Supply Chain Management Information System of Duck Meat at Madura Island (Case Study at Sinjay Duck Restaurant)

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Abstract. This study aims to determine and analyze the supply chain management information system of duck meat at Madura Island, East Java, Indonesia. Respondents of the study were duck farmers, intermediate traders, suppliers, fried duck restaurants, and consumers. Primary data of the study was gathered using structured questionnaires consists flow of information, material, and financial along the supply chain. Secondary data was provided by related institution. Method utilized in this study was survey with purposive sampling and snowball sampling. Data collected in this research was analyzed with qualitative descriptive analysis. Results showed that the flow of information in the supply chain of duck meat at Sinjay Duck Restaurant was including the purchasing DOD, Feed and Vitamins/Medicines. Information of duck breeders to duck traders and duck suppliers. The flow of products in the supply chain of duck meat at Sinjay Duck Restaurant explains the quantity and quality of the product.

1. Introduction

Business opportunities in the culinary field are currently overgrowing. Due to the increase of the level of people's income and public demand for fast food, culinary business rocketed because of the profit in this business area. Therefore, new food products emerged on the market with different brands and types and flavors that arouse consumer tastes. One of the processed food products that are in great demand by consumers is duck based culinary. Duck is one of poultry meats that can be processed into food dishes. Ducks can be fried or roasted to be used as side dishes. Duck meat is beneficial for the body, namely preventing anemia, launching the nervous system, launching the digestive system, improving the immune system, helping the body's metabolic system, as an antioxidant in the body, maintaining blood pressure stability, meeting the needs of vitamin B12, and others. Ducks also contain nutrients such as energy (321 kcal), protein (16 g), fat (28.6 g), calcium (15 mg), phosphorus (188 mg), iron (1.8 mg), water (54.3 g), ash (1.1 g), retinol (273 ug), and thiamine (0.1 mg).

Market demand for meat and duck eggs has also increased recently. This confirms that the level of consumption of processed poultry increased from time to time. High demand for treated ducks proved that people want to get a variety of flavors in the dish consumed. These opportunities are certainly not only utilized by culinary industry players; one of them is Sinjay duck restaurant. Sinjay duck restaurant is one of the bustling duck restaurants with duck meat as the primary commodity. The increase of demand for duck meat in the culinary industry is the main potential for duck meat in agribusiness. However, the low supply of duck meat has resulted in the incomplete amount of duck meat in the culinary industry. Meanwhile, farmers have an essential role to provide raw materials, especially...
duck meat. The information system in a supply chain is essential to build efficient cooperation between suppliers and consumers [1]. Chopra and Meindl [2] described that supply chain management is the integration between product producer and supplier to deliver the final product to the consumers. Russel and Taylor [3] explained that the supply chain focused to integrate and manage the flow of products, information and finance through a responsive supply chain system. The supply of duck meat is sent directly by the supplier so that there is harmony in the procurement of raw materials. This system is through the supply chain from suppliers and breeders. Based on the background and the problems that have been described, then the problem can be formulated: how is the supply chain information system implemented in Sinjay Duck Restaurant?

2. Materials and methods
The study was conducted at Sinjay Duck Restaurant, Bangkalan Regency, East Java Province. Data were collected in July 2019. Respondents were duck farmers, intermediary traders, suppliers, restaurant owners, and consumers. The selection of research locations was carried out using purposive sampling with consideration: Strategic location (located on the main route of Surabaya Madura), and the main menu offered was processed duck meat. Farmers were chosen as respondents with the consideration that the production system has been running continuously. Snowball sampling was used to determine the chain sample involved in marketing duck meat from duck farmers to restaurants. Snowball sampling technique is a method for identifying, selecting and taking samples in a continuous network or chain. Data collection is done through (1) Field observation, which is to see firsthand the activities in the supply chain. (2) In-depth interviews were conducted to obtain more comprehensive information about the duck meat supply chain on Madura Island.

3. Result and discussion
The flow of information in the supply chain of duck meat at Sinjay Duck Restaurant explains the sales system and the raw material purchasing system.
1. The flow of information on purchasing DOD, Feed and Vitamins / Medicines
   The DOD procurement system is sent by sellers who have worked together with breeders one and breeders 2. In breeders, 1 DOD shipments are carried out once a week as many as 500 DODs are different from breeders 2 purchasing DOD by buying duck eggs and then hatching in the hatchery. On the purchase of feed, vitamins and medicines, farmers also buy feed at the poultry shop.
2. Information flow of duck breeders to duck traders and duck suppliers.
   The distribution of ducks must be fulfill the standard requirements including average weights 1.3 kg per head so that when the duck is cut the carcass weight can reach 1.1 kg up. A farmer are sent directly to the duck suppliers to be cut and made carcasses. However, slightly different from breeder 2, he did not directly cooperate with suppliers from the restaurant, but there is an intermediary, namely the duck traders who work with duck suppliers 2 to find ducks with the specific criteria. This is the reason for the increase in duck prices because the longer the supply chain, the higher the price of a product. Delivery of ducks is done every day by the duck breeders to traders and traders to suppliers so that the duck meat that is distributed to restaurants is in a fress state. In addition to receiving ducks, the supplier also has an RPU (Poultry Slaughterhouse) facility for cutting and quality of duck meat for Sinjay duck restaurants. Offal from duck cuts will be sold to collectors. Duck procurement system every day by ordering using communication tools such as mobile phones.
3. Information flow from duck suppliers to Sinjay duck restaurants and end consumers.
   The delivery of duck meat by the supplier is carried out every day from 08.00 to 10:00 (local time) to the Sinjay duck restaurant using a motorcycle for breeder one and a pickup car for breeder two. Duck meat that has been sent to a restaurant or place of production will be checked organoleptically and severely from the carcass. If there is a mismatch, the duck meat will be returned to the supplier, and the supplier will sell it back to the collectors or the market. Good duck meat will be processed by the restaurant into processed duck meat. Using communication tools in the form of cellphones
for procuring duck meat. Restaurants in the system ordering not only ordering manually or directly by coming to an outlet but can use online ordering applications such as go food and grab food to facilitate the order.

Figure 1. Schematic flow of information

The flow of products in the supply chain of duck meat at Sinjay Duck Restaurant explains that the quantity and quality of the product:

1. The flow of information on purchasing DOD, Feed and Vitamins / Medicines
   The DOD procurement system is sent by sellers who have worked together with breeders 1 and breeders 2. In breeders, 1 DOD shipments are carried out once a week as many as 500 DODs are different from breeders 2 purchasing DOD by buying duck eggs and then hatching in the hatchery.
   On the purchase of feed, vitamins, and medicines, farmers also buy feed at the poultry shop.

2. The flow of Duck Products
Ducks that have been raised by farmers with 40 days will be harvested. In 1 duck, farmers that have been collected will be directly sent to supplier 1 to be cut and used as carcasses. Moreover, on two duck farms that have reached body weight with an average of 1.3 kg per head will be taken by the duck traders who then the traders send the ducks to supplier 2 to be cut and made carcasses with an average weight range of 1.1 kg upper carcass.

3. Carcass Product Flow
The supplier will cut the ducks and make them in the form of carcasses and the offal. Packed carcasses will soon be distributed to Sinjay duck restaurants every day. The carcass will be divided into four parts before the processing of duck meat is processed.

![Figure 2. Schematic flow of product](image)

Fiala [4] mentioned that the supply chain management is based on the awareness of all stakeholders to provide a quick and cheap product while also prevent product vacancy or failure. The last product flow in this supply chain pattern is processed duck meat to end consumers. Moreover, Janvier-Janvies (2012) also added that the supply chain management would improve the business performance by managing the flow of products, finance and information. In this study, the product sales flow is carried out by selling typical Sinjay duck restaurants, namely, fried duck breast/thighs and fried duck, sambal manga with one portion of pieces of fried duck, sambal, vegetables without rice which will be served to consumers of the restaurant. Supply chain management is the integration of material and service
procurement activities, conversion into semi-finished goods and final products, and delivery of products to customers.

4. Conclusions
Based on the research results, the following conclusions can be drawn:
   1. Based on the analysis of existing information systems, the development of supply chain information systems at Sinjay Duck Restaurant will support business processes.
   2. The value chain's flow in the production business can be fulfilled with the development of supply chain information systems in Sinjay duck restaurants.

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