Fruit and vegetables supply chain organization in Spain: effects on quality and food safety

Working Paper within the project:
"Food safety regulations, market access and international competition, SAFEMED" (nº 219262 FP7-ERANET ARIMNET)

Jesús Hernández-Rubio, Juan J. Morillas-Guerrero, Emilio Galdeano-Gómez, Juan C. Pérez-Mesa, José A. Aznar-Sánchez, Marta Fernández-Olmos, Giulio Malorgio

Departamento de Economía y Empresa

Universidad de Almería

Campus de Excelencia Internacional en Agroalimentación, ceiA3

(Corresponding author: jhernandez@ual.es)

TABLE OF CONTENTS

ABSTRACT

The Spanish fruit and vegetables sector consists of a large group of participants of various kinds, mostly fragmented and influenced by geographical origin of which may be stated, in general terms, that converge in the latter stages of the distribution process of their products. Therefore, it is advisable to group homogeneous products and similar characteristics, which usually belong to particular areas, since the type of supply chain is given by the destination of the goods.

In Spain, supply chains are highly adapted to the type of market to which they belong and consequently the type retailer at the end of the supply chain.

Often, producers commercialize their products with a total ignorance of the channel that these will follow from them to consumers. This creates an impediment to develop necessary vertical coordination relationships within the channel in a collaborative and coordinated search for its optimization, particularly from the point of view of the quality management and sanitary monitoring of the products.

With maximum perspective, the scenarios in which the various Spanish distribution channels play a main role are the EU market, domestic and local one. The typical retail corresponding to each one of these areas of the retail market would be the Spanish and European mass distribution self-service stores, the small specialized warehouse, street markets and street vending. The biggest change experienced by the sector has come from the supply chain opening to the export to Europe.

These evolved channels, in addition to those which have keeping serving domestic markets, but also with significant customization, form the basic structure of the current fruit and vegetables distribution sector in Spain which, in essence, can be defined as a distribution network system strongly opened to export and great innovation and technology implementation.

The simplest description of the fruits and vegetables distribution system in Spain is the one which describe it as: i) a "long channel”, where there are also numerous intermediaries; ii) "short channel" arising from become changes, both in productive and commercialization stages. In the both cases, the effects on the way of managing the quality and food safety can be very different, having thus influence on the food safety of the product achiving final consumers.

Keywords: supply chain, fruit and vegetables, organization, quality, food safety.

1. INTRODUCTION

The project SAFEMED (219262 FP7- ERA-NET ARIMNet) within the 7th Framework Programme of the European Union, has been created with the purpose of studying the nature of the business relationships between operators within the fresh fruit and vegetables supply chain among countries belonging to the northern and southern shores of the Mediterranean Sea. As key elements considered in this work, we find the study of the Spanish fruits and vegetables distribution channel´s structure, its performance, internal relations, export characteristics and food safety aspects.

The first section describes in disaggregated form the performance and organization of the supply chain making a classification on the basis of various criteria with reference to the functions performed by the actors and specifically addressing relevant aspects such as quality or logistics.

Then, we refer aspects of the change process happened in the industry and its value chains, as well as the effects in its members, their adaptation strategies and resulting channel characteristics.

A third part lists and details the Spanish fruit and vegetables supply chain actors with a closer look at the most prominent members in recent years (the retail dealers) and the vertical relationships which have arised between them.

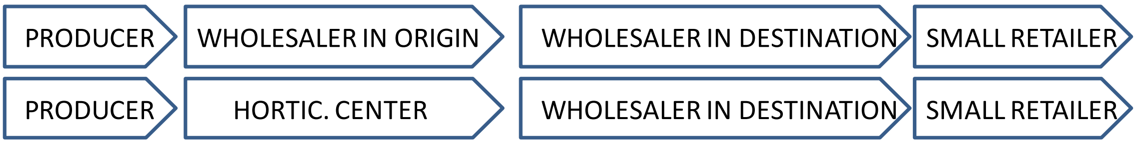
Within the next section, it is tried to explain the relationships between the organization and structure of the Spanish supply chain and its internal performance and food safety management, as well as the food safety implementation of food safety in Spain. Annexed, a description of the characteristics of the export process is offered.

The last section includes the main conclusions extracted from this work.

2. STRUCTURE AND PERFORMANCE OF SUPPLY CHAIN

In the current Spanish fresh fruits and vegetables commercial distribution system five main configurations of distribution channels can be differentiated.

Figure 1- Channels and actors involved in fresh fruit and vegetables Spanish supply chain. Case 1 and 2.



Source: own elaboration.

These two are those corresponding to the traditional channel. The first is the prototypical configuration, characterized by the wholesaler in the country of origin, which limits its functions to little more than the physical distribution of the product, with simple functions of sorting, cleaning and packing. This figure is losing relative importance being constrained to local markets.

The second configuration of this sort of channels could be called “conventional chain” to make a differentiation with the one above. The main difference of this current traditional channel form is the change of the wholesalers by producer´s organizations and commercialization bodies that in addition prepare and finish the products from selection to packaging (being different depending of the final selling point). So, it can be considered that the first placing on the market of the product is carried out not by farmers but by these fruit and vegetables plants once "product is finished", since the producers delivered goods are “semi elaborated”. The fact that it is necessary to “finish” the product delivered by producers, and that this task is held by a commercial and manipulative figure, is one of the main features of modern fresh fruits and vegetables distribution in origin, and one of the main factors to be taken into account to explain the formation of value in the commercialization of these products and their final sale price, usually existing a big difference between the price received by farmers and the final price paid by consumers (Martinez Castro and Rebollo, 2008).

The remaining descriptions correspond to the commercialization made through major retailers, also called "modern mass distribution", which has three main possibilities depending on that purchase platforms of large retailers:

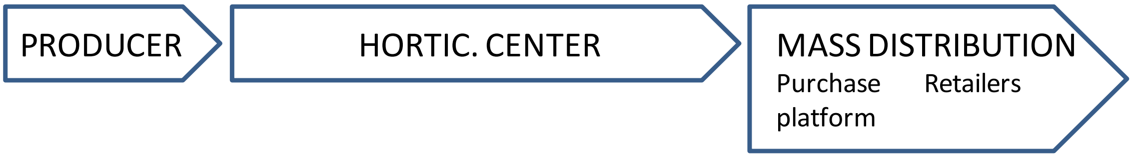
* deal with wholesalers in destination (figure 2).

Figure 2- Channels and actors involved in fresh fruit and vegetables Spanish supply chain. Case 3.

Source: own elaboration.

* buy directly from horticultural centers in origin (figure 3).

Figure 3- Channels and actors involved in fresh fruit and vegetables Spanish supply chain. Case 4.



Source: own elaboration.

* that the producers as well as the horticultural center are associated in companies to treat directly with the big distribution (figure 4).

Figure 4- Channels and actors involved in fresh fruit and vegetables Spanish supply chain. Case 5.

Source: own elaboration.

New supply chains, especially the last two ones, result in very different value chains to traditional channels. On one hand, because the most advanced distribution channels generate more value in the marketing process performing more finishing activities and marketing services and, on the other hand, because the actors involved in distribution operations are different and their number is lower. Nowadays in Spain, the quantity of distribution channels has increased, being possible to find traditional long circuits beside others much more integrated in which larger producers (or large producer associations) directly deal with major retailers.

In addition, the Spanish fresh fruits and vegetables distribution can be differentiated, according to their destination, in the following four types (Martinez Castro and Rebollo, 2008):

a) Distribution to industry. It is done primarily from origin, either through brokers, or wholesalers or direct buying in “alhóndigas” (Product auction places where producers sell).

b) Distribution of "short radius”. It is for sales to local retailers and wholesalers operating in the local areas.

c) Distribution of "long radius". Corresponds to the traditional channel described above.

d) Export. Traditionally the export was done by consignment sales through foreign wholesaler settled down in other countries. Later, big companies and horticultural cooperatives have developed their own network of offices abroad, as well as foreign trading companies have begun to operate from Spain, mainly coming from other EU member countries. Last but not least, we find export done through channels integrated in multinational retailers firms.

We can likewise say that fruit and vegetables distribution has undergone a transition parallel to the increase of agricultural land and production, consolidating a grouping process of farmers and producers and a concentrating supply, as well as a fresh fruits and fresh vegetables export development, coexisting multiple distribution channels and relationships, both horizontal and vertical, established among the agents and the different stages of the distribution process, so perhaps it is more appropriate to speak of complex distribution systems than of simple distribution chains.

So, leaving aside products for the short radius market, we can describe two types of supply chains in Spain:

Traditional distribution channel: refers to products characterized by their passage through the urban central markets and sold in traditional greengrocers. The difference between both agents may not result cleart. Within the central markets are companies that have achieved significant levels of vertical integration with suppliers. While there are large retailers that buy in central markets and greengrocers networks that are verticalizing with wholesalers in destination and achieve supply agreements with previous stages members. The weight of the traditional trade channel is lower in the off-season products (Martinez Castro and Rebollo, 2008). The traditional channel remains being the main organizer of trade, especially through wholesalers installed in the Network of “Mercas” (cities´ central markets) that sell about 60% of domestic production of fruits or vegetables (Mercasa , 2006). In this channel, the producer sells the product to a wholesaler in origin or gives it to a cooperative for their preparation and finishing and subsequent sale to a wholesaler at destination, which thereafter sells it to retailers, or HORECA sector (Hotel, Restaurant and Catering). The firms involved in this channel are numerous and still can participate some more as brokers, intermediaries working on behalf of wholesalers whose mission is to detect available supply and to match buyers and producers. Note that producers rarely sell goods directly to a wholesaler abroad for their direct sell in destination, but also they sell or gives them to to a wholesaler or cooperative, which makes finishing (sorting and grading, cleaning, conditioning fridge...) and presentation functions (packaging, labeling, packing, palletizing) to the product in facilities known as "Centrales Hortofrutícolas" (Martinez Castro and Rebollo, 2008).

More generally, traditional distribution channels are formed by a succession of different economic agents specialized in certain geographic markets performing the tasks of each step of the distribution. In words of Fernandez Nogales et al. (2006), the environment of these traditional channels is defined by a relative stability of supply (both in terms of product innovation and in terms of the emergence of new providers) and a relatively homogeneous and stable demand (divided into a small number of segments).

The decline in market share of traditional trade has overlapped with the rise of supermarkets and hypermarkets. But still, there is a commercial system with multiple different types of consumers which allows its survival.

It must be added, that the traditional supply chain is the main and almost the sole supplier of the specialized retail segment, being fundamental in providing the population. This channel is also the leading provider of street markets sellers.

Beside the traditional chain have emerged "parallel channels" from major retailers that have implemented wholesale facilities, known as "purchase centers or platforms" in which goods bought to big producers or “centrales hortofrutícolas” (cooperatives, limited liability companies, …) are grouped to be distribute through its own network of retail outlets in Spain and other European countries. This channel integrates into one actor (large retailer´s company) various intermediate agents in the traditional channel, resulting in a shorter one. Integrated channels have taken on great importance, both domestically and in export. In practice, across this kind of chain, all of product sold in hypermarkets and much of the available in supermarkets is distributed. As example regarding export, it is enough to say that one of the main exporters of fruits and vegetables in Spain is Socomo (Modern Trade Society), a company of Carrefour Group (Martinez Castro and Rebollo, 2008).

Modern supply chain: for products intended for mass distribution. In this one are located the largest operators in origin and destination and production standards and agreements medium term are frequent. Most companies are certified. Vertical integration levels are high and largely the way through central markets has disappeared. The modern channel means that the producer sells its goods to logistics operators (purchase central or platforms) that handle the supplying of their parent companies: the big distribution. Nowadays the modern channel is replacing the traditional.

Therefore, significant parallel channels have been constituted. Supermarket chains are tending to jump the step of traditional wholesalers in destination while it is still often to buy in these markets to complete their assortment.

With a broad perspective, we can list the different functions that agents perform in this kind of channel as follows (Fernández Nogales et al., 2006):

- assuming the tasks of merchandise fitness for entry into the market. These differ according to the segment to which they are addressed, while some are standardized and packaged and even have traceability, others are sold after a simple sorting.
- managing logistical tasks: transport and storage, if necessary.
- performing duties purely commercial: in the source or target market.
- performing operations in foreign markets: importing or exporting products.

Often ones and the others are weaved. Furthermore, it should be noted that this sector is rapidly reaching a significant level of vertical integration through various mechanisms. Moreover, the absence of radical changes (product freshly sold, usually) facilitates the development of business activity in the adjacent phases.

This makes productivity a very important factor in the organizational structure. It depends on each one of the links and is a verifiable fact that in Spain there is a very low growth of it, especially in the distribution operators. If we compare Spain to other countries in the European context, we note that productivity in Spain is at the bottom of the ranking. Spanish trade model responds to the Mediterranean prototype, with a high density of establishments per capita and sometimes becoming a refuge sector in relation to national unemployment problems. Being the competences of the sector mainly transferred to the Autonomous Communities creates serious problems for businesses to operate on a national level and to apply economies of scale. The tax burden is another obstacle to overcome (Briz and Philip, 2006).

Another important dimension that defines every channel is, according to Fernandez Nogales et al. (2006), the demand for quality within the supply chain, which, although perhaps with some delay from the pursuit of quality in services in general, is now a widespread and growing concern that is becoming one of the main factors of transformation of the distribution, since it involves new activities and to assume new costs as well as it affects the assortment of retail outlets and the image of the establishments to consumers due to retailers are ultimately responsible to them. The importance of quality in the distribution affects both domestic trade and exports. All this means that, in many cases, dealers must establish partnerships with producers, beyond the simple selection of products that meet the quality standards to fit their customers´ assortments.

The quality in Spanish commercial distribution can be classified into two main areas, quality related to product dimensions and retail outlets standards.

The quality of the products, in turn, has two objectives: their safety and their adaptation to consumer preferences. The first of these objectives is sought through legal regulations, which imposes minimum quality and information through labeling. The second objective can be achieved through agreements between producers and distributors on product characteristics, packaging, transport mode, etc. . These are very common in the marketing of food products, existing even retail associations that have established their own quality standards. Obviously, the relationship between these two objectives is large. It is often that private retailers standards imposes rules, according to their own trade policy, beyond legal o recommended quality requirements, in order to seek to ensure products´ quality and safety as well as better to meet the preferences of final consumers and to reduce the purchasing and procurement costs. Traceability is a good example of collaboration between producers and distributors and the nodal role that the latter play in the control of supply chains (Langreo and Benito, 2005). The second area of quality in commercial distribution is related with the retail trade. The aspects relating to the quality of retail service (Martin, 2005) and its corresponding legal regulations are numerous and they involve a range from the application of rules on waste and recycling, or fair trade, to stores cleanliness and attention to consumers. The specific quality normative of retail trade in Spain comes from the early years of the last decade (Gómez, 2005).

Given the close relationship between logistics management and quality, we must take into account that the transport, storage and handling of products which should be kept cold over zero is particularly complex. Most of the productions of fresh fruit and vegetables are not stored. In any case, they remain a few days in order to homogenize the product and stagger their release. This storage management is very important to prevent deterioration and it is typically performed by the commercial operator in origin. In some product lines, especially citrus and some other fruits, harvesting is traditionally assumed by the first commercial agent in origin, because the bulk of the crop is sold being still on the tree. This means that this operator organizes the storage and collection rate, removes discards and assigns the volumes for industry (Fernández Nogales et al., 2006).

3. THE PROCESS OF CHANGE

It must be considered that the described current situation of the sector has been reached after a process of change during the last recent years in which the fruit and vegetables supply chain has changed substantially causing much of what is happening in the sector. Specifically, mass distribution has become the leading stage in the supply chain, imposing many of the new forms of work along the channel and affecting to the producers, commercialization entities in origin, trade and logistics operators, etc. In parallel, the traditional chain members, wholesalers and greengrocers, have initiated a process of modernization, reorganization and finding niche market that is allowing them to maintain a high market share (Langreo, 2009).

Within the agrifood system, ie agriculture - subsector production factors supply - processing and distribution industry, there is a common denominator which is the trend toward globalization. Particularly striking is the importance of local or regional operations that survive, and even predominate, to competition from the supermarket chains, being leaders in various Spanish provinces. The trend towards concentration in retailing has been a recent indicator (Cruz et al., 2005).

According Langreo (2009), along this transforming process of the supply chain members, also Spanish wholesalers in destination have experienced an adaptation (mainly in response to the growth of large retailers) whose main strategies are:

- Concentration with bigger operators, including the setting up of companies in different cities and their link to some of the large international companies.
- Growth from mergers.
- Agreements with operators in origin and even development of vertically integrated companies.
- Agreements with small retailers, in a process of vertical integration to the end of the chain.
- Specialization in certain ranges of products with small volumes.
- Specialization in serving HORECA (hotel, restaurant and catering).

Similarly, it is a fact that the bargaining power has been passed on from producers to manufacturers and then, from these to distributors. Meanwhile, the fresh fruit and vegetables marketing has undergone a transition coupled to increased agricultural production area appearing a producers´ grouping process and concentration of supply chain members, as well as a development of fresh fruits and vegetables exports (Martinez Castro and Rebollo, 2008).

Following this argument, we can say that markets´ increasing size, both in terms of product offering, as well as the greater number of alternative supplier, and, of course, the demand (Casares and Rebollo, 2005) has resulted in a reconfiguration of distribution channels with new features (Fernández Nogales et al., 2006) as for example:

- concentration and diversification of product offering;

- increasing size and concentration of retail businesses;
- integration and sharing of supply chains´ new functions;
- extending the use of new information technologies and communications;
- changes in demand;
- high dynamic evolution of the channels.

One of the most remarkable results arising from the new configuration of these channels is the complexity of relationships in the source markets. Traditionally, producers sold their products to wholesale operators in origin (whatever their legal form, cooperative or private company), whose two main functions consisted in grouping products to provide lots of sufficient size to be marketed in terms of economic viability, and pack the products properly classified to be forwarded to destination markets, mostly national ones. In most cases, goods were sent to traditional markets without a fix price or, in the case of export, were shipped in consignment to international markets. Currently, the product delivered by producers should be consider as semi-finished, what means that it still need of a finishing process to make it suitable for marketing in national or international target market.

It is currently appearing a growing differentiation between, what we might call basic commercialization of agricultural products, and processed and manufactured products. Both production and commercial techniques must adapt to these characteristics. There is also a crisis in trade structural models, between traditional and parallel channels, big distribution companies and small ones, direct sales systems and electronic commerce, as well as multiple consumer segmentation (Briz and Philip, 2006).

Given the above, in the first decade of the century the traditional channels had declined much less than expected, being true that at the cost of severe changes in the activity of all their actors.

4. CHAIN´S MEMBERS DESCRIPTION

From the distribution level until the production one, we distinguish three main groups of actors: large retail chains (supermarkets and hypermarkets), smaller retailers, and actors more directly related to the production and markets of origin.

4.1. Mass distribution (supermaket chains and hypermarkets).

As the actor who has acquired more predominant within the channel, firstly, we list the retailers. Over recent decades, the size of retail markets has grown greatly in developed countries, which has led to the increased size of the companies, both for the opportunity of such growth and the need to adjust its size to remain competitive in global markets. And this has occurred primarily in two ways: internal growth, or by purchasing or merging with other companies and large groups (voluntary chains, purchase platforms, franchise chains, etc) forming legally independent companies but functioning as units of the same organization. This growth of companies and trade associations has led to an increase in concentration in commercial distribution and integration of functions within distribution channels and between producers and distributors.

The retailer offer to consumers is heavily concentrated in a few hands. They control the entire supply chain requiring suppliers great efforts in promoting quality and having as a result a negative impact in the income statement of the weakest link: the primary marketer. Fruits and vegetables, like poorly differentiated products, are subject, in negotiating with the big chains, to a steady downward pressure.

The major retail chains in Spain, in practice, impose quality control and traceability systems, speed of penetration of products and production consortium to supply the quantities required and in timeliness. Food scandals are achieving progressively a greater impact on the market despite the undeniable progress in the area of food safety in Spain. In parallel, the most significant revolution in food sector in recent decades has occurred in the distribution stages due to the growth and liberalization of the economy (Briz and Philip, 2006).

The big retail distribution´s decision of approaching the production has been one of the issues that have altered the way of working and the structure of the production chain. That approach is made by forming their own specific businesses to that purpose or through contractual agreements with the more suitable operators in origin. By means of these two ways, the extension of the production related food safety standards is being conducted.

In some durable and high consumption products has been established the packaging from the horticulture processing plant.

The mass distribution, after centralizing its supply, requires large volumes delivered in their purchase platforms at a determined rate. Also, the rational management of its supply promotes the existence of a few preferred suppliers for each product or group of ones, who must be able to supply full product ranges as far as possible and to give service throughout the year. All this has led to fundamental changes in the supply chain, promoting the formation of large groups of suppliers (among which there are second degree cooperatives), some large traders (including multinational dimension ones) as well as supermarket chains´ purchase subsidiaries, and thus limiting the number of suppliers, resulting in an improvement of the sector organization.

Overall, the entry of large retailers in the fruits and vegetables chain has leads to the following (Langreo, 2009):

- A shortening of the number of links in the chain and an increase in the marketed volume of those who serve the retail, which favors the concentration in origin.
- A segmentation of the sector concerning those who access to the channels and those who remain on the sidelines.
- A generalization of the production standards and certifications, of medium-term agreements and the existence of an extension of certifications requirements to all stages of the chain.
- Vertical integration processes and an increasing organization among the suppliers.
- A better and faster translation of consumer trends toward agriculture.
- A reduction in the number of customers in the early stages of the product commercialization, which supposes a weakness for the members of these phases.

- In cases in which large retailers require exclusivity in the supply, the supplier can grow with its client, but at the time, it is in a situation of maximum fragility in the event of a hypothetical costumer´s bankruptcy or a change in the client´s strategy. The great purchasing power of large retailers allows them to have "global" suppliers, what rests possibilities to local operators of intermediate size.

- The mass distribution can encourage consumption of certain products and facilitate the entry of foreign products.

However, these large supermarket chains continue sharing the market share of the final consumer with smaller retailers, such as greengrocers, central markets sellers and other ones.

4.2. Retaliers

Small retail distribution´s supply forms are varied, but among them, in Spain, dominates the one thru wholesalers located in the Spanish central markets network (Mercas). At this point it should be mentioned that in the group of the most concentrated and verticalized enterprises we find some which make supply agreements of certain product ranges with operators in origin, leading to another type of vertical integration within the production chain.

The main effects of the joint strategies undertaken by wholesalers in destination and greengrocers were aimed, in one way or another, to a vertical integration and concentration of these two activities. The main routes followed are (Langreo, 2009):

- Creation of groceries chains by wholesalers in destination.

- Agreements between grocers and a wholesalers or retailers to form a company with greater purchasing and selling capability, usually with several outlets and adopting various organizational and legal forms.

These processes have been completed resulting in companies and business groups, usually, of small size and municipal, regional or provincial scope, which have combined the last two phases of the supply chain and have increased their volume but without losing the benefits of the proximity to the final consumer or the privileged and consolidated location in the neighborhoods.

Ultimately, in the greengrocers´ scope has started an interesting process of finding market niches and adapted consumers to each location.

4.3. Actors closer related with the production and origin markets

Despite these processes of concentration, there is a huge variety of agents operating in the supply chain and forming the origin markets. Thus, it is possible to find isolated farmers, associated farmers, selling entities (auctions, networks), wholesalers, logistic operators, brokers, warehouses in origin, cooperatives, agricultural processing companies (SAT), common joint ownerships (CB), etc (Ministry of Agriculture, Fisheries and Food, 2006). There are also brokers at destination. The existence of all these agents, together with the diversity of products sold, yields the complex web of relationships that makes up the origin market of these products. This first stage of the commercialization leads to a high number of relationships among the various participants in the market given that each agent, producer or marketer, often use more than one circuit either occasionally or frequently. Thus, we see how producers associated to a cooperative or a private commercialization structure attend the auctions to sell part of their goods, or that often, distributors sell both own production and other acquired in the market, or, finally, how the traders, cooperatives or private companies, in origin use various types of providers for their sourcing.

Producers and traders

As mentioned above, the first phase of the commercialization process between producers and traders in origin takes place largely dealing with "semi-finished products", that after the preparation and finishing activities are sent to the destination markets. The importance of the need to end the product delivered by producers before its commercialization is because of its impact on the formation of the value chain of these kinds of products.

Cooperatives and Public Limited Companies of Agricultural Transformation (SAT)

Unlike other types of companies, which buy the products in the auction or producers themselves, associative formulas such as cooperatives and SAT (companies of agricultural transformation) involve the producer directly in the commercialization. In addition to direct sales to foreign markets through exporters, wholesalers in destination and supermarkets, cooperatives and SAT allocate their sales in the domestic market, mainly dealing with Mercas Network members, from which most of the Spanish retail stores get supplied. These companies are characterized by a specialization in exports and, in recent years, also because of a greater connection to supermarket and hypermarket chains and their purchase platforms.

Typically, these entities can achieve a greater profit margin in marketing their products, because standardizing and packaging at origin provokes that a part of the added value keeps in the hands of the productive sector. Moreover, the progressive increase in the participation of these institutions in destination marketing, even with direct selling to the consumer and eliminating middlemen, also causes that wealth generated in the process reverts to the producers. The second and further degree cooperatives are aimed at extending the concentration of supply in order to achieve better sales conditions, hiring an executive team to perform all the commercial management of the associated cooperative. Besides acquiring a statutory liability, in most cases they guarantee with significant amounts the compliance and marketing commitments.

Auctions (“Alhóndigas”)

The “alhóndigas” are private marketing centers in origin where producers lead directly their products, which are sold in individual batches by the reverse auction system. The number of buyers is low comparing with the large number of sellers, the fact that characterizes this market as oligopolistic. This system is located in the eastern Spain and eastern Andalusia, in the provinces of Murcia, Granada, Malaga and Almeria. In the latter it is where exists a greater concentration of this enterprises (and the biggest ones), which generally are family businesses in the form private limited companies. The marketed product depends on the production area where they are located, but generally they operate with vegetables, with virtually no presence of fruits and citrus. The “alhóndiga” is a broker who receives the fruits from the producer and is responsible for the sale and payment of the price achieved in the operation, the commission deducted. It organizes and controls the operations of weighing and stowing the goods. The producer takes almost at the time of delivery of the goods, since the auction pays almost immediately assuming the risk of potential defaulters. They are true organized markets, with opening dates, auction shifts, start times, etc. In addition, in their influence areas, they have a very high market share. The quality and presentation requirements for the producers are lower than in other channels of supply. The producer himself can stop the auction and remove the merchandise if he is agree with the prices, and anyone can commercialize his production without requirements of membership, quality and quantity, varieties, etc. Meanwhile, the producer becomes separated from the goods at the time of the auction, so it does not perceive the added value throughout the marketing process. The auctions encourage the free competition in origin. The other existing marketing agents (both individual and grouped) sometimes resort to auctions, and even themselves often act as such using their facilities for auctioning. The “alhóndigas" are provided with large facilities associated to horticultural cooperatives, partnerships that have resulted in their own export companies (CAP, 2002).

Intermediaries and wholesalers in origin: stockists and exporters

The intermediaries in origin can be mainly grouped into stockists (more specialized in the domestic or national) and exporters.

Stockists at source buy products from producers or auction centers (“alhóndigas”) to be allocated to the domestic market or the foreign one, usually simultaneously. These operators are corporations that concentrate a certain amount of product, developing in many cases all commercialization stages. They can even be considered as horticultural plants when they play the roles of receiving, sorting and packaging the goods, preparing properly them for shipment to the consumer markets or keeping them cold in their natural state, when market conditions make it advisable. The main tool they have for providers’ acquisition is the solvency offered to the producer.

A figure with a similar performance to the stockists is the named “exporter”. It is an agent of particular importance in the marketing of citrus. They perform purchasing functions, collection, sorting, grading, packing, storage and preservation, transport, sale and financing of the fruit. Normally, the exporter has concentrated its activities in the marketing of the best qualities of the fruit, according to the demands of the foreign markets.

Horticultural centers

It is simply a new name in the modern supply chain, as it can refer to entities such as cooperatives, auctions (“alhóndigas”) or stockists in origin.

The characteristics that best define them in terms of the organization of the supply chain are, firstly, that perform product handling as well as marketing functions typical of intermediaries, and, secondly, by their access to modern channels both domestic and export. Due to the importance in preparation of fruits and vegetables and the relative nearness to consumers that horticultural centers have, these figures are key to the commercialization of these products. These horticultural centers can belong to agricultural cooperatives, to SATs (companies of agricultural transformation), to large producers and, to a lesser extent, to wholesalers in origin, appearing sometimes associated to an auction or other appointed actors. The horticultural centers are nowadays one of the supply chain´s members at source most dynamic. The eminently export-oriented nature of horticultural centers makes them highly permeable to foreign equity, which in almost all cases, comes from wholesalers. One of the remarkable features of the Spanish horticulture is the existence of horizontal and vertical linkages between firms, sometimes because they are integrated in the same group of companies and others because one company can be a partner in many different others. In any case, the creation of these groups allows to concentrate supply, to plan their offering and delivery, to prove a greater number of services to both suppliers and customers, to establish stable relations with both and, ultimately, to meet better the requirements and the high market power of their customers, ie the mass distribution and its purchase platforms (Martínez Castro and Rebollo, 2008).

Joint horticultural centers (horizontal integration)

In addition to auctions and individual horticultural centers, other type of business operates in origin, whose primary function is commercial one, highlighting consortia and second degree cooperatives. In both cases they are independent companies but participated by others that are grouped in order to meet purchase orders, especially considering volumes, product range, risk and investment, which none could undertake independently. To strengthen overseas sales occurs exporters consortia that implement subsidiaries in other European countries or get involved in other foreign distribution-related companies. In the domestic market, they reach agreements with companies from other Spanish regions in order to increase the range of products and to ensure the supply of product.

Companies owned by big European retailers (vertical integration)

This figure appeared in the modern supply chain has become very important. These companies generally get supplied from horticultural centers to subsequently distribute the product to their own stores, both in Spain and in other European countries.

Thus, some large transnational retail groups have developed their own marketing companies or established exclusive distribution agreements with horticultural centers for the supply of fruits and vegetables for their supermarkets both in Spain and the rest of Europe. These companies owned by the supermarket chains usually sell exclusively to its parent companies. These companies are supplied from cooperatives, associated companies and private intermediaries (Fernandez Nogales et al., 2006; Martinez Castro and Rebollo, 2008).

5. SUPPLY CHAIN ORGANIZATION AS FACTOR OF ITS INTERNAL PERFORMANCE AND FOOD SAFETY: THE SPANISH CASE

So, given the above description of the Spanish distribution channels and its actors (traditional or long and modern or short), we describe now the relationships that exist between their organizational structures and channel performance aspects as well as the food safety management.

Spain is an economy purely exporter of fruits and vegetables. A long-term solution to maintain international demand lies in building trust and confidence of importers in the quality and safety of their food supply systems. This requires improvements in national food control and private quality programs implemented throughout the supply chain. In order to note the "good practice" in the fresh products safety and quality within the food export chain, it is necessary to implement inspections and certifications.

In supply channels already established and organized, as in the case of Spanish, it is possible a coordination of safety and quality through the supply relationships with retailers or through a centralized performance. In the case of products that are freshly transported and consumed, this coordination of the whole supply chain can influence on food safety and quality (Zepp et al., 1998).

Furthermore, the high perishable nature of fresh produce and susceptibility to damage and disease pre and post harvest is what imposes high standards for quality assurance. Similarly, the demands on the market of Spanish fruit and vegetables tend to be significantly high, so that compliance with these standards can require a large initial investment in quality control systems.

Another key to product quality and safety management throughout the supply chain of fresh produce is traceability, which allows product tracking and responsibility assignment at every stage of the chain. Currently, the ability to track fresh produce production and handling practices is required by the binomial importer / distributor, and all operations, from planting to export, must be documented. This approach ensures a better understanding of the steps and damages that fruit and vegetables might have suffered (Ait-Oubahou and El-Otmani, 2000).

In recent years, the production and evolution of the market has been very positive, but Spanish producers have had to face internal and external problems. The competitive advantages of Spanish vegetable production focus on low production costs and production schedule that is separate of the nearby European competitors (France, the Netherlands and Italy). But in spite of that, in the last decade, the Spanish horticultural sector has been losing competitiveness through an inadequate modernization of production and marketing structures.

One of the main problems for the Spanish fresh produce sector is to have a fragmented and small-scale production. In the framework of the competition from third countries and the concentration of demand (with growing needs) there is an urgent need to strengthen the Spanish producer organizations and vertical integration processes.

In recent years, in Spain there has been a increasingly concentrated demand in the food supply chain. This, together with the fragmentation of supply has caused serious imbalances in the markets, giving exporters a weak position in it. The consequences of the fragmented supply of Spanish exporters are multiple:

- It prevents companies from increasing their added value within the chain.
- Inadequate design and promotion.
- It does not allow exporting companies to make large commercial commitments.
- Higher marketing costs.
- It weakens the position of professionals and associations in their ability to pressure the national administration and the EU, in order to defend their interests and their position in the Common Agricultural Policy.

It deserves special mention that these weaknesses of Spanish horticultural exports are becoming more significant in an international context of increasing concentration in target markets, increased competition from other countries and changes in consumption patterns. To cope these changes with adequate guarantees, it is necessary to have a strong commercial and export infrastructure (Aznar, 2005). It must be launched a proper cooperation system among different Spanish exporting companies or to opt for forms of vertical and horizontal integration that allow to deal the identified weaknesses.

Furthermore, according to Poole et al. (2002), the food commercialization systems can be viewed as a chain of people and companies that produce, deliver and consume food. The food supply chain does not only refer to the offering of products, but it should also be seen as a series of interactive and interconnected flows of goods, services, incentives and information between the different participants in the distribution chain.

The number, size and functions of the Spanish alimentary companies within the chain, as well as their market access and competitiveness of the system described in the previous sections have become structural features. Enterprises, by interlinking their individual strategies, shape the performance of the system. The results, in terms of efficiency and effectiveness, are the performance characteristics.

Thus, the efficiency, considered as margins between stages, the added value and the profitability are the higher performance indicators in the Spanish agro-food system, being proved the paramount importance of the food safety. The significant coordination between the different actors of the channel is probably one of the biggest advantages that Spanish operators have to achieve the required high level of performance and safety.

In general, Spanish exports count on a high efficiency in their organization. The direct connection existing between exporters and distribution companies gives more flexibility and better information through the supply chain than the observed one in other countries. This is one of the arguments that highlights the integrated marketing process followed by Spanish companies compared to others where processes where there is no a producer-distributor continuing experience.

To achieve the quality levels demanded by the market, the supply chain in Spain has a great implementation of inspection and certification systems. Some of these controls are carried out by governmental authorities, both national and destination countries (based on government regulations), while others are conducted by private organizations (ie third-party certifications), on behalf of importers/distributors and based on particular specifications.

From a practical point of view, in the marketing stage where exporters receive the products of their suppliers, a series of quality control and safety are carried out such as:

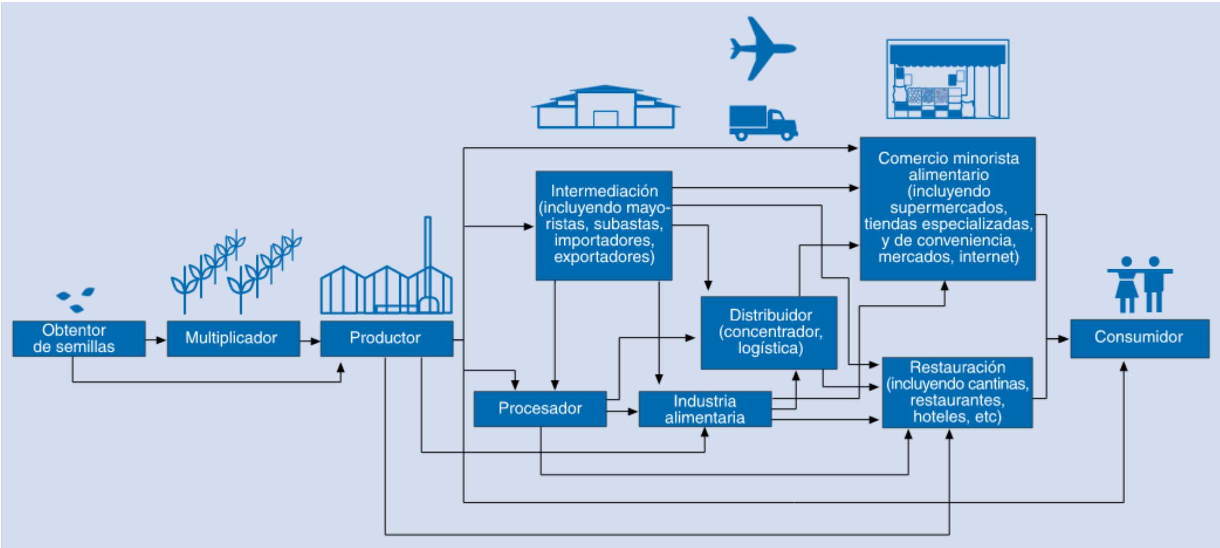
- Quality and weight of the product as well as controlled labels for conformance to specifications.
- Products inspected for physical contaminants and mechanical damage, including chilling injury.
- Product ripeness evaluation.

- Product sampling for specific quality tests (eg, the sugar content in melons) and product sampling for phytosanitary purposes.

- Product sampling for monitoring pesticide residues.

The system implemented mostly in Spanish production areas to achieve an accurate and timely traceability is by filling in records of production practices in terms of safety and quality management throughout all stages of the distribution chain. Depending on the type of channel, between the two prominent in Spain (the traditional or the modern one), monitoring of these records generates a greater or lesser confidence level according to the provision of information about the production practices and the knowledge of the exporter on these production practices and the ability to control or collect information about them. This occurs both in the traditional or “long” channel and the “short” or modern one (Briz et al., 2007).

Figure 5: Flow of the horticultural product from seed to the consumer.



Source: Rabobank.

In regard to the export activity, given the current Spanish fruit and vegetables supply chain´s structure, the different export systems that occur mostly in the Spanish sector are the indirect one through an intermediary and the direct one through creating its own distribution companies. The indirect way is less risky and requires less resource allocation, but the direct method makes possible higher potential incomes in a sustainable way. However, although the export operations allow significant growth to the companies, they are not assured neither a continued expansion nor the maintenance of the abroad market share. To get this, they need to progress in their process of internationalization.

Moreover, in the international framework are appearing a series of changes that are shaping a new baseline scenario and that pose a threat to the industry.

Companies, which have resorted to creating their own distribution subsidiaries in the countries of destination of their exports, are increasing the market share and getting to ensure the continuity of sales through a greater connection with the target markets. In addition, they get closer to the consumer, what allow them to better understand changes in consumers´ trends and to enable to try to influence them.

In this sense, Gracia and Albisu (2004) in his analysis of the Spanish food industry say the industry should be aware of the importance of a better knowledge of the market, especially in the case of small and medium agro-industries and that it is necessary to have a constant concern for the development of the markets and the right tools for an aggressive marketing of its products.

At the other end, and origin of the supply chain, some Spanish companies (wholesalers in origin, importers, traditional channel retailers, etc) have established production facilities in other countries that meet “a priori” the right conditions (such as Morocco). In this way, they are able to make their procurement from various sources during the whole season and to reduce the risk of not having an adequate supply in the event of adverse weather conditions or viral problems in one of the production sites. It also allows them to have large quantities of product, to complete in variety and quality the range of products offered and to expand the delivery schedule. All this helps to improve their ability to react to the requirements of target markets and retailers. While it is true that direct investment abroad can potentially generate all the mentioned advantages, it is also true that this is the strategy of entry into a foreign country with highest risk due to the large amount of resources needed to be assigned, therefore it is only reserved to the largest operators in the chain. Given this requirement, smaller companies face significant limitations due to its lower resource availability. This is the major bottleneck for the sector to carry this kind of investment out, since it consists mostly of small and medium enterprises. Although this configuration has not prevented significant volumes of sales made in foreign markets, it is nonetheless a relevant limitation to the internationalization processes through highly committed strategies such as direct investment abroad. Therefore, to implement it, it is necessary to increase the average size of the companies operating in the sector and / or to develop intercompany mechanisms (Aznar, 2007).

From the all above, from the different of Spanish production areas to the final consumer grows an international tangle of sales channels, intermediaries, transporters, processors, etc, each one with their specific needs, to which the producer must also pay attention, in addition to understanding the determinants of the final consumer demand.

Given the structure of the international market, Spanish exporters are increasingly following a strategy of market segmentation based on the purchasing power of consumers, who are primarily located in the countries with a high income level. It is to be considered that exporters have behind them many producers and in front of them a small number of traders in close contact with end consumers. Thus, the producer collects in the commercialization process all the disadvantages described by the oligopoly theory and some more. For example, the fierce price competition is among the first, the need to conform to the private standards set by buyers can also be seen as a form of pressure on prices.

Furthermore, this state of affairs has created a new and important dependence to Spanish producers and marketers of information flows, including especially the one relating to food quality and safety, both within the domestic market and the export one, which have become increasingly complex. The necessary trust between channel operators originates from these information flows. For example, in open markets, with transactions and price notifications, it is simply enough a product standardization and information about sold quantities and price levels to allow the producer to know the current market situation and requirements. However, with the developments in commercialization mentioned above, this information, in the unlikely event that it is publicly available, it is not sufficient as a guide, and other sources must be tapped. This greatly complicates the processes of obtaining, reporting and flow of information, which can not be limited, however useful it may be, only to the information flowing along the supply chain, for the obvious reason that each actor emits the one which is favorable or essential for him.

The structure of the value chain is another determinant of the situations faced by Spanish producers and traders. In Europe, reference framework for Spanish agriculture, the general trend is that the retail distribution tends to concentrate, acquiring the different types of supermarkets an increasing final consumer market share, at the expense of traditional stores, street markets and other similar forms.

To the extent that big retailers are growing and concentrating, they are establishing their ways of working and requirements for their suppliers. Private certification schemes are one of the most visible in the way that they are even becoming a true "license to sell". In its constant quest to improve the efficiency of supply, major Spanish retail groups, foreign ones with stores in Spain, or just importers in destination, introduce their ways of working and operating methods accelerating with it structural changes in the Spanish supply chain. It is not surprising then, that, for example, the origin of industrial already cleaned and cut packaging of fresh fruits and vegetables is the requirement of these actors to have the fresh produce presented that way (Merino, 2007).

At the time that trade grows in complexity, the requirements also rise embodied in the demands related to food safety, logistics, traceability, etc, which increase the costs and difficulties to get involved in this trade, what, in some cases, has led to some structural simplification of the same by making companies disappear. The result is a smaller number of operators but with a more organizational capacity as well as availability of capital and "know -how".

Finally, as the influence of large retailers and large food service companies on the Spanish horticultural supply chain is increasing, the coordination of the different steps of the same is becoming essential. It is occurring that some commercial intermediary companies are gradually moving away from merely acting as an intermediary to develop coordination functions between different stages within the supply chain. These companies trade both with information and with products.

Table 1. Influence of the supply chain structure on its performance and the food safety management.

	TRADITIONAL CHANNEL	MODERN CHANNEL
INFLUENCE OF STRUCTURE OF THE CHANNEL IN FOOD SAFETY		
Inspection and certification implementation to control "best practices"	Less impact to providers	High level of implementation and requirement for producers and suppliers
Safety and quality coordination through supply relationships with retailers individually or through a centralized entity	Little demand from national central markets operators	Mandatory in both cases
Initial investment in quality control and food safety system to meet requirements in the final market of fruit and vegetables	Lower for this channel operators	They can become important and always demanded by large retailers and retailers
Traceability as a key to product quality and safety management	There is a complete implementation and monitoring by all operators	Strict from producer to consumer
Food safety, logistics, traceability requirements, etc., have led to some structural simplification of the channel	Do not become determinants in survival of operators	Increase in costs and difficulty to participate in this channel leading to the demise of companies
Information flows dependence, including especially the one relating to food safety and quality	It has undergone a little evolution. Confidence generated in one on one relationships	Growing complexity due to increasing requirements and subsequent monitoring and verification systems
Implementation of inspection and certification systems	There are still uncertified operators. Lower demand from retailers and consumers	Fully extended to operators of this channel
Coordination between the different actors of the channel to achieve a high level of performance and food safety	Transaction oriented interrelationships	Standardized communication and certification systems.
INFLUENCE OF THE STRUCTURE OF THE CHANNEL IN SECTOR PERFORMANCE		
Empowering producer organizations and vertical integration because of a fragmented and small-scale production.	It remains possible for small suppliers to deal with retailers. Few cases of vertical integration	Need to grow in size to meet the requirements of retailers. Integration tendency towards the production phase.
Flexibility and better information access through the supply chain by direct	Existence of various stages of intermediation	Predominance of regular procurement programs. Very few intermediaries.

existing connection between exporters and retail companies		
Integrated commercialization process and continuous experience producer-trader	Medium level of implementation. Rather lower in the case of producer	Their tendency is to increase. The producer is always represented by a larger organization
Trust generation and provision of information about production practices	Trust between operators comes not only from this type of information so that it is not imposed so strictly	Required and checked through the requirement of certification by independent entities
Indirect export through an intermediary and direct by creating its own distribution companies	Predominance of intermediation. Export is limited to larger companies in both retailers and wholesalers in origin	Companies with appropriate dimension to undertake direct export
Knowledge and concern about market developments	Low fluency of this type of information along the channel	Consumer studies made by retailers. Dissemination of such a information through quality requirements
Production in other countries to improve their position on the requirements of final markets	Only for the biggest operators which are already producers in Spain	Appearing vertical integration processes. Serving the retail firms creates the need to internationalize the production
Segmentation and proximity to the final market	Poorly informed and demanding consumers	Design of product, services and processes along the channel imposed by retailers based on a consumer focus
Processes of obtaining, reporting and flow of information	Great subjectivity applied by each operator for its own purpose	Standardization process and audit by third bodies of information downstream
Value chain structure	Levels of power remain more stable. Loss of market share against the retail industry and the modern supply chain	The big distribution tends to concentrate and increase its dominance of the channel
Coordination of the different steps of the supply chain	There is opacity between a link and the next in the value chain. Widespread implications and openness between the channel members are not generated	It is becoming imperative. Intermediary companies assume coordination functions

Source: own elaboration.

6. FOOD SAFETY IN SPAIN

Large retailers, mainly the one focused on a better quality product, was responsible for the establishment of production standards that affect farm stage, handling and storage conditions, and transportation. These protocols were the antecedents of EUREP GAP, GLOBAL GAP and other certifications anticipating the regulations of hygiene and traceability now legally required. Initially, they were launched as a mechanism for competition among brands and now, when certifications are widespread, they still use some proper ratios in the same way. Moreover, the existence of different certifications also provides category management and allows adequate traceability of all processes as well as an easier location of inefficiencies. The imposition of these protocols has profoundly altered the structures and the way of working of the value chain that targets its products to the Spanish large retailers, making it hard to access it from other operators, and thus, causing a segmentation of agricultural and handling sectors with great implications in the medium term (Langreo, 2009).

On the other hand, the health and hygiene management plays an essential role in today's consumer, with responsibility throughout the entire food chain. Concerns about the nutritional aspects have given way to the concerns about the functional ones, ie, those that influence health. Consumers want the Administration to regulate and monitor food markets to offer a health guarantee and adequate information. The food chain must deal with this new phenomenon coordinating the functions of the actors involved in crisis situations: risk assessors (scientists and experts), risk managers (officials, policy-makers to take appropriate measures) and risk communicators (press, radio and television). A mismatch of their duties and lack of joint action can create panic situations (Briz and Felipe, 2006).

Likewise, consumers are increasingly concerned about the impact that companies have on society. This approach has been picked up by the Spanish modern distribution concluding that the buyer is willing to pay a premium for products whose production has been careful with the environment and working conditions. Retailers want to get ahead of the competition in order to be placed in an advantageous position in case that the Administration becomes stricter.

Due to all this, large retailers are increasingly more concerned about controlling their suppliers. For her, the ability to quickly react to problems arising from food safety and quality is a source of differentiation. Ultimately, the retailer tends to require health checks on their suppliers to protect their brand image. In this sense several initiatives were born which are still active and applied in Spain nowadays. They tend to establish increasingly stringent controls: 1) The protocol British Retail Consortium (BRC) Global Standard Food developed by British mass retailers in order to create a standard of best practices to ensure food safety (HACCP, quality management, product and process controls, as well as proper environment in the factory); 2) International Food Standard (IFS) founded by French and German mass retailers seeking to ensure the implementation of HACCP rules and, ultimately, the proper management of food safety; or 3) GLOBAL-GAP, as it is required by many retail chains as a way of ensuring the use of good agricultural practices (Garcia Torrente and Pérez Mesa, 2007).

Consequently, the Quality Program of a top level retailer in Spain involves all actors taking part in the process and implies the following actions (Bernal and Lopez, 2002):

- Suppliers: submission to a previous audit to verify that the quality and safety systems applied in their production processes ensure that supplied food meets the necessary requirements. Parallely, collaboration with small and medium enterprises, to advise on all aspects of health security systems and working methods and facilities.

- Warehouses: Implementation of systems to monitor product quality, temperatures, expiry dates, ripeness, freshness and handling of fruits and vegetables.

- Hypermarkets: application of preventive methods defined in the system of Hazard Analysis and Critical Control Points, with implementation in all sections of foodstuffs. Monitoring all points that can affect food safety (cod storge, supermarket shelves, cleaning and disinfection, handling, receiving, freshness controlling...). Steadily execution of microbiological analysis of samples of perishable products to check their sanitary and hygienic conditions made by internal experts and external laboratories.

- Crisis management: existence of a reagent system designed to avoid any risk throughout the food chain through an internal warning which is triggered immediately when the slightest doubt on the safety of a product exists. This mechanism starts with the immediate immobilization and removal of any items that may pose the least risk to the health of consumers. This operation is launched in both hypermarkets and logistics platforms, to perform analyses and corresponding checks under the strictest parameters of food safety. The controlled production system is supplemented with a traceable method of all food products and ingredients involved in obtaining them, in order to know the path of the product along the supply chain.

It must be added that, although the Spanish practical approach to food safety is very similar to other European countries, as their needs closely resemble (Agut and Comellas, 2009), one of the key characteristics of the food governance in Spain is that it is being introduced not as a response to social changes as in many other industrialized countries, but on the contrary, the government is introducing legislative requirements from the EU in a context of low social pressure from consumers.

In Spain, it is not clear to what extent consumer organizations are representative of consumers in general. His role in the committees of Spanish Consumer Agency, Food Safety and Nutrition (AECOSAN) indicates that they are not necessarily prepared for functions that European food law expects from them.

Equally, industry cooperation is vital to the functioning of the food safety system. In fact, the new shape of regulation assigns to the industry the role of conducting health checks and puts much emphasis on direct cooperation among industry, regulators and other stakeholders. The idea of self-control by the industry in the entire food supply chain is new to the Spanish food system. Now the industry is involved in the decision making of the Food Agency, along with the other actors mentioned above. This, of course, implies more communication. This type of direct exchange, especially between industry and civil society, was almost completely absent in Spain before the creation of EASA, and this is noticeable in the prevailing perception of industry representatives of the unimportance of society civil in the management of food crises (Muñoz et al., 2004).

All this raises questions about the effectiveness of EU food safety framework in Spain, while pointing to the need to adapt the regulatory governance to specific local situations. In the current Spanish context, which differs from the assumptions of EU legislation, governance (and confidence building) may not work as expected, because many of the social actors do not necessarily understand the role the European food governance system implicitly assigns to them.

While in most industrialized countries, regulatory governance can be interpreted as the result of a process of social learning, in Spain, is precisely the induction of governance across the EU legislation which can boost this social learning. Thus, it is unlikely that, without a fully transposition of the objectives of independence, transparency, excellence and participation to the regulatory practice, it becomes possible to regain the lost trust of consumers (Todt et al., 2007).

7. CONCLUSIONS

Globally, the distribution sector of fruit and vegetables in Spain can be seen as a set of actors that interact as a dynamic network with a predominance of vertical coordination strong and weak relationships, where there is a traditional channel with numerous members until the final consumer, also called traditional, and another where the number of intermediaries is reduced due to the expansion of large retailers and their activities within the channel, also called short or modern, in which the added value of product is more unbalanced in favor of retail companies which, to meet and to accommodate to the new demands of the final consumer, pressure along the channel until the producer in order to gain a greater control within it. These changes in consumers and consequent pressures generated in the channel by large retailers (mostly foreign capital supermarket chains in cases with a percentage in the share capital of horticultural centers) have provoked adaptive processes to be faced by the rest of the members of the Spanish supply chain that have been mainly performed through concentration and specialization strategies.

For all this, currently, it is possible to speak about new peculiarities of the Spanish distribution of fruit and vegetables, also originating in the modern global market expectations. His effect can be seen in the increasing export propensity of the chain traders operation by modifying their structures in search for market penetration and optimal benefit. However, in the commercialization stage, the Spanish sector of fruits and vegetables is not currently comparable, and therefore competitive, with other European Union member states, especially with the Netherlands.

Coupled with this competitiveness are the food safety requirements required primarily by European markets, of compulsory compliance to take part of them, and driven from the major retailers. In this respect, the demands and interests of consumers, Administration and Spanish private companies are no different to the European context ones. But the normative development, particular mentality of channel agents and expectations of final demand has its own peculiarities in Spain, implying that the food safety risk management throughout the Spanish supply chain has greater level of difficulties in their development.

Influence of the chain structure on the sector food safety

Specific conclusions can be drawn concerning the influence of the chain structure on the sector food safety as follows.

The implementation of inspections and certifications to control practices have a lower impact on the traditional channel suppliers, while in the modern exists a high level of implementation and requirement for producers and suppliers.

The initial investment in quality control and food safety systems to meet requirements in the final market of fruit and vegetables may become important in the modern channel where they are always demanded by the major retailers.

The traceability, as key to product quality, and food safety management must be comply by the producer until the consumer in the modern channel, including food safety requirements, logistics, etc... In addition, there has been a certain structural simplification and an increase of costs and difficulty to operate in this channel. In the traditional channel, there is not a complete implementation and monitoring of these guidelines by all operators due to that these standards are not determinants for their survival.

The reliance on information flows, including especially food safety and quality aspects, has shown a little evolution in the traditional channel, given that the confidence is established mainly in personal relationships one by one, in contrast to the modern one where this confidence is established by increasing requirements and subsequent monitoring and verification systems.

Influence of the chain structure on the supply chain performance

With regard to the influence of the channel structure on the supply chain performance, we find the following aspects.

In the traditional channel, where there are few cases of vertical integration, it is still possible for small retailers and suppliers to deal with retailers. Meanwhile, in the modern channel exists the need to grow in size and the trend to promote vertical integration processes towards the phase of production.

The greater flexibility and better information through the supply chain, by the direct connection between exporters and distribution companies, is given in the modern channel where regular programmes predominate, including few intermediaries.

There is an increasing trend of implementing integrated commercialization processes and producer-distributor continuing experience relationships in the modern channel where the producer, except exceptions, is always represented by a larger organization in origin. In the traditional channel, the level of application of these processes is more moderate.

Confidence among traders in the traditional channel comes not only from the provision of information concerning production and processing practices to the customer, so this coordination is not imposed so strictly, whereas in the modern channel this information is required and proven through the requirement of certifications by independent entities.

The intermediation prevails in the traditional channel and direct export activities are limited to larger companies, both retail and wholesale in origin. Direct exports are much more common in the modern channel for companies with a right dimension.

The knowledge of market development is a type of information that isn´t transmited fluently along the traditional channel. On the other hand, given that continued studies and surveys on consumers are developed by large retailers, the more important agents in the modern channel, there is a spread and response to this information along this supply chain through the imposition of quality requirements, labeling, packaging, etc...

The production in third countries to improve the positioning against the requirements of target markets has been mostly reserved in the traditional channel to the biggest operators which are already producers in Spain. By other side, again, the fact of supplying to large scale retailers creates a need, the internationalization of the production, which causes vertical integration processes within the modern channel.

The traditional channel consumers are poorly informed and less demanding while final customers are the center of the design of products, services and processes imposed by the mass distribution along the modern channel.

Related to the structure of the value chain, the power structure in the traditional channel has remained stable in recent times, while a loss of market share has happened in favour of the mass retail industry and its modern supply chain.

Given the opacity existing between a link and the next in the value chain, widespread implications and openness between traditional channel members don´t occur. At the same time, the coordination of the different steps of the supply chain is becoming essential in the modern channel, making brokerage firms also assume coordination functions.

ANNEX. Additional aspects about Spanish fruit and vegetables export sector.

The strategic suppliers to Europe are Spain and the Netherlands, this last one also has the characteristic of hub for foreign production (mainly Spanish) and its maintenance is essential for sustaining the Spanish sector. Spain is classified as a purely sender country and not re-exporter, appearing, contrary to what might seem an underdeveloped commercial sector (Ministry of Agriculture, Fisheries and Food, 2006).

The channel used by companies to export is not much different to the one employed in the domestic market. It is only sold directly to central purchasing bodies around a quarter of the total, the rest is commercialized by the intervention of importers and brokers who reintroduce again the product in the channel, even sometimes re-exporting the production to new areas of consumption. Some of the central purchasing and re-exporters located in Spain with branches in destination use one channel or another as appropriate. The export process varies depending on the destination country (Pérez Mesa, 2010). Among the priority customers (Germany, France, UK and the Netherlands), Germany is the country where the sale is made in a more direct way. The Dutch case is the opposite, since a high percentage of shipments are destined for re-export. The complexity of sales can be noticed when we observ that The Greenery (major producer in the Netherlands) as well as acting as an importer in different markets, is located in Spain. In short, it is clear, as happened in the domestic market, that in many transactions the final customer is unknown and the importing company acts as mere commissionist.

Distribution chains controll, directly or indirectly, the sale flows of fruits and vegetables. Due to their size they have become large multinationals operating in many countries. For example, in Spain the sales of fruit and vegetables made through supermarkets and hypermarkets signify a 40% (Mercasa, 2010), another important channel is constituted by greengrocers with a similar percentage, however, in Germany, the share of modern distribution rises to 81% (GFK, 2010). These organizations develop rules and standards to its suppliers based on identified consumer trends. On the other hand, even though these companies are large multinationals there is significant competition in its sector to maintain and expand the market share. We can say, in this sense, that consumers and domestic competition mark their strategies, which in tactical and operational level, have to transmit to suppliers (Pérez Mesa, 2010).

Acknowledgments

This research was founded by the European project "Food safety regulations, market access and international competition, SAFEMED" (nº 219262 FP7-ERANET ARIMNET). Also, we would like to thank the funds by Spanish MINECO and FEDER aid (project ECO2014-52268) and by the Junta de Andalucía (project SEJ-5827, Consejería de Economía, Innovación y Ciencia).

REFERENCES

Agut, M. and Comellas, Ll. (2009). "Focus Research on Food Safety and Food Analysis in Spain". Chimica Oggi, 27, 5, pp. 46-47.

Ait-Oubahou, A. and El-Otmani, M., (2000). "Quality Assurance for Export-oriented Citrus and Tomato Fruit in Morocco in Quality Assurance in Agricultural Produce". G.I. Johnson, Le Van To, Nguyen Duy Duc y M.C. Webb, (Eds.) ACIAR Proceedings 100.

Áznar, J. Á. (2005). "Caracterización de la exportación hortícola de Almería". Economía Andaluza, Informe Anual del Sector Agrario en Andalucía 2005.

Áznar, J. Á., (2007). "El proceso de internacionalización comercial de la horticultura intensiva almeriense". Revista de Estudios Empresariales, 1, pp. 55-72.

Bernal, J. M. a López, P., (2002). "La seguridad alimentaria es responsabilidad de todos". Distribución y Consumo, March-April, pp. 36-38.

Briz, J. and De Felipe, I., (2006). "La cadena alimentaria en España: retos y perspectivas". Distribución y Consumo, November-December, pp. 71-85.

Briz, J., García, M. and de Felipe, I., (2007). "International Marketing and International Trade of Quality Food Products". Contributed Paper prepared for presentation at the 105th EAAE Seminar, Bologna, Italy, March 8-10.

CAP (Consejería de Agricultura y Pesca de la Junta de Andalucía), (2002). "*Plan del Sector Hortícola de Almería*." Junta de Andalucía, Sevilla.

Casares. J and Rebollo, A., (2005). "*Distribución Comercial*". Civitas Ediciones.

Cruz, I., Yagüe, M., J., Rebollo, A. and Oubiña, J., (2005). “Concentración y competencia en la distribución minorista en España” Información Comercial Española, 779, pp. 9-36.

Fernández, A., Martínez, E. and Rebollo, A., (2006). “La reorganización de los canales de comercialización”. Información Comercial Española, 828, p. 187.

García Azcárate, T., (2007). “La reorganización de los canales de comercialización”. Mediterráneo Económico, 11.

García Torrente, R. and Pérez Mesa, J. C. (2010). “Demanda Internacional y Control Biológico de Frutas y Hortalizas”. Cuadernos de Estudios Agroalimentarios, 1, pp. 111-122.

GFK, (2010). “Consumer behaviour within German supermarket shelves”. GfK Panel Services Deutschland.

Gómez, R. (2005). “La calidad en el comercio minorista”. Distribución y Consumo, January-February, pp. 24-27.

Gracia, A. and Albisu, L. M. (2004): “Evolución de la industria agroalimentaria española en las dos últimas décadas”. Economía Industrial, nº 355-356, pp. 197-210.

Langreo, A. and Benito, I., (2005). “Efectos de la aplicación de la trazabilidad y la normativa de higiene a la cadena de producción de alimentos”. Distribución y Consumo, January-February, pp. 39-49.

Langreo, A., (2009). “Nuevas estrategias de la distribución de frutas y hortalizas”. Distribución y Consumo, July-August, pp. 24-35.

Martín, V., (2005). “Calidad del servicio en la distribución comercial”. Distribución y Consumo, January-February, pp. 5-23.

Martínez Castro, E, and Rebollo, A., (2008). “El sistema de comercialización en origen de las frutas y hortalizas en fresco”. Distribución y Consumo, March-April, pp. 8-24.

Mercasa, (2006). “*Alimentación en España 2006. Producción, Industria, Distribución y Consumo.* Mercasa, Madrid.

Mercasa (2010). “Alimentación en España 2010”. http://www.munimerca.es/mercasa/alimentacion_2010/ [Seen 18-04-2011].

Merino, M., (2007). “La cadena de valor hortícola”. Horticultura Internacional, 58, July, pp. 14-23

Ministerio de Agricultura, Pesca y Alimentación, (2006). “Diagnóstico y Análisis Estratégico del Sector Agroalimentario Español: Análisis de la cadena de producción y distribución del sector de las frutas y hortalizas frescas”.

Muñoz, E., Todt, O., y Ponce, G., (2004). “Spanish consumer self-image – IF-CTS 2005/01”. IF, Madrid.

Pérez Mesa, J. C. and De Pablo, J., (2007). “Producción, comercio, consumo y reexportación de tomate en la Unión Europea”. Revista Española de Estudios Agrosociales y Pesqueros, 214, pp. 155-170.

Todt, O., (2003). “Designing trust”. Futures, 35, pp. 239–251.

Todt, O., Muñoz, E. and Plaza, M., (2007). “Food safety governance and social learning: The Spanish experience”. Food Control 18, 7, pp. 834-841.

Poole, N.D., Marshall, F. and Bhupal, D.S. (2002). “Air pollution effects and initiatives to improve food quality assurance in India”. Quarterly Journal of International Agriculture, 41, 4, pp. 363-386.

Zepp, G., Kuchler, F. and Lucier, G., (1998). “Food safety and fresh fruits and vegetables: is there a difference between imported and domestically produced products?”. Economic Research Service, USDA, Vegetables and Specialities/VGS-271, pp. 23-28.