flow of information in the cuttlefish supply chain is very important to ensure that accurate, timely and relevant information is available to all stakeholders in the supply chain (Gereff, 2018). Several important elements in mapping the information flow of the cuttlefish supply chain include:

- Information on production: Information on production includes information on the number of cuttlefish produced, the location and time of collection, and their quality conditions;
- Information on processing: Information on processing includes information on the type and quality of raw materials, the amount of product produced, and the quality of the product;
- Information about distribution: Information about distribution includes information about delivery destination, delivery time, and quantity of products sent;
- Information on demand: Information on demand includes information on market demand trends, consumer preferences and customer expectations;
- Financial information: Financial information includes information about production costs, processing costs, distribution costs and revenues;
- Regulatory information: Regulatory information includes information on government regulations, quality requirements, and safety requirements.

Supply chain cuttlefish CV. Surya Baru accurate, timely and relevant information is essential to ensure efficient and effective operations. Inaccurate or untimely information can lead to errors in decision making, lack of coordination between stakeholders, and lost business opportunities. By understanding the flow of information in the cuttlefish supply chain, stakeholders can identify areas where information can be improved and optimize their operations to maximize profits (Yolanda, 2019).

Cuttlefish supply chain management CV. Surya Baru covers a range of activities designed to optimize the flow of cuttlefish from production to final consumption. The goal is to achieve efficiency and effectiveness in meeting the needs of the cuttlefish market. The cuttlefish supply chain management involves various stakeholders, such as fishermen, collectors and CV. Surya Baru. These stakeholders must work together to ensure that cuttlefish is produced, processed and shipped in an optimal manner.

The results of research on cuttlefish supply chain management from fishermen, collectors, to CV. Surya Baru, regarding the distribution of cuttlefish, the problems encountered were field constraints when catching cuttlefish so that the distribution channel was not good and not effective and efficient.

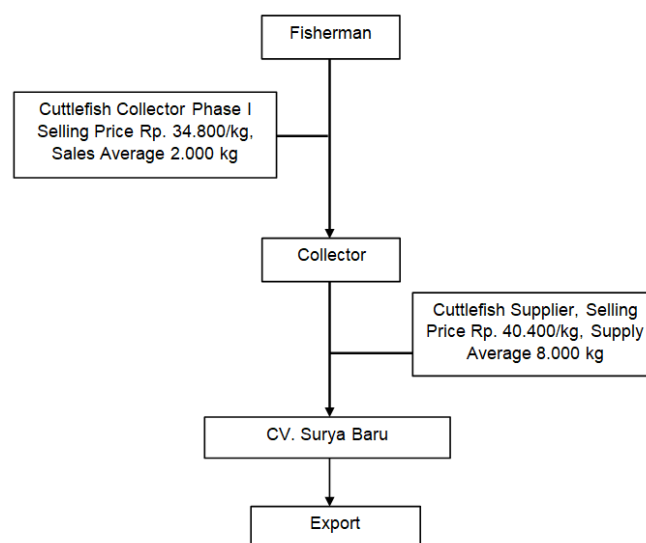


Figure 2 – Supply Chain Management Pattern of Cuttlefish CV. Surya Baru



The results obtained from the components of the cuttlefish supply chain management are as follows:

- Upstream Supply Chain. Upstream Supply Chain management takes care of the relationship between CV. Surya Baru with outside vendors or companies CV. Surya Baru. So the goods produced by the company do not reach consumers directly but are distributed to other distributors;
- Internal Supply Chain. Internal supply chain management is management related to cuttlefish import activities. In this case what is often considered is production management, manufacturing conditions and control over the availability of cuttlefish;
- Downstream supply chain. Downstream supply chain includes all activities that involve sending cuttlefish to end customers. In the downstream supply chain, attention is directed to distribution, warehousing, transportation and after-sale service.

Based on the research results, important aspects in cuttlefish supply chain management include:

- Inventory management: Monitor available cuttlefish stocks at each stage of production and distribution to avoid shortages or excess stocks;
- Quality management: Ensuring that cuttlefish produced and distributed meet established quality standards, such as being fresh and free from contamination;
- Risk management: Take into account the risks associated with cuttlefish production and distribution, such as the risk of bad weather or regulatory changes;
- Coordination between stakeholders: Optimizing collaboration and coordination between fishermen, producers, distributors and exporters to ensure production and distribution efficiency;
- Use of information technology: Using information technology such as supply chain management systems and internet of things (IoT) to monitor every stage of production in real-time and enable fast and accurate decision making.

Effective cuttlefish supply chain management can help improve operational efficiency and maximize profitability in the overall cuttlefish supply chain. Furqon (2014) analysis of supply chain management and performance that is too long causes the existing supply chain performance to be not very efficient because it has a supply chain network that is too long with too many members, besides that the margins obtained are too large because each party incurs high costs. big to get big profits too.

Nuriyanti, et al (2017) regarding the analysis of efficient supply chain management, namely from fishermen, collectors, producers, retailers, and consumers. Business partnerships are an important strategy in existing supply chain management, because the entire supply chain needs each other, strengthens and benefits each other so that a good partnership for each actor is needed. Septiana, et al (2017) regarding the management of supply chain performance improvement from producers to final consumers has a long flow and various channels, so that it can bring problems in supply chain performance.

The results of the research efforts carried out by CV. Surya Baru in improving the performance of the cuttlefish supply chain, namely building the right inventory system, reducing huge price differences, coordination and collaboration among chain members and strengthening the cuttlefish supply chain management. Production process management of cuttlefish supply chain CV. Surya Baru is presented in the following figure:

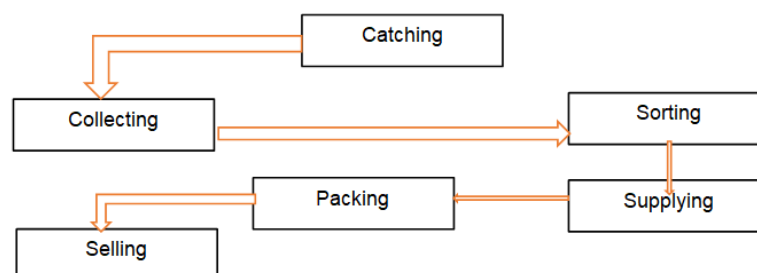


Figure 3 – Production Process Management of Cuttlefish CV. New Solar



Christopher (2016) cuttlefish supply chain management in Indonesia and the factors that influence the effectiveness of the cuttlefish supply chain. The results of the research show that cuttlefish supply chain management in Indonesia still faces several challenges, such as lack of coordination between stakeholders, lack of technology used in the collection and processing of raw materials, and limited transportation infrastructure. Several factors can influence the effectiveness of the cuttlefish supply chain in Indonesia, namely the quality of raw materials, distribution and logistics efficiency, as well as increased quality control and product safety.

Simchi, et al (2014) management of cuttlefish production processes includes a series of activities to optimize cuttlefish production efficiently and effectively. Some of the stages that are usually carried out in the management of the cuttlefish production process include::

- Production planning: This stage includes planning for the number of cuttlefish to be produced, planning for production time, planning for raw materials, and planning for the required workforce;
- Procurement of raw materials: The raw materials used in cuttlefish production are usually fresh or frozen cuttlefish. This stage includes the procurement of quality and adequate raw materials;
- Processing of raw materials: This stage includes processing raw cuttlefish into finished products such as frozen cuttlefish or other processed cuttlefish;
- Product marketing: This stage includes efforts to market cuttlefish products to consumers or parties who need cuttlefish products;
- Maintenance of production facilities: This stage includes maintenance of cuttlefish production facilities so that they are always in good condition and ready for use;
- Product quality control: This stage includes quality control of cuttlefish products before and after production to ensure that the products produced meet the desired quality standards;
- Productivity improvement: This stage includes efforts to increase cuttlefish production productivity by optimizing the use of raw materials, labor, and production facilities.

Management of cuttlefish production process, it is important to pay attention to aspects of food safety and sustainability of cuttlefish production in CV. Surya Baru in order to maintain product quality and minimize negative impacts on the environment.

CONCLUSION

Cuttlefish supply chain management at CV. Surya Baru, Tanah Laut Regency, South Kalimantan Province which includes socio-economic interactions and contributions between the business actors involved, namely from fishermen, collectors, to CV. Surya Baru. Stages of cuttlefish supply chain management at CV. Surya Baru, Tanah Laut Regency consists of several stages, namely mapping production flows, mapping financial flows and mapping the flow of information on the cuttlefish supply chain

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