A Study of Supply Chain and Product Quality of Salted Jellyfish in Samut Songkhram under COVID-19 Situation

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Abstract

The research aims to 1) study process and management of supply chain and local product quality, salted jellyfish, in Samut Song Khram, 2) study problems and obstacles in the supply chain of salted jellyfish processing of local food processing group in Samut Songkhram, and 3) study the guideline to improve efficiency and upgrade the supply chain of a local food processing group in Samut Songkhram. The research instrument was a survey, observation, and unofficial interview. The samples for data collection were 46 people. Content analysis was used as an analysis tool. The results of this research revealed that, according to the SCOR model, all people concerned with raw materials such as suppliers and contractors have to plan extensively for the supply chain and apply the SCOR model to manage their activities in the jellyfish processing community enterprises. All processes of the SCOR model; Plan-Source-Make-Delivery-Return, showed that the community enterprises in Samut Songkhram can handle their supply flows from the upstream to downstream efficiently. Besides, they connect and build their networks internally and externally, specifically with the government sector that concern with their activity. Therefore, they have fewer problems in the situation of COVID-19 spreads. The supply chain management of the community enterprises in Samut Sonkhram can be used as the guideline for other food processing industries to manage their supply chain.

Keywords**:** *Supply Chain Management, Local Fisheries, Jellyfish, Logistics, COVID-19*

1. Introduction

Thailand is the world's 11th agricultural and food exporter. The agriculture sector has played an important role in generating income and establishing food security, therefore, it helps Thailand in having food stability, low inflation rate, and maintaining its economic balance. Thailand has had comparative advantages in manufacturing products compared with the neighbors (Nakrit, 2015, p. 5-6). However, the agricultural market is highly competitive and has a high dynamic in all small parts.

The management of Thai fisheries began in 1901 (B.E. 2444) with three purposes; taxation, food balance, and local fishery products (Strategy, Department of Fishery, 2013-2016, p.5). Thai fisheries made a lot of incomes of approximately 8% of GDP in 2014, which had a total of 26 million tons from catching 1.6 million tons (62%) and from fish farming 0.89 million tons (35%). Fisheries incomes from catching and farming in 2014 were 62,403.90 million Baht or 43% and 83,050.23 million Baht or 57%, respectively. Thai modern fisheries have started to develop by using modern trawl fishing tools in 1960 and expanding fishing areas further from shores into high seas, hence, the volumes of fisheries have been grown up rapidly for many years. Until 1994, many countries haven't allowed foreign fisheries in their areas, which affected the volumes of fish continuously (Narong Anupan and Tuthana Pak-a-anant, 2017, p. 7). Laws and regulations made at that time are illegal, unreported, and unregulated fishing (IUU Fishing).

At present, the business sector in Samut SongKhram, with the government, is focusing on local products for exporting. The local manufacturing products have been exported increasingly year by year, supported by Free Trade Agreements, FTAs, with many countries. Thus, the industrial sector needs to adjust for production and exporting promotion. Moreover, the global trade situation is changing rapidly, causing many major industries in Thailand to adjust and improve themselves for highly competitive markets, especially the development of supply chain and logistics management. Most Thai entrepreneurs still lack the management skills of both branches and lack integration of each section in the supply chain, causing higher costs in production and administration and making the industries lose their competitiveness. Understanding

the supply chain and logistics management will help the industries to reduce the total costs and formulating their guideline for improving their activities.

Those problems mentioned above increase the cost of production and eventually cause high prices of agricultural products. However, trade liberalization will intensify competition, making lower prices in agricultural products. Many research results showed that the future food prices would be higher and higher. The Thai fishery production sector has begun to adjust the structure to maintain its competitiveness, in addition to reducing costs and increasing productivity. The result of developing the value chain showed the upgrade of the value chain of the fishing trade business. The fishing community is a source of good quality fresh seafood, in which fresh is needed by the market and there is a rich source of fish that can be caught throughout the year to make a sustainable income for the family (Anupan & Pakanan, 2017, p. 5).

The global economy and trade have been slow down due to the situation of COVID-19, however, food processing products have been affected positively. Furthermore, there are other risks in the overview that Thai exports in 2021 (B.E.2564) might have still been slowing down; it will not be as slow as in 2020 (B.E. 2563) (Kasikon Thai Research Center: Online). The researcher was interested in the study of the local fisheries supply chain and logistics management and realized that it is the beginning part to make the local fisheries group, including SMEs and community enterprises, and develop the markets more efficiently and sustainably. (Suriyasri & Hassaro, 2018, p. 411)

2. Objectives

The objectives of this study were

1) To study the process and the management of supply chain and local product quality, salted jellyfish, in Samut Song Khram,

2) To study problems and obstacles in the supply chain of salted jellyfish processing of a local food processing group in Samut Songkhram, and

3) To study the guideline to improve efficiency and upgrade the supply chain of the local food processing group in Samut Songkhram.

3. Materials and Methods

This research used materials and methods as follows.

3.1 Research Design

This research is qualitative research designed to study and analyze the supply chain of Thai local fisheries. The area scope in this research is in Samut Songkhram. Factories of dried seafood processing were selected by using the purposing sampling method based on the objectives of the research (Posri, 2006).

3.2 Research Instruments

The instruments used in this research's observation were a survey and unofficial interview. The researcher selected one of the salted jellyfish processing company as a case study and divided 46 samples into four groups by focusing on participatory patterns as follows

3.2.1 Group 1: 15 suppliers of production factors

3.2.2 Group 2: 15 producers of salted jellyfish

3.2.3 Group 3: 15 contractors who buy for sale

3.2.4 Group 4: one of the officers from the department of fisheries in Samut Songkhram

These four groups were related to the production process from the upstream to the downstream and concerned with each other in the production line.

The data collection was from secondary data sources and primary data sources as mentioned above.

The scopes of content were the information of production factors including the physical flows, logistics flows, problems of procurement, production processes and processing methods, production, quality and inventory controls, pricing versus quality, production standards, and the ways to support and promote supply chain management such as marketing and trade promotion.

3.3 Research Analysis

The researcher identified all data from the secondary and primary sources and made the content analysis of the supply chain management through the SCOR model. Content analysis is a highly flexible research method that has been widely used in library and information science studies with varying research goals and objectives (White & Marsh, 2006). Therefore, the information from 46 samples could be illustrated appropriately and systematically without any bias from the researcher. The research had set the questions for each group before summarizing data and revealing the results based on the objectives.

4. Results and Discussion

The results of the study and analysis of the salted jellyfish supply chain in Samut Songkhram are summarized in this section as follows.

4.1 Supply chain management of the jellyfish processing factories in Samut Songkhram

The beginning of jellyfish processing started from catching jellyfish by the member of the Thai local fisheries group and members of the Thai jellyfish processing group. They caught and made food processing with salt. Raw materials are jellyfish and salt, and they are upstream of the supply chain.

All activities upstream of the supply chain are shown in Figure 1 below.

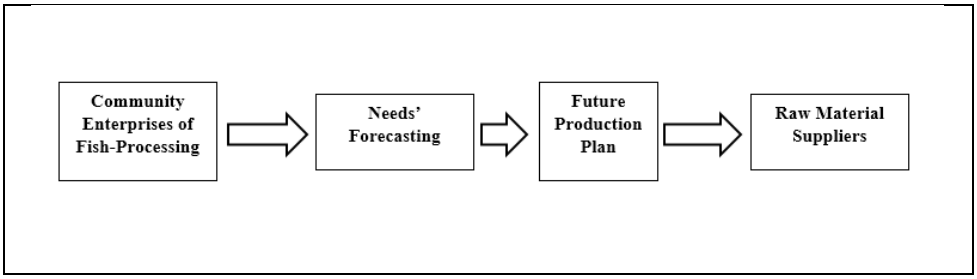

Figure 1 Information flow for raw material suppliers
Source: The researcher

Figure 1 shows that the community enterprises send their specifications of raw materials to the suppliers, including their plans for specific periods. For each raw material, the suppliers have their own ability to procure the raw materials, then they receive orders and continue to the next process shown in Figure2.

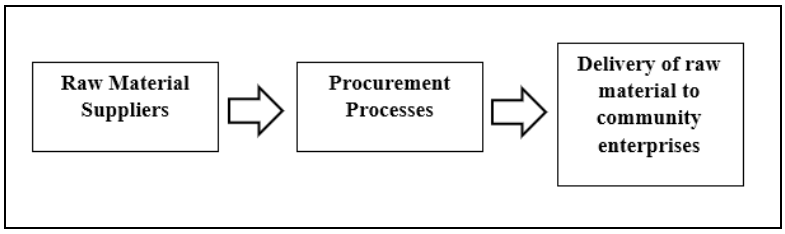

Figure 2 Production flow of raw materials
Source: The researcher

Figure 2 shows that raw material suppliers receive the orders and manage their orders by sending them to each fisherman in their networks, both inside and outside Samut Songkhram. The delivery dates are well managed to the community enterprises on time by the suppliers. After information transmission from the community enterprises and raw material producers is made and settled, the second process starts as well. The raw material procurement is to catch jellyfish and deliver them to the community enterprises. The suppliers might not be the fishermen themselves but they have a contract with the fisherman and have a good

relationship with each other, so the suppliers can get the jellyfish as ordered in quantity and followed their specifications. When the community enterprises get the raw material, they start their production process as shown in Figure 3.

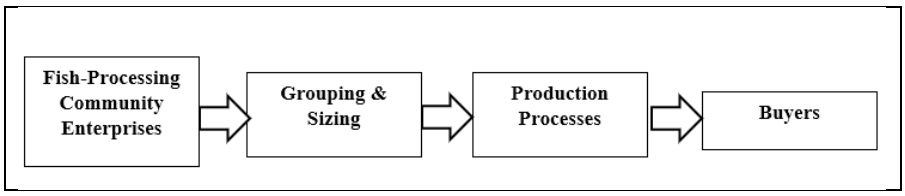

Figure 3 Flow of raw materials (Finished goods) to buyers
Source: The researcher

Figure 3 shows that the production processes start by grouping the raw materials and sizing each of the groups and do the production processing for sated jellyfish products. After that, the community enterprises will send their finished products to the buyers for distribution to the markets.

Moreover, the physical flows of the supply chain can be explained in Figure 4, the longest flow that starts from the suppliers to the end customers.

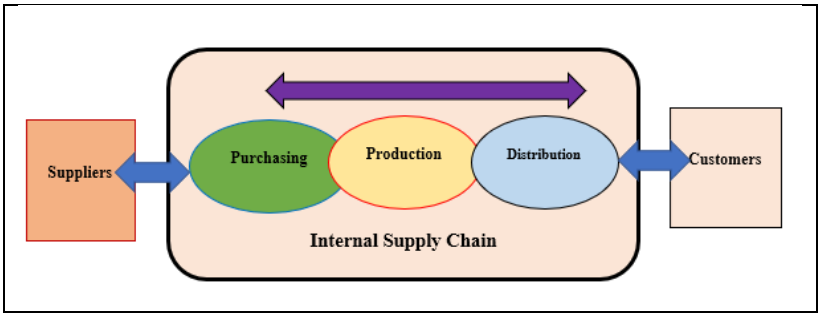

Figure 4 Physical Flow of Supply Chain
Source: The researcher

Besides, the details of the supply chain management of the sated jellyfish can be explained in Figure 5 and further demonstrated using the SCOR model in the next section.

4.2 Supply Chain Management of the jellyfish-processing factory by the SCOR Model

The researcher has used five steps of the SCOR model to apply the processing of salted jellyfish as shown in Figure 5, Patterns of the supply chain by using the SCOR Model.

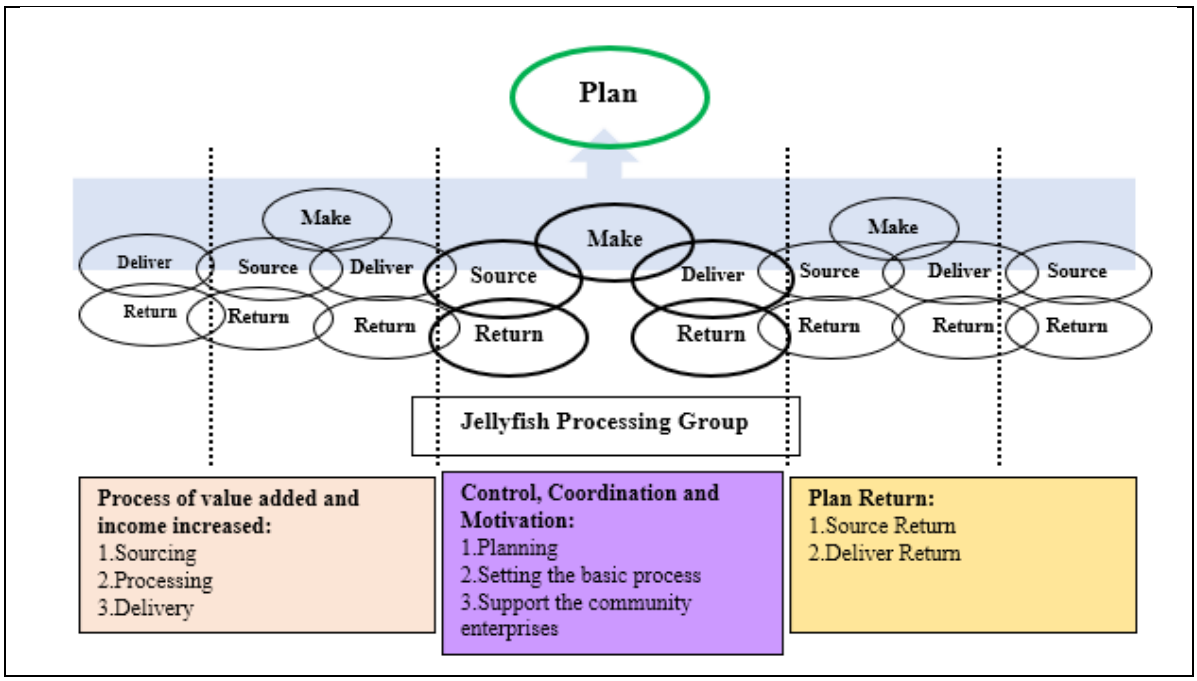

Figure 5 Patterns of the supply chain using the SCOR Model
Source: The researcher

4.2.1 Planning – this stage is about planning the whole supply chain management that has details as follows.

1) Supply chain planning – the community enterprises set the overview of the supply chain flow for the production, including all activities in production planning. Moreover, they can ask for suggestions from government units or departments to develop their processes and products that can fulfill the markets. Some special techniques are necessary for them to apply in the processes of salted jellyfish processing. This planning is the beginning of all plans in supply chain management.

2) Source-procurement planning – Since jellyfish is a natural resource, its quantity fluctuates by season and becomes lower and lower. Besides, the community enterprises belong to the Samut Songkhram, so the local fishermen should get the value-added of this supply chain as well. It means that the raw materials should be bought from the local fishermen as a priority and sent to the production line, making some incomes current in the community.

3) Production plan – Jellyfish processing is a method of the value-added process that makes raw materials, especially agricultural and natural products, more valuable. The production plan begins with the information of the customers to plan for. This information may help the producers to produce appropriate types, sizes, or other attributes and features of salted jellyfish products. When all members agree with the specifications, they start doing the production plan. This plan concerns inventory management as well, so they have to know the limitations of each process that help reducing wastes.

4) Delivery planning – Logistics of physical flows start from the sea, shores, factory, and customers; therefore, the members of the community enterprises who work as the administrators should concentrate on this issue deliberately and have to understand that delivery planning help in a highly competitive market. The delivery plan does not concern only the time to deliver but also the costs of transportation. One who may concern in the jellyfish-processing community enterprises has to figure out the total transportation costs in the flows. Increasing incomes and reducing costs are the major objectives of doing business, likewise, the community enterprises follow this concept as well. Thus, they should do delivery planning carefully.

4.2.2 Source – There are two sources of raw material; inside and outside the Samut Songkhram area. The procurement of the raw materials for salt-pickled jellyfish processing has contacted material suppliers, mostly from the fishermen in Samut Songkhram. Basic processing facilities cover seller selection, procurement operations, and vendor evolution. In the procurement of the raw materials, production components also concern storage, packaging, and storage of them for production, including other products for production.

4.2.3 Make – The members of the community enterprises determine based on the suitability of the type, grade, size, and other requirements of purchasers, thus, the production plan must be made following the purchasing order of the customers.

4.2.4 Delivery – Since the community enterprises are located near Hua Luang, the transportation for delivering the raw materials or finished goods is quite convenient and not far from Bangkok. Most product buyers like to get the order by themselves if their market is outside Bangkok. Besides, there are many local markets in the Samut Songkhram area, the members of the community can sell the products directly by themselves. Therefore, the products can be promoted by local government offices extensively.

4.2.5 Return – This activity concerns both raw materials and finished goods that are disqualified and returned to the factory. The return is essential, and the administrators have to record the wastes and evaluate the feedback from the suppliers and customers. The information of the return is a must to be recorded appropriately and used for future planning since higher returns mean higher losses.

4.3 Supply Chain Management of Salted-Jellyfish Products

Lastly, there are three flows of the supply chain management shown in Figure 6, namely, production factor flow, financial flow, and logistics information flow, which are categorized into upstream, midstream, and downstream, respectively.

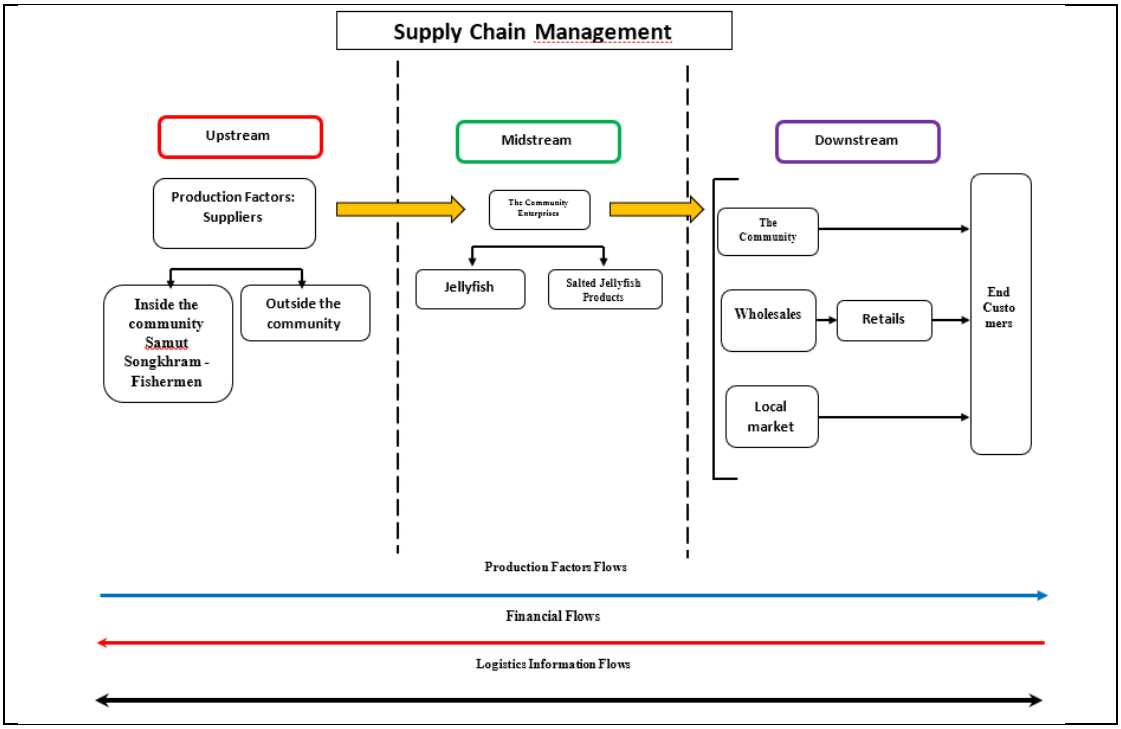

Figure 6 The Supply Chain Management of Salted-Jellyfish Products
Source: The researcher

1) Production Factors flow

The production factors flow is about sourcing and production factors in the upstream, in which the community enterprises get the raw materials from two sources; inside the community in Samut Sakhram (fishermen) and outside. Then, the raw materials flow into the midstream where the jellyfish processing is done into various products and some of them might be sold fresh. The jellyfish flow from the upstream to the downstream as the processed products, salt-pickled jellyfish products, and are sold domestically and internationally.

2) Financial Flow

The financial flow is current in each stream, and the community enterprises try to make benefits for the community as much as possible. At the same time, they have to control the current of money within the community and flow inside for all members as much as possible.

3) Logistics Information Flow

While starting planning for the supply chain management, logistics information is involved in every activity, especially for food processing as the raw materials are easy to rot and disqualified. The logistics information flow starts from the sea and flows into the community back and forth as shown in the figure. It is unlike the production factor flow and financial flow since the logistics information is intangible but necessary for every single activity. Therefore, all plans from upstream through downstream need specific information.

The figure of the supply chain management is helpful to understand the overview of the supply chain and can be used as the guideline for every kind of business, whether there is a production part or not. Furthermore, it can be used to analyze other platforms such as the value chain and SCOR model at various levels.

5. Conclusion

The supply chain management of the jellyfish processing community enterprises in Samut Songkhram can be identified as three groups; raw materials procurement suppliers, jellyfish processing producers, and buyers. Every group has to work integrally and connect. However, the community enterprises in Samut SongKhram can be a prototype of the food processing community enterprises that use supply chain management to handle their activities for social benefits.

6. Acknowledgements

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