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Editorial

Fish direct purchase & traceability

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Editorial

In recent years several European Union (EU) farm prices (including aquaculture and fisheries products) have experienced a significant decline, resulting in considerable financial stress to producers.[1] However, in some cases, casual observations suggest that price movements of a similar magnitude, or even in the same direction, were not experienced at the wholesale and/or the food retail levels. Often, there is a gap between seafood primer producer prices in the EU and the prices paid by the consumer.[2]

Market research shows consumers prefer local seafood over imports but they do not always know where to find local products in season.[3] Furthermore, consumers say it is important for them to know they are supporting local fishermen[4] or local aquaculture companies.[5,6] An Internet presence can help put a "face on the seafood" and reaches a greater number of potential customers to expand their businesses. If innovative software applications will enable the consumer to select a trustworthy source of seafood through internet, with direct contact of the producer by the consumer and the quality of the product will be assured, that will be a break-through for the fish sector, especially if a win-win solution in terms of pricing will be established.

The European Commission (EC) is supporting in the context of the Framework Programme 7 for Research and Development and Horizon 2020 the Future Internet (FI)[7] The main goal of the FI is to establish powerful network infrastructures, so as to support numerous applications and services and the emergence of new business models. To this end, the infrastructure will be highly pervasive consisting of people, smart objects, machines and the surrounding space, and embedded devices (e.g., data loggers, sensors, RFID tags) that will result in a highly decentralized environment of resources, interconnected by dynamic Networks of Networks.[8] In that respect, the Future Internet Public-Private Partnership (FI-PPP) is a 300 million Euros European programme for Internet innovation that aims to accelerate the development and adoption of Future Internet technologies in Europe, advancing the European market for smart infrastructures and increasing the effectiveness of business processes through the Internet.[9]

The supply of fresh food products to healthily feed Europe is of vital importance. But food products and other perishables (including flowers) impose very challenging demands on the management of its supply chains. Due to high perishability, quality conditions have to be controlled from farm to fork. On the other hand, a transparent documentation of supply chains is complicated and time consuming. Furthermore supply chains have to deal with unpredictable variations in quality and quantity of supply. Therefore planning, control, and processing systems consequently need to be extremely flexible, while simultaneously enabling early warning and preventative control. The Finish Accelerator[10] is currently funding solutions addressing these problems and successfully bringing them into the market.[11]

The proposal for Fish Direct Purchase & Traceability improves the supply chain of freshly harvested fish from the producers to consumers and addresses the problem of product quality, being the most critical in the acceptance of a direct transaction between producers/consumers of perishable goods. Nowadays, the vast majority of fish is traded through the channel producer => wholesaler/retailer => consumer. This is the case for both fisheries and aquaculture seafood. Aquaculture enterprises sell their fish almost exclusively to wholesalers and there is always a very narrow margin as sometimes the production must be sold in order to stock in the cages new fry. Moreover and as concerns the quality of the product, from the time the fish is packaged until it is delivered to its final destination, either a store or a consumer, it may suffer conditions where it is being exposed to higher temperatures than 0-4 °C. The latter may occur due to latencies in the transportation from one carriage to another, posing circumstances where fish product is being exposed to environmental conditions that do not assure its proper temperature. Temperature is the basic condition that should be maintained within a certain range until the time the fish is being consumed, in order for the fish product not only to provide its maximum nutritional value but also to be safe for consumption. Ideally, the temperature must be recorded and stored during the supply chain, so that any stakeholder can be aware of the fish time- temperature profile that affects its freshness and act accordingly.

The e-aquafood platform provides reliable solutions to fish and shellfish producers as the current isolation between them and the consumers and the difficulty to approach each other will no longer exist. The consumer has now the ability to select fish from an aquafarm or a supplier (fisherman) of his/her choice, while there will be selections for the form of the fish (whole, head-off, filleted, gilled and gutted, de-scaled and gutted, de-scaled, gilled and gutted, etc.). Then, after placing the order, the consumer will get the order in a predefined area. Several possibilities will exist, based on the availability of the client (pick up from a predefined place, etc.). Freshness and traceability are ensured through special time temperature sensors that are placed in the pack of the fish and communicate data concerning the traceability of the fish product to a layer enabled by the e-aquafood

platform. Accordingly this data is readable from both mobile and web application, providing to the end user valuable information of the seafood product history and quality.

More specifically, a sensor is placed in each slot with seafood. This sensor is responsible for reading the temperature of the "box" where seafood is placed and sends data to a service for updating a respective database with this information. The latter is viewable by the consumer. The B2C platform provides the ability to consumers to select fish products from a nearby fish producer and place orders either alone or in groups. Consumers receive the package in a predefined destination and are able to check seafood quality via the temperature control mechanism described above. The platform can host multiple fish and shellfish producers from all over the world and allow consumers to interact with any of them; priority will be given to nearby producers and those of good reputation.

The entire solution is supported by finish enablers that guarantee a professional execution of the system, able to support millions of transactions in a secure and reliable manner. The overall platform and the provided enablers do not only offer a robust and service-based outcome, but also help reach the project objectives quicker and more reliably. Additionally, the FIspace platform developed with FIware tools, allows the manager of the fish platform to contact all fish producers and transport companies and manage the business processes concerning the fish commerce and transport as well as the negotiations that may occur.

The benefits of the e-aquafood platform is three-fold, affecting the producer, the consumer (and the end-store) and the platform service provider. Benefits include:

1. Direct access of customers to seafood producers.
2. Guaranteed quality monitoring and traceability.
3. Achievement of better prices compared to traditional retail selling points. It is expected that a reduction of 15-30% will be possible in the fish price that will be traded through the e-aquafood platform.
4. Ability to make informed choices for the source of the fish. By offering a wide range of producers, the consumer will be able to control the quality as near-by producers will offer a better quality compared to more distant producers or from farms and fishers abroad.
5. Ability to choose from a wide selection of farmed and captured fish.
6. Ability to have the ordered fish in a variety of forms such as whole, head-off, filleted, gilled and gutted, de-scaled and gutted, de-scaled, gilled and gutted etc.
7. Ability for the producer to by-pass through the e-shop the intermediaries and sell the product to the consumer.

It is expected that the aforementioned benefits will boost widespread acceptance of the platform both by consumers and fish producers. By paying special attention to the user-friendliness of the platform and provided its core ability to solve a genuine problem for all stakeholders in the fish industry, the platform will be used by more and more people, if properly informed of its existence. With the rapid rise of e-commerce cold chain logistics, leading e-commerce platforms that sell fresh goods all over the world, are reaching across industry lines to step into the market, forming a new competitive landscape. Such cross-industry competition will facilitate the integration of e-commerce and logistics. A mature business model and accelerated market integration are on the horizon. Agricultural products (including fisheries and aquaculture food) will remain the main category for cold chain logistics. Significant market size and demand growth in the seafood markets and the continued improvement of cold chain technology will make them key product categories in the cold chain logistics industry.

As e-commerce will be one of the drivers of this growth as operators rush to meet consumer demand it is expected that cold chain logistics business will grow at the rate of 25% annually until 2017 in China only. This prediction was made by Roland Berger Strategy Consultants experts in Shanghai,[12] who added that growth is expected in products, customer channels, logistics providers and service coverage – bringing about new opportunities and challenges. According to the China Market Research Report, "The cold chain logistics industry is expected to develop rapidly as demand for commodities like food, medicine and cosmetics increases in China As a high-end sub-industry of the logistics industry, cold chain logistics will attract much investment in the coming years. The e-commerce enterprises of fresh food spring up as e-commerce develops in China, which remarkably promotes the development of cold chain logistics". Given that the fish sector has minimal sales through e-commerce for the moment, the proposed e-aquafood platform is expected to grow at a rate as high as 30-100%.

Acknowledgments

None.

Conflicts of interest

None.

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