

## POSSIBILITIES OF DEEPENING COOPERATION WITH SUPPLIERS BASED ON THE CPFR METHOD IN A COMPANY PRODUCING AND SUPPLYING FISH AND FISH PRODUCTS - CASE STUDY

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### Abstract

It is now quite clear that successful are those businesses that deepen cooperation with their suppliers and customers. The closer cooperation can be established in the supply chain, the greater the opportunity to apply modern management technologies in the supply chain, such as VMI, CRP, Quick Response, ECR, CPFR methods. The method of implementing these methods and the resulting form of cooperation depends on the willingness of individual links to engage in the cooperation, on the shape of relationships prevailing between individual links of the supply chain as well as on the specifics of the products passing through the chain. In chains, whose articles progressively add value to customers consuming fish, there are significant specifics due in particular to the very short shelf life of the products produced. The article publishes results of a primary qualitative research, whose main objective was to identify and evaluate the collaboration system of a company producing fish and fish products with its suppliers. It describes the mechanisms of cooperation with major suppliers who supply both freshwater and saltwater fish for processing in the enterprise as well as the mechanisms of cooperation with suppliers who supply auxiliary materials for the manufacture of the food products. Subsequently, an assessment is carried out of opportunities for the company to improve cooperation based on the methods described above and a suggestion made for measures necessary for the successful implementation of the methods that respect the specificities of the supply chain.

**Keywords:** Supply chain, cooperation, fish, fish products

### 1. INTRODUCTION

The constantly changing market conditions have brought about the need for closer links between entities in the value network with a view to achieve a faster and more flexible response to the needs and desires of customers [1]. That is why in the past two decades, supply chain management has been recognized as a powerful business tool to survive in the competitive marketplace. Supply chain (SC) operators have started considering the changing interests of consumers and their shifting loyalty whilst managing supply chain inventory, capacity and production, and delivery management [2]. Several companies have established collaborations with other supply chain (SC) partners [3]. Especially after the success story of Wal-Mart's collaboration with upstream suppliers (e.g., P&G), supply chain collaboration has become one of the common norms for many companies around the world [4]. Success of collaboration is represented through three observed items namely sales growth, satisfaction and market share [3].

Collaboration between the supplier and the store-level retailer does improve the performance of the holistic supply chain [5]. The closer cooperation can be established between retailers and their suppliers, or possibly in the entire supply chain, the greater the opportunity to apply SCM practices such as Vendor Managed Inventory (VMI), Efficient Consumer Response (ECR), Continuous Replenishment (CR), and Electronic Data Interchange (EDI) that have been suggested in the literature to increase benefits of SCs [6] and to improve SC efficiency [2]. It appears that different replenishment mechanisms between the supplier and the retailer can have a significant impact on supply chain performance [5].

In practice, most CPFR applications have concentrated on the grocery industry [7, 8]. The grocery industry is a high-competitive, low-net-profit industry [5]. In case of CPFR method application is necessary to respect the specific features of the grocery industry as high product variety and fierce price competition, which causes volatile sales. The volatility in demand is not only affected by promotional campaigns, but also seasons, the weather and more flexible opening hours of grocery stores [9, 10]. The shorter the shelf life of products supplied, the more difficult it is for suppliers of food products to adapt to this changing demand. One of the food products with an extremely short shelf life is fish and fish products. It is only substantial deepening of cooperation that can prevent the loss of links in such chains. The existence of opportunities to deepen cooperation of the enterprise that supplies fish and fish products to retailers with its suppliers became an object of the primary research.

The main objective of the primary research was to survey the current state of cooperation in terms of the enterprise's cooperation with its main suppliers and consequently to identify opportunities for improvement in this area through the application of the principles of the CPFR method. The primary research was conducted in a small company whose principal business activity is the production of freshwater and saltwater fish and supply thereof in a raw and processed form. The data collection took place in the first half of 2015, based on a questioning scenario. The respondent was a director of the company responsible for the selection of suppliers and modification of the conditions of mutual cooperation with suppliers and the production manager responsible for providing all resources for the manufacturing process as well as for fulfilling the production plan. While interviews were conducted, written records were made, which were then checked for completeness of the information gathered and their logical correctness. Additional information was obtained by studying corporate documents, in particular commercial contracts concluded with individual suppliers. In order to fulfil the main goal of the research, we conducted a content analysis of the information collected and subsequently a synthesis thereof. In conclusion, we formulated recommendations for improvement, which is the main output of the primary research conducted.

## 2. THEORETICAL BACKGROUND

In retail supply chains, poor replenishment performance leads to product availability problems in stores, or, on the other hand, oversupply of products [10]. That is why the retailers tend to deepen cooperation with their suppliers and apply new technologies to manage the material flow throughout the chain, namely the CPFR technology. Since collaborative, planning, forecasting, and replenishment (CPFR) was first proposed in 1998, numerous studies have focused on exploring its implementation in retailing contexts [11]. In CPFR, the jointly developed business activities create an agile supply chain that can better capture demand uncertainties in the market [10]. From the retailer perspective, the benefit of adopting CPFR is to reduce out-of-stock incidents and improve the inventory turnover ratio. The current trend of retailing management is to efficiently make use of limited resources to enhance competitive advantages in the supply chain [11]. In general, the benefits of CPFR are: faster response to consumer demand, increased forecast accuracy, sustainable improvements in the collaboration relationship, increased sales, inventory reduction, reduction of supply chain costs, increased promotion effectiveness, more predictable order cycles, more frequent deliveries, improved accuracy and availability of information, fewer stock-outs, improved reliability of deliveries, faster inventory turns, real-time information sharing, and reduced inventory holdings [12]. For more details, Transora, a software supplier for buyers and sellers of packaged goods, reported the average benefits of CPFR implementation as: visibility and forecast accuracy improved between 10% and 40%, lowered inventory costs between 10% and 25%, increased sales between 1% and 3%, improved service levels between 0.5% and 2.0%, and improved shelf in-stock levels between 1% and 4% [13]. Williams [14] described how Procter and Gamble (P&G) took advantage of CPFR in a supply chain to create value for itself, as well as its trading partners and consumers.

The CPFR method seems to be very useful for ensuring the effective functioning of the supply chain, through which fish and fish products are sold. Such a chain is very specific. What makes it specific is the very fact in

that the enterprise operating in the fishery is limited by its range of products supplied to the customer. It can also be often limited by the quantity of individual products (in particular live fish) that can be offered for sale, mainly due to the fact that it can take several years before the fish reach to the minimum market size [15]. That is why businesses in this industry are rather inflexible and long-term planning and forecasting is very important here, preferably in cooperation with business partners.

Flexible response to the current customer requirements is also affected by fishing techniques, for example by means of draining ponds or stocking fish in fish tanks, where the fish are located before the subsequent sale. The current supply of fish and fish products to customers are affected mainly by the fact that the fish belongs to the perishable goods, which is an increased risk of product safety. This affects both the sale organization method, as well as the form of the tangible movement of fish and fish products through the chain, with continuing respect to the strict hygiene and veterinary standards governing the transport and storage of fish and products thereof. Costs of packaging, distribution and transport of fish [16] are high. In the transport of the fish, an important parameter is the optimum level of oxygen and primarily the density of the fish transported [17]. According to Wheaton [18] there are several transportation options. Live fish can be transported in bags or in special tanks and containers fitted with water oxygenating facility. Killed and bled out fish can be transported in thermal insulated boxes with ice. When transported, the fish must be healthy and in good condition, because there is a risk of contamination of the entire consignment if fish die.

The complexity of managing the material flow through the chain supplying fish and fish products is complicated by the fact that according to company managers, are the end-consumers in the Czech markets of food industry trained to buy cheap goods [19]. This forces retailers to push the prices of the products they buy from their suppliers, and prefer suppliers offering the lowest prices. High bargaining power of retailers is determined by the market situation, where there is quite a lot of competition in the supply of processed fish, both from domestic and foreign suppliers. It also corresponds to the harsh conditions of cooperation set with selected suppliers. The basic conditions also include the promptness of meeting the order (usually 1 day) whereas the production cycle itself takes several days [19].

This forces the suppliers of fish and fish products to constantly seek ways to streamline the material flow, where it is seems convenient tool to develop cooperation with their suppliers. Successful SC collaborations with satisfied partners will lead them to continue their future partnerships [3]. Success of the SC collaboration will improve the confidence of the SC collaboration partners to improve their performance further to achieve high profit. Thus businesses will try to establish collaborative partnership with the existing partners [3].

### **3. PRACTICAL RESEARCH**

The enterprise where the research took place is a Czech company mainly engaged in breeding and production of freshwater market fish and fry, processing freshwater and saltwater fish and selling fish and fish products. Its range of products includes fresh live fish e.g. carp, pike, tench, grass carp, silver carp, catfish and trout. The most produced and processed fish is carp. Processed fish (freshwater and saltwater) are frozen and smoked fish. Thanks to the conditions and technologies, in which fish are bred, the company's products can be labelled as organic products.

The company sells live fish primarily for domestic consumption; a smaller part of the production is exported to foreign countries, mainly to Slovakia and Poland, sporadically to Germany. Live fish are bought by direct consumers at fish tanks or by various business intermediaries, i.e. wholesalers, retailers, as well as canteens, possibly other fish processors. Products from the fish processing plant are sold by the company to retail chains in the domestic and foreign markets, as well as to catering businesses and other retail customers. Purchases of fish remain the same for the whole year (with steady seasonal fluctuations), but are different in individual months or weeks (e.g. the barbecue season depends on the weather). The enterprise gets ready for immediate

satisfaction of its customers by fishing live fish more than once a year and keeping them in smaller ponds or directly in fish tanks.

The competitors are other fishing companies producing live fish, also engaged in the processing of fish, and businesses processing saltwater fish. The level of product quality is comparable; companies attract customers mainly by lower prices, made possible by saving on transport costs. Therefore, the market is basically divided territorially (producers satisfy customers who are geographically close to them).

### **3.1. Cooperation of the enterprise with freshwater fish suppliers**

Cooperation of fish suppliers operating in the Czech Republic is very specific, mainly because the fish suppliers are competitors, suppliers and customers at the same time. The companies help each other and cooperate in cases when they do not have enough live fish for their customers. It is because the volume of production depends on many factors, e.g. the capacity of ponds, floods, water quality, damage caused by predators, reconstructions of ponds, etc. In case of lack of fish they turn to their competitors and purchase fish from them to satisfy their own customers. The enterprise has permanent suppliers of freshwater fish and chooses a particular supplier according to current options of these suppliers, i.e. depending on what kind of fish the suppliers can sell. Also, the company quite often purchases overproduction of its competitors and resells or processes the fish, thereby adding to the range of their products and eliminating the reasons for a price war. The company arranges transportation of live fish either by its own means, or transportation is provided by the supplier. The supplied fish are examined and placed in fish tanks, or in the fish processing plant, according to current needs.

### **3.2. Cooperation with suppliers of saltwater fish**

Cooperation with foreign suppliers of saltwater fish is extremely important for the company, it endeavours to work with them and strengthen relationships. The company purchases raw materials for its saltwater fish products mainly through an intermediary, additionally through distributors or directly from the producers of saltwater fish. Cooperation with the intermediary has long been highly satisfactory. The intermediary provides the company with only high quality products according to their demands; it communicates with the company and is very reliable. It supplies the company with a broad portfolio of saltwater fish from various suppliers, or it looks for the best supplier to meet the needs of the enterprise. Selection of a suitable foreign contractor is under its responsibility. It arranges purchase, secures tangible movement of fish and a variety of related activities (customs, communicating with the veterinary authority and carrying out their instructions). The intermediary is rewarded for the execution of a contract; it has not entered into a long-term cooperation agreement with the company. With one exception (a framework agreement on the annual volume of a certain category of fish), the company has not concluded any contracts with other suppliers, it orders goods just to satisfy current needs. Purchased fish are stored in a warehouse located in central Bohemia, where suppliers deliver goods. They are responsible for delivering the right product, which is at the agreed quality, in intact packaging, with the necessary certificates, and on the agreed date. The amount of inventory is checked by the company. Stored fish are then operatively transported for further processing to the company according to orders from customers, by own means of transport. They are stored in a fish processing plant and gradually processed.

### **3.3. Cooperation with other suppliers supporting the main production process**

Among the major suppliers supporting the manufacturing processes of the company there are suppliers of feed, packaging and spices.

The company purchases from its suppliers feed mixture in particular, additionally also ordered feed mixtures according to its own recipes, which are adjusted according to the analysis of nutrients in the ponds. The feed is supplied by 2-3 local contractors, to minimize transport costs. But it also requires a larger number of

suppliers, as none of them individually is able to meet the requirements in terms of the annual volume of feed (depending on the stocking of fish in the ponds). The selection of a suitable contractor for cooperation is decided by the director of the company, who also monitors the price of competing suppliers. He negotiates the price with suppliers to achieve the best prices. It is because the company is not able to reflect the long-term high price of feed in the prices of its own production and by purchasing for the given prices it would risk its market position. The company negotiates the volume of feed with a selected supplier during the autumn and deliveries are carried out in early March, when fish are given supplementary feeding after winter. Deliveries are made in several times; feed is stored in silos directly at the pond. All purchased food is consumed; the company has never experienced any shortage of feed. The company does not conclude neither long-term nor short-term contracts with its suppliers. Both sides are dependent on natural conditions, which jeopardize the fulfilment of obligations under the contract. Therefore, feed is purchased based on orders currently sent.

The company cooperates with several companies supplying packaging materials, because each provider offers a different kind of packaging and different prices and, moreover, suppliers have difficulties in promptly meeting the needs of the company. The company purchases packaging materials, such as cartons, plastic wrap, vacuum bags, food bags, bowls, adhesive tapes, baking paper and custom-made labels with the company logo. It maintains a certain supply of packaging material in the warehouse to ensure the smooth running of its own production. The company has concluded contracts with packaging suppliers. Suppliers themselves strive to conclude them, since they guarantee sales. Deliveries are made on the basis of telephone orders, or via e-mail. Especially packaging suppliers seek to deepen cooperation, for example by modifying the packaging according to customer needs, in cooperation with the customer.

The company has been cooperating with a supplier of marinades and spices in the long term. The supplier provides custom manufacturing of marinades and spice blends according to recipes which have been created as a result of the company's cooperation with the supplier. Therefore, the company strives for further cooperation, not only in the supply, but also in the development of new fish products. However, the company has not entered into a long-term contract with this supplier, and orders are carried out by phone or via e-mail.

#### **4. EVALUATION OF COOPERATION WITH SUPPLIERS OF THE COMPANY AND PROPOSALS FOR ITS IMPROVEMENT**

The primary research has shown that there are great opportunities to improve the company's collaboration (supplying customers with fish and fish products) with its suppliers. These opportunities relate mainly to cooperation with foreign suppliers of fish and suppliers of packaging. Some improvement can be achieved in collaboration with suppliers of marinades and spice and suppliers of freshwater fish. The smallest opportunities to improve cooperation are in ensuring the supply of feed.

Cooperation with foreign suppliers that supplying the company with saltwater fish is pivotal for the company, which should specifically strive to develop it using CPFR-based methods. With regard to the language barrier and the necessary knowledge of the market and the conditions prevailing therein (e.g. different regulations), a direct business relationship with the exclusion of the intermediary is out of the question. The intermediary should not only carry out current activities, but it could also act as an information bridge. The information transmitted should result in smoother deliveries and cost savings especially for storage of saltwater fish. In the first phase, however, an agreement should be concluded among suppliers of saltwater fish, the intermediary and the company on information to be transmitted, a mechanism for replenishment of saltwater fish and conditions of mutual cooperation. Information must flow in both directions - from the enterprise it is information on demand forecasts, projected and actual sales, and on the part of the supplier it must be information indicating the available quantity of each species and quality (e.g. the type of catches, the place of catch, the time of catch, fish size, yield, the method of freezing, etc.).

The development of cooperation with the suppliers of packaging is particularly suitable because the demand for fish and fish products is variable and prone to seasonal fluctuations during the year. To make sure that it always has enough packaging for manufacturing (and does not needlessly increase their stocks) the company could apply cooperation based on the principles of the CPFR method. However, this would first require choosing the right supplier for long-term cooperation and reducing the existing suppliers. When choosing, the company must choose their suppliers also in terms of its suitability for the given type of cooperation and subsequently it has to conclude a cooperation agreement. It is very important to elaborate a system for transmission of information and joint planning, during which the businesses must plan production either together or in a derived manner (in which the manufacturer of packaging bases its delivery schedule and production of packaging on a production plan provided by the company processing fish for fish products). Among other things, this will allow the packaging supplier to optimize its production processes, where it is very important to properly utilize the production facilities. Information from the customer will allow it to predict fluctuations in the needs of customers and suitably link the anticipated order with another current order. In the first phase, a very simple form of information transfer is possible (e.g. by phone or e-mail) that does not require costly investments in information technology. Tuning the supply system between the two partners then provides the basis for the implementation of more complex systems of inter-company management of material flows. Cooperation in the field of material flows will then certainly contribute to the development of cooperation in the field of packaging innovation (new packaging options, increasing the functionality of the existing packaging, packaging design, composition thereof, etc.).

The company does not deliberately strive for collaboration with suppliers of freshwater fish. The businesses help each other out and complement each other's range of products when their own production of fish is insufficient, but it is cooperation within normal business relations. Neither is the company itself interested in developing cooperation with the suppliers, who are also its competitors in this business. Each of the companies operating in this sector has established different goals and strategies to achieve them. There are not many ways to improve cooperation in the supply, but the common interest is the growth of the market due to increased consumption of fish and products thereof. The development of cooperation can focus on joint actions such as educating customers on the need and the health benefits of eating fish, fish preservation methods for preserving the highest quality, proper preparation of fish for consumption etc. It would be beneficial to jointly promote fish as a healthy regional organic product.

Collaboration with the suppliers of marinades and spices is not the focus of the company, because they are complementary products and stocks thereof do not bind large funds. It makes no sense to invest a high amount of money into technologies for intercompany management of material flows. However, simple transfer of basic information about the planned need for spices and marinades in the fish processing enterprise will allow the supplier to better plan its production. Much more important in terms of deepening cooperation is innovation of spice blends (joint market research, identification of new trends in spices and spice blends, new composition of marinades, etc.).

## 5. CONCLUSION

Flexible and efficient satisfying of the wishes and demands of consumers of fish and fish products requires building a specific supply chain. Participating links in the chain can then develop cooperation not only in terms of supply, but also in other areas (above all, research and development of products, allowing consumers to increase the value of the final product, but also shared communication of health benefits of eating fish and products thereof). To ensure the stability of the chain, however, it is important that all the links in the chain benefit from this cooperation, at least in the long run.

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