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Identifying Value Drivers in Organic Food Supply Chains

Imen Arfa and Samir Mili

Institute of Economics, Geography and Demography (IEGD), Spanish National Research Council (CSIC), Spain
samir.mili@csic.es, arfa.imen1992@gmail.com

ABSTRACT

Appropriate value creation processes play a key role in the success of organic food supply chains in terms of effective response to consumer requirements and sustainability goals. In this study, we explore key drivers for value creation in the organic food industry, taking the Spanish organic olive supply chain as a representative case study. A business model survey was conducted with the participation of a highly qualified panel of experts to provide innovative options for value generation in the organic olive oil industry. Elicited expert judgements relate to the identification of the potential sources of adding value along the supply chain as a whole and among its different actors, as well as the factors that influence positively and negatively the adding-value formation. Findings contribute new ideas and pathways to develop innovative, effective and sustainable business models capable to generate value for companies, customers and the society as a whole. Results can be readily applied in real-world case studies to improve existing company business models.

Keywords: value creation; value drivers; business models; organic supply chain.

1. Introduction

Over the last two decades numerous agri-food industries have been facing economic, environmental and social struggles (low profits, biodiversity loss, climate change, rural depopulation). To reverse these difficulties, growing number of these industries have been undertaking significant steps toward transition from traditional to sustainable production models, especially organic production. Organic farming has been suggested as a feasible way to reduce the environmental impacts of agriculture, provide better products to consumers, and improve farmers' income (Malek *et al.*, 2019). It is well known that the organic farming system can be a solution to maintaining a sustainable agriculture as it favors the balance between economic, social and environmental functions (Reganold and Wachter, 2016). There is growing evidence indicating that organic farming reduces negative environmental impacts (Tuomisto *et al.,* 2012) and increases biodiversity (Tuck *et al.,* 2014) compared to conventional agriculture. Available information also reveals that the demand for organic food is growing rapidly as a consequence of increasing concerns about diet quality and environmental issues including climate change (Pawlewicz, 2019; Willer and Lernoud, 2019; European Commission, 2020).

At global level, on the supply side, from 1999 to 2018 the organic agricultural area has grown from 11 to 69.8 million hectares which is 1.4% of world agricultural land, and the number of operators (producers, processors, exporters and importers) from 0.2 to more than 2.9 million, while the number of countries that have opted for this production system has doubled (Willer and Lernoud, 2019). On the demand side, global organic food sales have also grown significantly reaching a value of 92 billion euros in 2017 (Willer and Lernoud, 2019).

Similarly, in Spain, the number of operators (producers, processors and marketers) dedicated to this activity has been increasing from 396 registered in 1991 to 44 282 in 2018 (MAPA, 2019). According to the same data source, the certified organic area has increased from 4 235 hectares in 1991 to 2 246 475 hectares in 2018 which represents 8.9% of the total Utilized Agricultural Area. Spain is the leader in Europe in terms of organic area and the seventh in consumption by value. Major organic productions are cereals (206 119 hectares), olives

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(195 114 hectares), nuts (146 977 hectares), vineyards (106 897 hectares, leguminous crops (30 484 hectares), and vegetables (20 537 hectares). These data show the current and future potential of the organic market, supposedly favored by the growing interest in healthy eating and the conservation of the environment and sustainable development.

However, in Spain, despite the continuous growth of the domestic market for organic products – including organic olive oil, there is still a lengthy path ahead as demand still is quite low. Yet, annual per capita expenditure in these products account for only 32 euros compared to 2 134 euros in total food in 2015 (MAPAMA, 2016), representing olive oil 12% of total spending on organic food. This constitutes one of the main concerns of the whole organic sector in Spain. The lack of appropriate promotion, consumer misinformation about this type of products, the scarcity of points of sale, and price differential with respect to conventional products, appear among the major reasons behind this reduced domestic demand (Parras *et al*., 2011; Marques Vieira *et al*., 2013). The gap between domestic supply and demand makes Spain an eminently exporting country of organic products, including olive oil. Moreover, as in many other products, the predominant business model in the Spanish olive market (organic and conventional) is largely based on low prices, high bulk share and high dependence on traditional markets, thereby placing the product at a competitive disadvantage in terms of value.

In this context, effective value creation processes are needed as they play a vital role in the success of organic operators in responding remuneratively to the increasing consumer demand for organic products while at the same time contributing to environmental and social functions in agricultural landscapes. Indeed, effective value creation models allow earning more revenues as well as attracting investors and establishing new partnerships. This refers not only to the economic value that can be captured but also the social and cultural values companies and organizations can sustain and foster in the long term.

Therefore, this contribution intends to identify key drivers and options for value creation in the organic food industry, taking the Spanish organic olive supply chain as a representative case study. This in turn will provide new ideas and processes to develop innovative, effective and sustainable business models capable to generate value for companies, customers and the society as a whole. To this end, a survey was conducted with the participation of a highly-qualified panel of experts in organic food supply chains in general and the organic olive supply chain in special. The main objective of the survey was eliciting the judgement of selected experts relating to the identification of the potential sources of adding value along the supply chain as a whole and among its major players, as well as the factors that influence positively and negatively the adding-value formation.

The study uses a questionnaire whose structure was conceived in such a way that it fits with the business model vision in order to the results can be readily implemented in real-world company business models. For that purpose, a business model vision for organic produce is proposed through an integrated framework combining the Canvas business model and the business model experimentation template approaches. The Canvas business model is a strategic management and entrepreneurial tool entailing nine components: key activities, key resources, value proposition, key partnerships, customer relationships, customer segments, distribution channels, cost structure, and revenue streams (Osterwalder and Pigneu, 2010). It allows any company to describe, design, challenge, invent, and pivot their business model. It is used in an interactive way to help to capture, visualize, understand, communicate and share the business logic. The Canvas value proposition makes explicit how value is created for customers, thereby helping to design products and services demanded by company customers.

The business model experimentation template (Sinfield *et al.*, 2012) comprises six components following a logical order each addressing a key question: (i) who is the target customer? (ii) what need is met for the customer? (iii) what offering the business will provide to address that need? (iv) how does the customer gain access to that offering? (v) what role will the business play in providing the offering? and (vi) how will the business earn a profit? The answer to each question will represent a decision with different possible outcomes in the templates represented by numbers. Choosing a different outcome for just one component can often result in a substantially different business model. According to Sinfiled *et al*. (2012), business model experimentation consists in a series of "thought experiments" that provide a means to methodically and routinely explore multiple business model alternatives, in order to enable business model innovation.

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Both approaches consider business model as a process to examine alternative paths to value creation in a business, and complement each other for conducting what-if scenario analysis of interrelated strategic choices. By using both the "canvas" and the "template", the business model provides entrepreneurs with a framework to take decisions, while encouraging them to seek complementary relationships among building blocks and components through unique combinations, and ensuring consistency with the goal of sustaining competitive advantage and profitability (Morris *et al*., 2005).

It should be pointed out that studies referring to innovative value creation processes in organic food business models are very scarce in Spain despite the relevance and topicality of this issue. This work intends to close at least in part this gap by providing new insights that can be used in organic companies for identifying potential innovation areas and developing new profit streams in their business models.

The remainder of the paper is organized as follows. Section 2 describes of the conceptual model and the methodology adopted. The results obtained in the business model survey are depicted and discussed in section 3. The last section presents the conclusions.

2. Research methodology

A two-stage methodology has been used to carry out the present study. In the first stage a conceptual framework has been constructed based on the business model and value creation literature as well as the assessment of recent developments and trends in organic versus conventional food markets including olive oil. In the second stage, a business model survey was conducted for collecting primary information aiming at generating new ideas and recommendations that supply chain operators may take into account in their value-creating strategies.

Conceptual model

The suggested conceptual model (Figure 1) represents to some extent a preliminary solution for creating and capturing value in the organic food supply chain. It is a framework formed by seven basic components representing each a building block in the creation of the product. The model allows the firms to understand how the different building blocks relate to each other to increase efficiency and effectiveness. The identification of the key resources and partners gives a clear idea of what value proposition the company needs to create for the target customer, which resources are needed and can result in cost savings for the company, and if they are sufficient to achieve the key activities. Furthermore, the identification of the activities that are key to producing the company’s value proposition helps to determine whether these activities can be carried out with key resources and partners and whether they meet the needs of the target customers and distributors.

The business model can contribute to determine what is the value created for customers and if it satisfies their needs. To carry out an effective and optimal value proposition the company needs first to know both the current and future customers needs and this is by two components: customer segmentation and customer relationship, which are essential parts of a company’s business model and are key to ensuring that the value proposition features are aligned with the segments characteristics and requirements. Besides, the optimization of the value proposed can influence the cost structure of the company. The first step for a firm obviously is to identify all costs associated with the business. A realistic understanding of the business costs is one of the hallmarks of a good business model. After identification it is important to list all the costs (fixed, variable and opportunity costs) on the model so they are visually present, and then create plans for each cost to observe whether the enterprise strategy is based on economies of scale (costs decrease as production increases) or economies of scope (costs are decreased by investing in business activities related to the core product). A revenue stream is the methodology a company follows to get its customer segments to buy its products or services. The firm needs to find an efficient method to convince and attract each customer segment to buy the corresponding product or service. Finally, after understanding the cost structure and the revenue streams the company can calculate the profit which is the difference between the revenue and costs, and thereby decide on how much it needs to invest in key resources to perform profitable and sustainable business activities.

Business model expert survey

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A business model survey was conducted through a structured questionnaire addressed to a selected expert panel at the highest level of experience and responsibility, including organic olive oil supply chain operators (producers, processors, distributors, exporters, and their professional associations), academic researchers and representatives of the public administration dealing with organic food supply chain challenges and issues. Experts contributed their judgements and opinions towards the expectations, needs and perceptions relating to organic olive oil, and how the different organic olive oil supply chain operators can contribute to more efficiency and value creation. Also, they have contributed their judgment on the key factors conditioning the formation process of the added value in the Spanish organic olive oil supply chain.

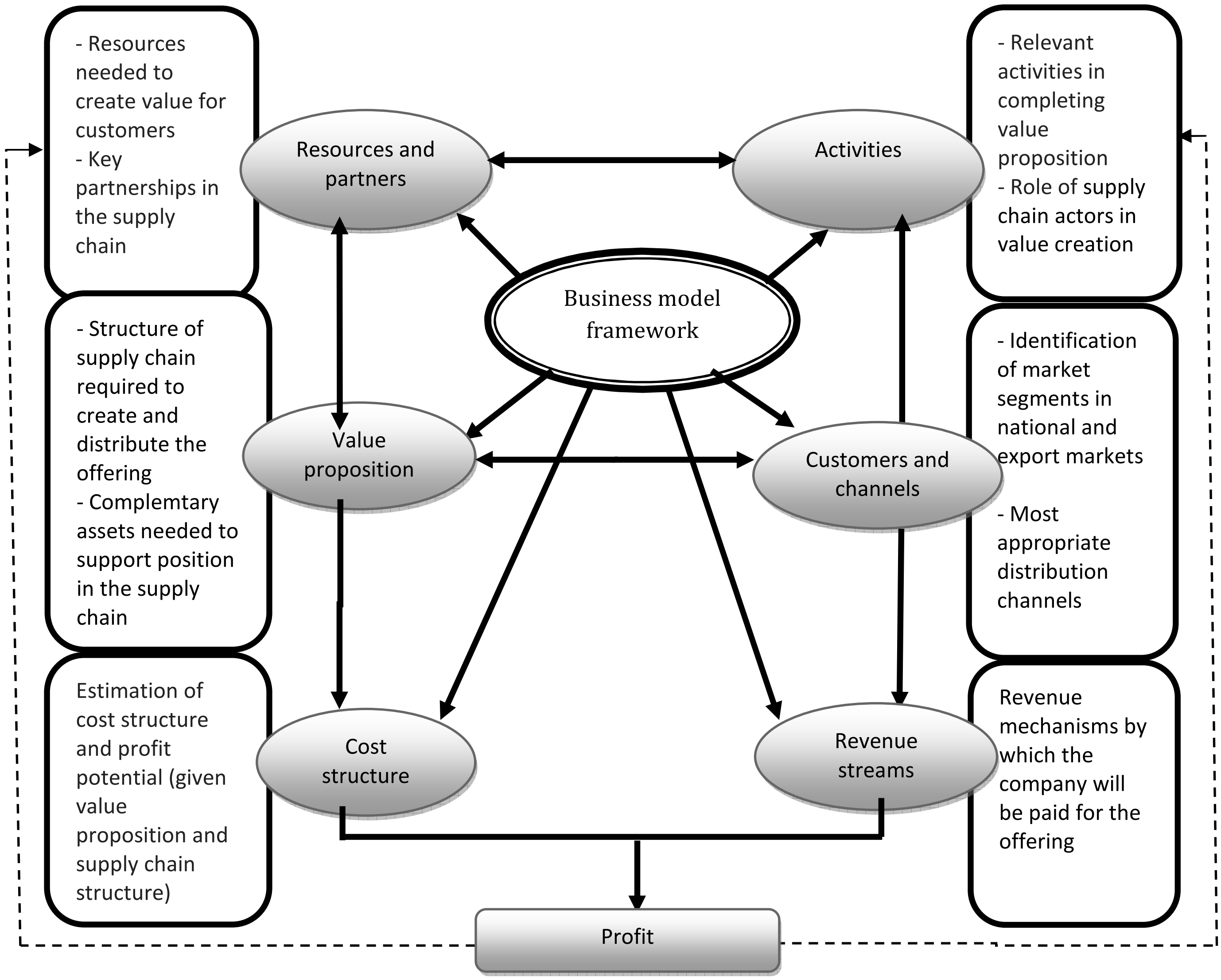

Figure 1: Suggested conceptuel model (Authors' elaboration).

The questionnaire was carefully drafted taking into consideration the different components of the conceptual model proposed in Figure 1. The questionnaire comprises three sections: (i) expectations, needs and perceptions relating to organic olive oil, including expected benefits from organic olive oil, consumer profile and distribution channels; (ii) business response to market expectations and value drivers, including the contribution of different supply chain players to value creation and the key partners in the process; (iii) factors influencing positively and negatively in value creation. A five-point Likert scale was used to assess the degree of importance, impact or suitability the experts assign to each item ranging from 1 (minimum valuation) to 5

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(maximum valuation). The questionnaire has been sent to 29 experts of whom 17 have responded effectively. This can be considered a fair response rate (58.6%) in this type of surveys.

The analysis of results features a quantitative analysis of the distribution of the responses as well as a qualitative integration of the comments provided by the experts and the own perceptions of the authors. The quantitative analysis consisted of the computation of the mean to determine the central position of the answers, and the standard deviation to give indication of the spread of responses around the overall mean. The use of the mean allows the identification of the factors that are considered as more relevant and influential. As a robust and widely used measure of dispersion (disagreement) within the responses, the standard deviation summarizes the amount by which every value varies from the overall mean, indicating how tightly the individual score values are bunched around the mean value. In this survey, the standard deviation in most responses is relatively low showing a high level of agreement between respondents. Moreover, minimum and maximum response values for each factor are displayed. The minimum and maximum portray the lowest and the highest score options that receive at least one response. They give further understanding of how responses are spread out along the scale.

3. Results and discussion

The views derived from the survey are subdivided into three sections according the structure of the questionnaire. The first section presents the expectations, needs and perceptions relating to organic olive oil. The second section deals with the business response to market expectations and value drivers, and the last section focuses on factors influencing the value creation process.

3.1. Expectations, needs and perceptions

Expected benefits from organic olive oil

Table 1 summarizes the expected benefits of organic olive oil compared to conventional production. According to experts, less soil and water contamination, and improved fertility and conservation of soils are the main expected benefits of organic olive oil compared to conventional production. This is in line with several studies finding that organic farming systems have greater soil carbon levels, better soil quality, and less soil erosion compared with conventional systems (Seufert and Ramankutty, 2017; Ramankutty *et al*., 2019; Malek *et al.*, 2019). In addition, organic farms generally have more plant diversity, greater faunal diversity (insects, soil fauna and microbes, birds) and often more habitat and landscape diversity. The expert panel also highlighted the importance of organic olive oil in increasing producers' income and improving resilience to climate change.

Although in a lesser extent, organic olive oil is seen as profitable for job creation in rural areas compared to conventional production. In Spain and in most developed countries organic production has become an economically and socially relevant agro-food activity which means that it offers jobs, provides a significant contribution to agricultural production and trade, and presents an attractive future, without forgetting its benefits for sustainable development. Moreover, organic farming has been shown to have some sociocultural strengths such as positive shifts in community economic development, and better employment of farm workers and cooperation among farmers (Reganold and Wachter, 2016).

Table 1. Expected benefits of organic olive oil compared to conventional production.

	Number of responses	Overall mean	Standard deviation	Min	Max
Improved product quality	17	3.53	1.04	1	5
Better food safety	17	3.71	1.23	1	5
Higher income for producers	17	4.12	0.68	3	5
Less soil and water contamination	17	4.88	0.32	4	5
Improved fertility and conservation of soils	17	4.65	0.59	3	5
Improved resilience to climate change	17	4.06	1.16	1	5
Better water use	17	3.18	1.15	1	5

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Biodiversity preservation	17	4.24	0.81	2	5
Job creation in rural areas	17	3.41	0.84	2	5
Contribution to circular economy	17	3.53	1.04	2	5

Note: Values represent mean importance on a five-point scale from “not important” to “very important”.

More understanding of how consumers establish their evaluations and their consequent purchasing decisions with respect to marketed organic olive oils is also important to EU policymakers and regulators. Table 2 shows that the most perceived preferences of organic olive oil that supply chain actors should satisfy are health and diet attributes along with high quality (organic extra virgin olive oil, crystal packaging). Organic consumers (regular and occasional) perceive the quality of the organic olive oil as a means to health, wellbeing, and sustainability (Zanoli and Naspetti, 2013). For organic food in general, the main motivations for consumption are health attributes followed by the absence of chemical synthesis, higher quality and better taste (Willer and Lernoud, 2019).

Regarding the packaging material, the non-crystal packaging remains in the view of consumers a lower quality indicator. According to several studies, glass packaging is mostly preferred in organic food and olive oil is no exception (Krystallys and Ness, 2005). Interestingly, innovative packaging design is considered among perceived preferences. It can attract more consumers and facilitate the use of the product (e.g. smart packaging of olive oil in Italy).

Furthermore, relatively high importance is granted to competitive price. The consumption of organic olive oil is still marginal (less than 0.6% of Spanish consumers buy it regularly, according to a survey by Yangui *et al*. (2016). Respondent’s reasons for not buying organic olive oil included the high price, the lack of availability in the supermarket where they buy food, or lack of information about organic food. However, other studies have shown that the low price of organic olive oil is not an important goal for consumers since higher price is usually perceived as indicator of higher quality (Zanoli and Naspetti, 2013).

Table 2. Perceived preferences of organic olive oil consumers to be satisfied by supply chain actors.

	Number of responses	Overall mean	Standard deviation	Min	Max
Environmentally sustainable production	17	3.82	0.98	2	5
Fair remuneration to farmers especially small farmers	16	3.38	1.05	2	5
Empowerment of rural areas	17	2.76	1.06	1	5
Health and diet	17	4.53	0.61	3	5
High quality: Extra virgin	16	4.38	0.60	3	5
Product with Protected Designation of Origin	16	2.81	1.13	1	5
Competitive Price	16	3.81	0.73	3	5
Fair trade	16	2.44	0.79	1	4
Eco-friendly packaging	16	3.38	1.11	1	5
Packaging capacity: Single-dose	10	2.40	1.28	1	4
1/4 liter	13	2.62	0.92	1	4
½ liter	13	3.38	1.39	1	5
¾ liter	13	3.23	0.97	1	4
1 liter	13	3.38	1.08	1	5
2.5 liters	13	2.69	1.14	1	5
5 liters	13	2.31	1.49	1	5
Packaging material: PET (Polyethylene terephthalate)	14	2.64	1.04	1	5
Crystal	15	4.27	0.68	3	5

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Metal	15	2.93	0.85	1	4
Innovative packaging design	15	3.80	0.91	2	5

Note: Values represent mean importance on a five-point scale from "not important" to "very important".

Consumer profile and distribution channels

Experts pointed out in this area that the most targeted organic olive oil consumers should be eco-friendly and highly health-conscious people (Table 3). As mentioned before and according to EcoLogical (2018), the characterization of the organic consumers in Spain shows that 30% are less than 35 years old. This generation born between 1980 and 2000 also called "millennials" has become the main national consumer group in volume. It is expected that market growth will come from the hand of these buyers for two reasons. The first reason derives from a foreseeable increase in their disposable income; secondly, because they are starting to create the next family nuclei. The latter leads to the development of new attitudes, priorities, and motivations that will influence their buying behavior by actively seeking healthier and more nutritious products.

Table 3. Most targeted organic olive oil consumers in the national market.

	Number of responses	Overall mean	Standard deviation	Min	Max
Young people (less than 30 years)	17	2.35	0.59	1	3
Families with children	16	3.25	0.97	2	5
Highly health-conscious people	16	4.44	0.50	4	5
Eco-friendly people	17	4.65	0.59	3	5
People with high income	16	3.94	0.75	2	5
All categories of people	16	1.63	0.78	1	3

Note: Values represent mean importance on a five-point scale from "not important" to "very important".

Furthermore, the experts underlined that eco-friendly people, highly health- conscious people and people with high income should be the most targeted organic olive oil in the export market (Table 4). The situation is not far from the national market. The main conclusion of a study conducted by the Organic Trade Association in the USA during 2017 was that "millennials" are also the main buyers of organic products. The rise in disposable income encourages consumers to try new products and allows for greater expenditures on high-value food products (EcoLogical, 2018).

Table 4. Most targeted organic olive oil consumers in the export market.

	Number of responses	Overall mean	Standard deviation	Min	Max
Young people (less than 30 years)	17	2.76	0.73	2	4
Families with children	16	3.44	1.06	2	5
Highly health-conscious people	16	4.75	0.43	4	5
Eco-friendly people	17	4.82	0.38	4	5
People with high income	16	4.13	0.60	3	5
All categories of people	16	1.75	0.83	1	3

Note: Values represent mean importance on a five-point scale from "not important" to "very important".

Several studies have approached many questions related to the consumption of organic food products, including consumer valuation of organic food and developing a statistical "profile" of a typical organic food consumer in terms of motivations as well as in terms of socio-demographic characteristics. The more consistent result is that consumers with higher levels of education are more likely to purchase organic products (O'Donovan and McCarthy, 2002; Wier *et al.*, 2008; Dettmann and Dimitri, 2012; Monier-Dilhan and Bergès,

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2016). Meanwhile, there is no consensus about the impact of other households' socio-economic characteristics. Wier *et al*. (2008) and Loureiro *et al.* (2001) conclude that the propensity to purchase organic products tends to increase with the presence of young children in a household, whereas Zepeda and Li (2007) come to the conclusion that the presence of young children reduces the probability of buying organic food. Similarly, income yields mixed findings. Higher income households are more likely to purchase organic produce according to Loureiro *et al*. (2001), while other authors found that income is unrelated to the likelihood of buying organic food (Monier-Dilhan and Bergès, 2016).

Besides, a company can deliver its value proposition to its targeted customers through different channels. Effective channels will distribute a company's value proposition in ways that are fast, efficient and cost-effective. As shown in Table 5, there is a strong agreement that the most appropriate distribution channels for organic olive oil in the national market are the specialized chains (bio concept), followed by e-commerce, agrotourism, hyper and supermarkets, and specialized small shops. In the last years, Spain has seen an important development of organic supermarket chains beyond the herbalist and small eco-shop formats. The implementation of the herbalist and small eco-shop formats focuses on large cities and tourist areas with the aim of serving an international customer of organic products (EcoLogical, 2018).

Interestingly, direct sales (producer), and farmers' markets represent less important distribution channels for organic olive oil. In the total olive oil category, the hypermarket evolves negatively and internet positively in terms of sales (MAPAMA, 2017). According to EcoLogical (2018), the expenditure of Spanish households on food purchase through electronic commerce is only 0.9% of total sales in 2016 (around 620 million Euros). Even so, in this environment there are multiple online initiatives that come from retailers within their omnichannel strategy contributing to expanding the bio references. Moreover¸ one of the traditional formats of commercialization –consumption groups- is evolving towards cooperative formats of consumers, where partners collaborate in the management and organization. Around 13%-15% of organic food sales are made through this channel (EcoLogical, 2018). In the export market consideration is given to specialized chains (bio concept), e-commerce and specialized small shops as the most appropriate distribution channels for organic olive oil (Table 6).

Table 5. Most appropriate distribution channels for organic olive oil in the national market.

	Number of responses	Overall mean	Standard deviation	Min	Max
Hyper and supermarkets	17	3.71	1.23	1	5
E-commerce , network purchase, social media...	17	3.88	0.58	3	5
Specialized chains (Bio concept)	17	4.18	0.62	3	5
Specialized small shops	16	3.69	0.68	2	5
Direct sale (producer)	15	3.53	0.96	2	5
Fair trade shops	17	2.59	0.91	1	4
Farmers' markets	16	3.25	1.20	1	5
HORECA (hotels, restaurants, catering)	17	3.24	1.26	1	5
Agrotourism	17	3.76	1.21	2	5

Note: Values represent mean appropriateness on a five-point scale from "inappropriate" to "very appropriate".

Table 6. Most appropriate distribution channels for organic olive oil in the export market.

	Number of responses	Overall mean	Standard deviation	Min	Max
Hyper and supermarkets	17	3.82	1.10	1	5
E-commerce, network purchase, social media...	16	4.25	0.75	3	5
Specialized chains (Bio concept)	17	4.59	0.60	3	5
Specialized small shops	16	4.13	0.99	2	5
Direct sale (producer)	17	2.59	1.29	1	5
Fair trade shops	17	2.88	0.96	1	5

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Farmers' markets	16	2.88	1.49	1	5
HORECA (hotels, restaurants, catering)	16	3.25	0.97	1	5
Agrotourism	16	3.19	1.33	1	5

Note: Values represent mean appropriateness on a five-point scale from "inappropriate" to "very appropriate".

3.2. Business response to market expectations and value drivers

The added value created in the organic food sector reflects the specific quality of organic products and the increasing consumer demand for these products, which represent the main strengths of the sector (European Commission, 2016). Tables 7, 8 and 9 depict the role played by the supply chain actors for value creation in the organic olive oil supply chain. Survey results indicate that producers can contribute by the development of solid cooperation initiatives with other supply chain members. Opportunities to create value-added benefits for farmers in organic supply chains result from cooperation between organic producers, strengthening their bargaining power and the creation of regional brands or brands of suppliers, special agreements between upstream players and retailers for high quality products, investments in processing, direct marketing, product innovation and differentiation (European Commission, 2016). In Spain the greater part (more than 70%) of the first industrial processing takes place in cooperatives that sell virtually all their bulk production, without extending their activities beyond the milling phase (Mili and Rodríguez-Zúñiga, 2003).

Moreover, The results obtained in this respect implicitly highlight the focus that is being placed on quality as a crucial factor for the value creation, since the experts strongly agreed on the importance of implementing good harvesting practices and appropriate transportation conditions of the olives from the groves to the mill, given that the duration between harvesting and pressing the olives and the conditions of their transport are determining factors in the quality of the finished product (Niklis *et al*., 2014). Also, the application of precision farming (digital technologies that optimize returns on inputs whilst reduce environmental impacts) can create value. In this context, the World Bank (2018) highlights a range of areas where ICT has been successfully applied, such as using GPS for farmland management, crop and livestock sensor data to predict diseases, weather data, traceability and logistics tracking, online shops, agricultural market price data, and many more. Food supply chain actors are making advanced use of ICTs, the next steps being related to the capabilities of small and medium-sized enterprises (SMEs) to harness the potential generated by ICT applications.

Table 7. Contribution of producers in organic olive oil value creation.

	Number of responses	Overall mean	Standard deviation	Min	Max
Adoption of good practices for olive harvesting and transportation	17	4.29	0.82	2	5
Additional certification schemes (carbon footprint, local farming labeling and other emerging sustainability labeling initiatives)	17	4.06	0.87	2	5
Strengthening producer organizations and other associative forms	17	4.29	0.82	2	5
Differentiation of the product through the adoption of sustainable production methods beyond organic production schemes	17	4.12	0.76	3	5
Application of precision farming	17	3.12	1.08	1	5
Cooperation with other supply chain members	17	4.47	0.70	3	5

Note: Values represent mean importance on a five-point scale from "not important" to "very important".

The implementation of additional certification schemes (carbon footprint, local farming labeling, and other emerging sustainability labeling initiatives) was also considered an important aspect for the value creation. Geographical origin has received increasing attention over the years. It has been widely demonstrated that consumers, even if their geographical and socio-economic realities are different, give priority to information on the country of origin of the olives (del Giudice *et al*., 2015). All claims related to organic products are "all

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natural" and "local", while companies are trying to introduce new emerging concepts such as "ethical" and "environmentally friendly" by implementing ISO 14001 certifications and SA 8000 (Zanoli and Naspetti, 2013).

Producers can contribute in a positive way in the differentiation of the product through the adoption of sustainable production methods beyond organic production regulatory schemes.

At the level of processors the value can be created by the adoption of good extraction and storage practices, cooperation with other supply chain members, and the implementation of management systems for the assurance of product quality and compliance with environmental and traceability requirements. At this stage, the adoption of good practices of olive oil extraction and packaging along with adequate storage conditions were equally important in order to preserve the quality of the product throughout the supply chain. Moreover, digital technologies can change farm practices and agricultural structures and, hence, contribute to the prosperity and resilience of farming systems. Agribusiness supply chains are increasingly becoming data driven, which raises the need to move toward higher levels of data integration along the production chains. Farmers and agribusinesses can benefit from enhanced data usage for improved sustainability, food safety, resource efficiency, and reduced waste (World Bank, 2018). Furthermore, experts also emphasized the importance of the actions undertaken by the processors to promote the positioning of olive oil as a differentiated and high value product, the new product presentations, nutritional and health benefits studies and research on consumer behavior in emerging markets, and developing strong brands.

Table 8. Contribution of processors in organic olive oil value creation.

	Number of responses	Overall mean	Standard deviation	Min	Max
Adoption of good extraction and storage practices	17	4.47	0.61	3	5
Implementation of management systems for the assurance of product quality and compliance with environmental and traceability requirements	17	4.35	0.48	4	5
Use of eco-friendly packaging materials	17	4.24	0.64	3	5
Innovation in products destined to differentiated market segments	17	4.18	0.78	2	5
Adoption of new digital technologies	17	4.12	0.68	3	5
Cooperation with other supply chain members	17	4.47	0.85	2	5
Creation of new services (smart packaging, availability of the product…) by systematically analyzing changing consumer needs and buying behavior	17	3.82	0.78	2	5
Development of strong brands	17	4.00	0.97	2	5

Note: Values represent mean importance on a five-point scale from "not important" to "very important".

In order to respond to market expectations and create more value in the organic olive oil supply chain, the experts reported the need to develop and use of the e-commerce platforms both in the national and export markets. E-commerce represents huge marketing opportunities for international trade since consumers in developed countries such as France, Germany, and the UK are increasingly relying on the online platforms for performing their purchases. In Spain, some olive oil producers and wholesalers are launching online projects so that they make international shipments directly to the consumer. Although this modality has hitherto been of little relevance, the predictions point to a great development of this channel in the coming years (ICEX, 2016).

Meanwhile, the implementation of new stock management and logistics technologies (blockchain, RFID, QR code, smart glasses…) is considered relatively less important in the national market than in the export market. In this context, the restructuring of logistics processes becomes particularly relevant in business strategies. It could be said that the major distributors are orienting a large part of their activity towards the optimization of the binomial "product range quality - quality of commercial logistics", in a context of increasing globalization and technological innovation. According to the 2017 MHI Annual Industry Report (Deloitte, 2017), next

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generation models are successfully combining automation and digital technologies to drive superior performance. While this digital ecosystem is creating cost savings, innovation and win-win opportunities along supply chains, it is also accelerating the pace of change, creating disruption and increasing competitive pressures. In addition, technologies such as barcode readers, radio frequency identification (RFID) tags and readers, point-of-sales systems, imagers, and beacons are being used to capture, verify, store and communicate supply chain data, replacing the cumbersome, costly and error-prone manual processes of the past.

Experts also emphasized the importance of the actions undertaken by the distributors to promote the positioning of olive oil as a differentiated and high value product, but also to provide lines of support for R&D on quality improvement, new product presentations, communicating healthy recipes based on organic olive oil linked to the Mediterranean diet nutritional and health benefits, studies on consumer behavior in emerging markets by using dedicated personal assistance in the national market.

Table 9. Contribution of distributors and exporters in organic olive oil value creation.

	Number of responses	Overall mean	Standard deviation	Min	Max
NATIONAL MARKET					
Implementation of new stock management and logistic technologies (blockchain, RFID, QR code, smart glasses…)	17	3.71	0.75	2	5
Development and use of e-commerce platforms (e market places)	17	4.53	0.50	4	5
Improving the positioning of organic olive oil in priority consumer segments	17	4.76	0.55	3	5
Communicating healthy recipes linked to Mediterranean diet	17	3.71	0.89	2	5
Use of dedicated personal assistance: a sales representative assigned to handle all the needs and questions of specific sets of clients	16	3.81	0.88	2	5
EXPORT MARKET					
Close coordination and cooperation with producers and importers	17	4.53	0.61	3	5
Use of digital technologies for logistics and stock management (blockchain, RFID, QR code, smart glasses…)	17	4.29	0.75	3	5
Development and use of e-commerce platforms (e market places)	17	4.59	0.49	4	5
Improving the positioning of organic olive oil in priority markets	17	4.65	0.59	3	5
Communicating healthy recipes linked to the Mediterranean diet in new markets	17	4.00	0.84	2	5
Implementation of joint promotional campaigns in destination	17	4.71	0.57	3	5
Use of a commercial representative in destination	16	4.38	0.60	3	5
Investment in packaging and marketing centers in destination	17	3.35	1.13	1	5
Recruiting managers highly specialized in international markets	16	4.38	0.70	3	5

Note: Values represent mean importance on a five-point scale from “not important” to “very important”.

At the export market level, the exporters are required to implement joint promotional campaigns in destination, which are especially pertinent when dealing with large distributors. This explains why the

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restructuring of logistical processes became relevant in business strategies as a way of reducing costs and increasing efficiency and competitiveness on the market (Mili, 2006). Also and as expected, the experts view the role of exporters in the olive oil marketing on the target markets as of great relevance in order to achieve a successful international performance. This role mainly consists of the realization of joint promotion campaigns in destination and improving the positioning of olive oil in priority markets. On a strategic level, they are expected to develop effective strategies for entering new markets, together with processors whose contribution is not to be neglected, as they are in charge of developing strong brands. This is particularly important in markets such as the British market, where most consumers purchase olive oil under the private labels (García Martínez *et al*., 2002), and where the Spanish brands have a weak presence (ICEX, 2016).

In addition, exporters can coordinate and cooperate with producers and importers in order to create value in the organic olive oil supply chain. These coordination and cooperation actions can help the supply chain actors to know and understand the export market needs, and make the sharing of information between actors easier, faster and more flexible.

It should be noted that in order to optimize operations and reduce risks of a business model, companies usually cultivate buyer-supplier relationships so they can focus on their core activity. In this area, as shown in Table 10, there is a widespread agreement that support from Research and Development departments on quality improvement, packaging suppliers and advertising, communication and marketing agencies helps the organic olive oil supply chain actors to meet the market needs. A partnership with Research and Development departments improves, for instance, the quality of organic olive oil in terms of new product presentations and eco-friendly packaging materials.

ICT/digital technology providers such as the Spanish CITOLIVA (Technology Center for the Olive Grove and Olive Oil) are nowadays considered in Spain as a key factor of innovation in the olive supply chain, through formulas of open innovation allowing to advance in processes and innovative products that place companies in a better position in an increasingly competitive environment.

Table 10. Key partners to meet the market needs and efficiency requirements.

	Number of responses	Overall mean	Standard deviation	Min	Max
Research and Development departments	17	4.24	0.64	3	5
ICT/digital technology providers	17	4.06	0.80	3	5
Packaging suppliers	17	3.29	0.96	2	5
Advertising, communication and marketing agencies	17	4.47	0.61	3	5
HORECA companies	17	3.53	0.92	2	5

Note: Values represent mean importance on a five-point scale from “not important” to “very important”.

3.3. Factors influencing the value creation

The factors portrayed in Table 11 suggest that the value creation in the organic olive oil will be affected positively mainly by increasing fraud control, transparency and norm compliance, and increasing knowledge of official organic food labels and consumer confidence. Also, strong marketing policies based on maximizing value through highest quality, strong brands image and higher prices are expected to play an important role in the value creation in the organic olive oil, especially since a growing interest, awakened by the favorable commercialization perspectives in nontraditional markets is being manifested for olive cultivation. Experts also estimate that a significant impact is to be expected from trade facilitation measures (more transparent, predictable and simplified cross-border procedures), increasing the availability of organic market data (supply, demand, retail sales, exports, imports), optimization of logistic costs (transportation. maintenance…), cooperation between research and practice, rapid adaptation to changing market needs and investment in R&D in primary production, post-harvest and market development.

Factors such as the existence of agri-environmental subsidies for organic agriculture and Common Agricultural Policy (CAP) subsidies for sustainable agriculture can also influence positively the value creation and encourage further the producers to respect the environment and promote sustainable agriculture. Such policies would provide financial support for Member States to design and implement agri-environmental measures. Each

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measure has a specific environmental objective such as the protection or enhancement of biodiversity, soil, water, landscape, air quality, climate change mitigation and adaptation. Many measures are multi-functional and are designed to bring simultaneous benefits for several environmental objectives. Each measure also involves paying those farmers who choose to adopt specific environmental management practices on their farms (European Commission, 2016).

In any event, alternative policy options allowing the implementation of environmental measures in the olive sector could have additional positive effects in terms of redistributing aids from less to more environmentally friendly farming (i.e. from conventional to integrated and organic farming practices), which both reward the public goods generated by these public aids (environment and quality of the improved products) and reinforce in the meantime the legitimacy of the financial support of the CAP (Mili *et al*., 2017).

Table 11. Factors that can impact negatively or positively the value creation in organic olive oil.

	Number of responses	Overall mean	Standard deviation	Min	Max
Agri-environmental subsidies for organic agriculture	17	4.12	0.76	2	5
CAP subsidies for sustainable agriculture	17	3.88	0.90	2	5
CAP direct payments	17	3.41	1.14	1	5
Marketing policies based on maximizing volume at competitive prices	17	2.94	1.26	1	5
Marketing policies based on maximizing value through highest quality, strong brand image and higher prices	17	4.59	0.77	2	5
Programs for generic promotion	17	4.00	1.14	1	5
Globalization of organic food	17	4.18	0.92	1	5
Harmonization of international olive oil quality standards	17	4.12	0.96	2	5
Trade facilitation measures	17	4.53	0.61	3	5
The new EU organic logo symbolizing the legal organic rules valid all over the EU	17	3.94	0.80	2	5
Increased fraud control, transparency and norm compliance	16	4.81	0.39	4	5
Implementation of effective regulations to rebalance market power in the supply chain	17	4.18	0.92	2	5
Support for producer organizations and associations	17	4.12	0.68	3	5
Support for Spanish olive oil inter-branch	17	3.41	1.14	1	5
Adoption of multi-actor approaches for value co-creation	17	4.12	0.90	2	5
Investment in R&D in primary production, post-harvest and market development	17	4.24	0.64	3	5
Increased availability of organic market data (supply, demand, retail sales, exports, imports)	17	4.41	0.77	2	5
Investment in digital supply chains (robotics, automation, IoT, smart city, wearable and mobile technology, Big Data…)	17	4.00	0.91	2	5
Rapid adaptation to changing market needs	17	4.29	0.57	3	5
Increasing knowledge of official organic food labels and consumer confidence	17	4.76	0.42	4	5

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Optimization of logistical costs (transportation, maintenance…)	17	4.35	0.59	3	5
Cooperation between research and practice	16	4.31	0.58	3	5
Euro exchange rate fluctuations	16	2.88	0.86	1	4
Competition from substitute oils	17	2.88	1.23	1	5
Price volatility	17	2.65	1.23	1	5
Competition from other exporting countries	17	3.18	1.38	1	5

Note: Values represent mean on a five-point scale from "very negative" to "very positive".

The implementation of effective regulations to rebalancing market power along the supply chain can reduce the power imbalance between producers and distributors. The emphasis placed on these aspects makes perfect sense, since the Spanish olive oil sector frequently witnesses the emergence of conflicts of interest between the actors involved in the production stage (olive growers, oil mills and producing cooperatives) and those pertaining to the commercial stage of the supply chain (retailers and exporters). These confrontations often make cooperation difficult in matters of common interest such as generic promotion, support to exports, or the handling of import regulation (Mili, 2009).

The expert panel also highlighted the importance of the harmonization of international quality standards along with the clarification of the denominations of the different olive oils for their better understanding by the consumers. In fact, non-traditional consumers, such as the Chinese for instance, are often unable to distinguish different grades and varieties of olive oil, which means that the quality and specificity of each product are not appreciated correctly. This situation calls for clear labeling indicating the quality, the country, the terroir and the designation of origin, and underlines the need to make consumers aware of the differences between product categories.

Programs for generic promotion of Spanish and EU olive oils can influence positively in the value creation. The generic promotion can be considered as the cooperative effort to increase demand by producers of organic olive oil and aims at strengthening the market for the benefit of all producers (FAO, 2011).

Some experts highlighted that price fluctuations affects negatively the value creation in the organic olive oil supply chain. As a corollary, the reduction in the volatility of international prices and the Euro exchange rate fluctuations is likely to have a positive impact on the value creation, when compared with other factors. To prevent price fluctuations, it is necessary the establishment of market management mechanisms at the whole supply chain level. Such measures would allow strengthening consumers' loyalty and mitigating the impact of the price swings on the product demand, especially in foreign markets where price variations are more accentuated. They also contribute to farmers' income stabilization.

Besides, the competition from substitute oils (sunflower oil…) could be a negative factor for the future evolution of the organic olive oil consumption. Indeed, the olive oil sales in Spain declined by 8% in the period October 2016 - September 2017, while the national sales of packaged seed oils increased by 5% in the same period (Alimarket, 2018). The commercial retreat of olive oil in Spain and the move of part of consumption towards the seed oils were motivated by the increase of the producer and retail prices.

4. Conclusions

The present study attempted to identifying and better understanding the potential sources of added value in the organic olive oil supply chain taken as an example within the organic food industry. A business model survey was carried out to elicit the structured opinions of a representative group of highly qualified experts belonging to administration, academia and the private sector. The information gathered can be considered representative and relevant to the object of study, however it should be regarded yet as explorative rather than conclusive.

There is a large consensus indicating that creating value in the organic olive oil supply chain would be based essentially on a market segmentation strategy where companies should orient the product to quite health-conscious consumers, people friendly to the environment and high-income people, both on the national and the export market. The distribution of the product would be more efficient through specialized channels (bio

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concept), e-commerce, agro-tourism, hypermarkets and supermarkets, and small-specialized shops, in this order. All of which without forgetting the need to meet the requirements of local and international consumers in terms of high quality organic olive oil (extra virgin) packed in innovative crystal bottles and with a suitable price on the markets.

Moreover, creating value and achieving a sustainable competitive advantage in the domestic and foreign markets will depend on the commitment and joint efforts of the different actors operating in the supply chain. At the production stage, this would be reached through the implementation of actions focused on quality improvements by the adoption of good practices of harvesting and transporting, and the differentiation of the product by the adoption of sustainable production methods that go beyond organic production regulations. At the processor level, value creation depends on the adoption of good extraction and storage practices, the implementation of digital technologies and management systems ensuring the quality of the product, the respect of environmental requirements and traceability, and the development of strong brands. To all this should be added the necessary structural and organizational changes as well as the development of appropriate marketing strategies and promotional campaigns in collaboration with public institutions, the use of ICT and the development of sales through e-commerce platforms, and the improvement of product positioning in the priority consumer segments.

The findings indicate potential practical implications for olive oil supply chain operators currently engaged in the organic segment and those who desire to become organic active. Factual case studies can be performed to test the applicability of results for generating new business models in olive oil companies. Based on the existing business model of the company and the survey results, new business models could be devised by innovating strategically in a series of variables such as customers, channels or the value proposition. Further development scenarios aiming at reinventing the company business model also are possible using alternative combinations of value-creating factors and seeking new and complementary relationships between different components of the model.

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