An Overview of Traceability System for Fish Products in Romania

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The paper aims to provide information about the framework of the traceability of fish and fish products and the implementation of the traceability systems in the Romanian fish industry. The research is based on the results of the empirical studies conducted in Romania regarding the barriers and incentive factors that influence Romanian fish industry to adopt the traceability system and the Romanian consumers to be aware about its importance.

Keywords: traceability, fish products, barriers, benefits, influencing factors

JEL Code: D18, Q13, E21

1. Introduction

Food industry in Romania faces general problems related to food safety, but it has also specific problems that require solutions accommodated for various types of food products with the purpose of ensuring an adequate level of consumer protection and for coping with the European market especially starting with 1 January 2007, when as a member of the European Union, Romania has to comply with the Community legislation that regulates food safety and security. The acceptance of European standards as national standards in EU countries aims to eliminate the technical barriers to international trade and the European countries to avoid the situation to deal with different requirements for the same products. The implementation of European standards contributes to the achievement of the main principle of the European single market, namely the free movement of goods and services. (Nicolae, et al., 2016).

Traceability is the manner in which can be managed, at national and international level, food safety and security. In order to accomplish a global and integrated approach to the concept of traceability, the Community legislation takes into account all aspects of the production chain: processing, transport and distribution. In all the links of this chain, the legal responsibility for watching the product safety falls on the manufacturer. The responsibility of monitoring and controlling the way in which are observed the rules and requirements in force, that is, food products traceability, comes to the national and European authorities, ANSVSA respectively (The National Sanitary Veterinary and Food Safety) in Romania and EFSA (European Food Safety Authority) in Europe.

2. The framework of the traceability of fish and fish products

The first international definition of traceability was established through ISO 8402 in 1987, as being "the ability to find the history, use or location of an entity by means of the registered identifications." The entity might have the meaning of: an activity, process, product, an organization or a person. The notion of traceability was taken from the series of ISO 9000: 2005 standards concerning the systems for quality assurance, being treated as a key element of the quality management for any product. According to ISO 9000:2005, traceability is the capability to find the history, achievement and placement (location) of what is the subject of an examination. If we consider products, then this definition involves the possibility to find, as appropriate, the origin of materials, components and products incorporated in the finished product, history of product making and/or its location after delivery. The system of traceability records and follows the production process starting with taking from suppliers products, parts and materials, going through their processing and distributing as finished products.
In the European recommendations, it appears a definition established by the General Food Law No. 178/2002, which is taken over also in Law no. 150/2004. This definition can be also relevant for the non-food products manufacturers. SR ISO 9001, Quality Management System. Requirements, 2008. At European level, there are two important normative acts for regulating the traceability: Directive (EC) 2001/95 concerning the General Product Safety and Regulation (EC) No. 178/2002, referring to the General Food Law, applied starting from 15 January 2004, and, respectively, 1 January 2005, in all EU member states. The provisions of the Community Regulation No. 178/2002 are taken completely by Law No.150/14.05.2004 concerning food safety that regulates the Romanian agents 2005, in all EU member states. The provisions of the Community Regulation No. 178/2002 are taken over also in Law no. 150/2004. This definition can be also relevant for the non-food products manufacturers. SR ISO 9001, Quality Management System. Requirements, 2008.

**3. Characteristics of the traceability systems in the Romanian fish industry**

Aquaculture is a sector of agriculture that includes fishing, raising, processing and marketing of aquatic animals. Fishery products include the following categories:

1. Fish products - all marine or freshwater animals (except bivalve molluscs, live echinoderms, live tunicates and live marine gastropods, and all marine mammals, reptiles and frogs) whether wild or from farms, including all edible shapes and parts of these animals;

2. Fresh fish product - any unprocessed fish product, whole or prepared, including products packaged through vacuum or in modified atmosphere, which has not been subject to any treatment other than refrigeration for preservation;

3. Prepared fish product - any unprocessed fishery product that has not been subject to an operation which changes its anatomical wholeness, such as evisceration, heading, slicing, filleting, and chopping.

Strengthening the confidence in fish products, in general, and aquaculture products, in particular, depends on the good management of the supply chain within the fishery area and their traceability. In Romania, traceability is necessary in order to meet the following requirements concerning:

1. food safety: occasionally, the food safety problems are generated by contaminants or pathogens either voluntarily or accidentally; in this case it is required a clarification of responsibilities so as to be able to identify and remove the source of contamination;

2. transparency: consumers are more and more concerned about the origin of fish and of fish products they consume. Implementing a traceability system through which consumers and buyers can track the foods they buy along the chain of production/processing is a condition necessary for access on the EC market since starting from from January the 1st, 2015, the EU regulations on traceability will be more stringent, following to be used as a barrier to trade;

3. sustainability: currently, an increased attention is given to sustainable aquaculture.

So far, in Romania there is not any integrated concept at national level for the supply chain in the fishery area, that would enable both the complete and continuous monitoring of food safety and quality as well as the traceability of the whole supply chain. One of the reasons is the fact that the traditional supply chain in fishery is conventional and long, characterized by complex combinations of elements from upstream and downstream, which are difficult to manage and follow, making difficult the elaboration of effective and practical methods for monitoring food quality and safety, as well as its monitoring. Monitoring can be accomplished by developing a traceability system based on artificial intelligence and information technology for data acquisition and processing, a system adapted to the supply chain of fishery products from Romania. Storing information in such a system would allow the history transmission towards the authorised control institutions, as well as their access to consumers, by making available certain means of easy access. The system must meet the traceability requirements provided by Law 150/2004 and traceability demands on the rules for animal identification. The products are monitored by numbers of production lot assigned to every movement of the products resulted following the primary processing or fish processing at: fisheries, production farms, processing workshops, warehouses and points of sale. In order to attain its purpose, the system should put in contact all stakeholders from the supply chain of fish and fish products. The operators who have different positions in the supply chain introduce the information. Each operator connects to the Internet and will enter, respectively consult information, according to its own activity.

The main stakeholders in the sales chain of fish products are producers, that is, farms specialized in the production of spawn, hatcheries, manufacturing companies and companies dealing with the sale, as well as the consumers. The processing companies prove to be the core of the supply chain, here being focused most of the capital, technology and human resources in relation to the chain
of supply and sales of the fishery products. The Stakeholders have different requirements and different approaches to traceability, given the different roles they have in the supply chain of fishery products. The implementation and use of traceability system depends on a close cooperation among the parties involved in the supply chain. When the traceability system meets all participants - consumers and producers' requirements, then the anticipated benefits will be obtained.

Therefore, a system of traceability intended for fishery products should harmonize the requirements of each of the categories presented. A study in the Romanian fish farms investigates the barriers like the basic characteristics of the enterprises and whether they export, the costs of adoption, and different traceability standards in the markets and incentive factors grouped in categories like improvement of management level, enhancement of product competitiveness, satisfaction of social demands and other incentives such as encouragement of the government and first adoption of similar enterprises (Moga, et al., 2016). The system of factors is based on a similar study conducted in PR China (Wang et al., 2009). According to Moga, et al. (2016), the main barriers that impede the adoption of traceability system in the Romanian fish farms are related the lack of the preferential policies which has to be promoted by the Romanian Government and followed by the shortage of management and technical personnel and high costs.

The results of the survey conducted on the Romanian fish and fish products consumers show that the consumers are aware about the fish products safety, and they got the risk perception associated with fish products (Moga et al., 2016). The Romanian consumers are aware about the possibilities to access information related to the quality of fisheries products directly from the place of purchase, which is mostly the supermarket/hypermarket.

4. Conclusions

Romania’s capacity to implement the traceability system in the fishery industry at the national level is reduced. One reason is the inadequate regulation framework which does not force the . Based on the present situation of Romanian fish industry, it is impracticable to force all the enterprises to implement the traceability system, because of the lack of capital, technology and human resources. The government should provide policy guarantee for adoption of traceability system, else, the efforts made for developing customized traceability systems by the software developers will not fill their target regarding implementation in the fish industry.

Acknowledgements

This research was financed by the Programme Partnerships in Priority Areas – National Plan for Research, Development and Innovation 2007–2013 (PN II), sponsored by Ministry of National Education – Executive Agency for Higher Education, Research, Development and Innovation Funding (MEN – UEFISCDI), project no. 167/2014, Cloud computing-based traceability information system for fishery.

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