



Preference for olive oil consumption in the Spanish local market

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Abstract

It is becoming ever more important for the olive oil industry in Spain to adopt a business strategy based on client orientation. In this sense, the objective of this paper is to identify the preferences of olive oil consumers and propose a series of business strategies for the producing sector. The methodology consisted in a survey of 404 olive oil consumers during the months of January and February 2013, whose preferences were determined through several multivariate techniques (conjoint analysis, consumer segmentation and a simulation of market share). The preferred olive oil is low priced, extra virgin and organic. The type of bottle does not appear to be relevant in the buying decision process, although it might be a factor in increasing market share. The current economic crisis has resulted in the emergence of two consumer segments; 67.1% of consumers selected the olive oil they buy on the basis of price and 32.9% were guided by the product's specific attributes, which include, for example, organic production, which can be another differentiating element for producing companies.

Additional key words: agri-food marketing; conjoint analysis; consumer behaviour; olive oil attributes; organic.

Abbreviations used: EU (European Union); MUM (Maximum Utility Model); PDO (Protected Designation of Origin); RI (Relative Importance); U (Utility).

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Introduction

The Oslo Manual defines innovation as the introduction of a product or new process, either significantly improved or having a new marketing or organisational method applied to business practices, workplace organization or external relations (OECD/Eurostat, 2005).

The advantages of innovation are widely recognised for the competitiveness of a country, sector or organization. Thus, both the public sector and the private sector meet in the need for innovation for the economic growth of the country and the progress of its firms, insofar as it modernises the economy, through the noteworthy increase and improvement in the production and productivity of the innovative industry (Debenham & Wilkinson, 2006).

The increasing level of competition in the agri-food sector, augmented by economic internationalization and globalization compels firms to promote and implement

policies and strategies to diversify and add value to their agri-food production. Diversification is an excellent opportunity for positioning products in the increasingly dynamic and demanding marketplace. Likewise, growing consumer concern for and interest in the safety and healthiness of the products that they consume and respect for the environment during production processes has caused the imposition of new demands on the food industry (Conner *et al.*, 2009; Dios-Palomares & Martínez-Paz, 2011).

Besides the above-mentioned globalization and the increasing social sensitivity about food safety and environmental sustainability, the context of the regulatory community is reinforcing a more competitive, multifunctional, sustainable agri-food model in which, together with productivity, special attention is paid to other functions or externalities that affect consumer well-being.

In this sense, it is logical that the social dimension would acquire greater weight in policy decisions in

general, and in those linked to the agri-food sector in particular. The challenges of food safety, the relationship between food and health, the new demands and purchase habits of some increasingly educated and informed consumers, as well as the innovative practices that producers, transformers and distributors should implement to satisfy them require greater attention on the part of the food industry to studies on consumer requisites and the development of new products and services (Thompson & Sinha, 2008; Song & Parry, 2009; Lindgaard *et al.*, 2011).

Consumers are frequently the most important source of new ideas, as happened in the case of the food and beverage industries in Germany, Belgium, Denmark, Spain, Ireland, Italy, the Netherlands and Norway (Christensen *et al.*, 1996). Therefore, the key lies in knowing what the consumer necessities are.

The existence of feedback between the innovative attitude and market orientation can be accepted, so that communication between firm and consumer furthers the start up on the part of the firm of the products and/or services that the client demands.

That is to say, incorporating the knowledge of client needs into business planning influences more apt innovations with greater probability of success on the market and therefore, with less risk for the entrepreneur who takes charge of their introduction.

Garcia *et al.* (2014) identified two ways for the firm to carry out innovations, whether through scientific knowledge (orientated to learning), or through social knowledge (market orientated). In this sense, for the proposal of innovations to be carried out by the firm, a market orientation was decided on that starts with consumer knowledge about olive oil, stemming from

five socioeconomic characteristics (gender, age, education, income and work role) and four preferences for olive oil attributes (price, type, bottle and system). The conceptual framework for the study is rendered in Figure 1.

In this sense, the olive oil industry, the same as the rest of the Spanish agri-food industry, is subject to a process of continual change. Globalisation, new commercial structures, technological advances and consumer demands compel the adoption of new production systems to reach greater levels of competitiveness. Therefore, permanent innovation is necessary in practices, products, points of sale, forms of presentation and commercial organization. One of the pending matters in the sector is retaining a greater share of added value and satisfying different new consumer demands.

The process of globalisation and trade liberalisation, as well as the growing competition in the sector, make it necessary for firms to promote and implement policies and strategies to innovate and to add value to their agri-food production, differentiating and connecting it to quality marks, sustainability, territoriality, alternative ways of production, and so on. Innovation is an excellent opportunity for differentiation, diversification and positioning in an increasingly competitive, demanding and globalised market.

The challenges of food safety, the relationship between food and health, new demands and purchasing habits of increasingly formed and informed consumers, require great attention on the part of the agri-food industry to papers on consumer requisites and the development of new products and services (Gracia & De Magistris, 2008; Song & Parry, 2009; Annunziata *et al.*, 2011; Briggeman & Lusk, 2011; Erraach *et al.*, 2014).

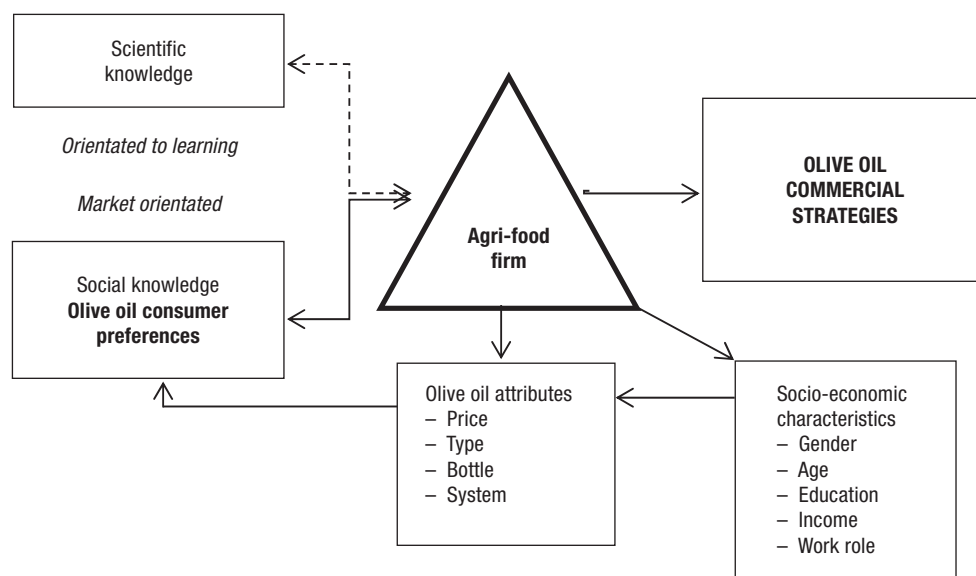


Figure 1. Conceptual framework.

A key factor for success in the current market would be to understand consumer behaviour and identify consumer needs and desires in the agri-food sector, incorporating them into the strategic planning of the stages of the production process, the transformation and marketing of products and/or services, and especially in the planning and design of new products (Parras-Rosa *et al.*, 2013).

Olive oil represents the main product of the olive sector in Spain. In the year 2012, the surface area of olive groves in Spain was 2.5 million ha and produced 1.2 million t of olive oil, which is 45% and 60% respectively of the world production and of the European Union (EU) production (IOC, 2013).

In turn, in the year 2012, Spain was the first worldwide exporter of olive oil, with nearly 750,000 t, mainly destined to EU countries. There was also a large increment in the USA market share, in consonance with the growing evolution of worldwide consumption. The result was a positive trade balance of 1,750 million € (IOC, 2013).

Presently, the USA is computed as the second export market for Spanish olive oil, since it is the third worldwide consumer of olive oil (300,000 t), only behind Italy (610,000 t) and Spain (574,000 t) (IOC, 2013).

Yet, although origin and price are key elements for olive oil in the world market, in the domestic market business strategies continue being insufficient since olive oil is still considered an undifferentiated product by Spanish consumers (García & Sanz, 2012). Therefore firms should continue to carry out differentiation strategies for the olive oil they produce.

Demand for quality olive oil includes not only chemical and sensorial attributes (flavour, colour, acidity, and so on), but also other extrinsic attributes (price, bottle, place of purchase) and certification and quality assurance, whether under a Protected Designation of Origin (PDO) or rather from Organic Farming.

Having revealed the importance of the origin attribute or rather the certification of a PDO (Fotopoulos & Krystallis, 2001; Van der Lans *et al.*, 2001; García *et al.*, 2002; Ward *et al.*, 2003; Caporale *et al.*, 2005; Krystallis & Ness, 2005; Espejel & Fandos, 2008; Bernabéu *et al.*, 2009; Kavallari *et al.*, 2009; Chan-Halbrendt *et al.*, 2010; Dekhili *et al.*, 2011; Menapace *et al.*, 2011; Mtimet *et al.*, 2011, 2013; Erraach *et al.*, 2014; Yangui *et al.*, 2014), it is necessary to determine the importance of other attributes that help the differentiation of olive oil synergistically. The origin of the olive oil is predetermined as Spanish, given the importance of this attribute for Spanish consumers (Espejel & Fandos, 2008; Bernabéu *et al.*, 2009; Erraach *et al.*, 2014; Yangui *et al.*, 2014).

Currently in the agri-food sector, references to the origin and the production system through organic pro-

duction are becoming increasingly appreciated differentiation factors to consumers. Likewise, agri-food firms tend to take consumer preferences into consideration in the processes of planning, design and implementation of their products to achieve greater competitive advantages and value-added in increasingly dynamic and demanding markets.

In this sense, this paper aims to determine what olive oil consumer preferences are, what type of olive oil is the one they prefer, as well as to evaluate the possibilities of success for organic olive oil depending on the type of bottle used, as a differentiating quality element. The final objective is none other than to obtain commercial information so that firms in the olive oil sector may carry out accumulative innovation in the supply of their products in response to consumer needs and desires.

Material and methods

Data collection

Data was collected by means of a survey through personal interviews addressed by an experienced interviewer to consumers who were purchasing food in stores, supermarkets and hypermarkets in Castile-La Mancha (Spain) (Fig. 2), during the months of January and February, 2013.

The importance of conducting the survey in Castile-La Mancha is that olive oil is a well-known product to these consumers. At the same time, the agri-food olive oil sector is one of those having the greatest weight in Castile-La-Mancha's economy in the domestic sector



Figure 2. Castile-La Mancha Autonomous Community (Spain), which consists of the provinces of Albacete, Ciudad Real, Cuenca, Guadalajara and Toledo.

as well as abroad. Castile-La Mancha (406,751 ha) has been and continues to be the second community in Spain next to Andalusia (1,554,771 ha) with regard to surface area dedicated to the cultivation of the olive tree and the production of olive oil (MAGRAMA, 2013).

Stratified random sampling was made with proportional allocation according to the population, gender and age of the consumers in each of the provinces that form Castile-La Mancha. Prior to taking the survey, a pre-test was administered to 25 individuals to verify whether the questions on the questionnaire were understood.

Once the correct design of the questionnaire was established, the final survey was taken, from which 404 valid questionnaires were obtained. With this number of questionnaires and at a 95.5% ($k=2$)¹ confidence interval, under the assumption of maximum uncertainty ($p=q=50%$)², the sampling error was less than 5%. Socio-economic characteristics of individuals surveyed are shown on Table 1.

Table 1. Sample socio-economic characteristics of the subjects participating to the consumer panel (%).

Variables/Levels	Population ^[a]	Sample
Gender		
Male	50.42	49.50
Female	48.58	50.50
Age (years)		
18-34	27.53	27.97
35-54	38.25	44.30
≥55	34.22	27.73
Education		
Grade School	33.8	20.00
High School	46.8	42.30
College	19.4	37.60
Work role		
Housewife	16.00	12.60
Employee	42.51	54.70
Student	7.5	8.20
Businessman	9.72	8.40
Retired	14.63	10.90
Other	9.64	5.20
Monthly family net income (€)		
< 900	17.30	6.70
900 to 1,500	28.80	27.50
1,500 to 3,000	33.80	44.80
>3,000	20.10	21.00

^[a] Source: Own elaboration based on INE (2012).

¹ “k” is a constant that depends on the assigned level of confidence. The confidence level indicates the probability that the results of the research are correct.

² The binomial parameter, denoted p , is the probability of success; thus, the probability of failure is $1 - p$ which is often denoted q . Assigning success or failure to p is arbitrary and makes no difference.

The conjoint analysis method in the study of olive oil

One of the most interesting criteria at present in market research is the composition and formation of consumer preferences. Relating to preference detection it can be said that two models exist with regard to the analysis techniques used to determine consumer preferences. In compositional models (Wilkie & Pessemier, 1973), those interviewed provide an opinion on several attributes of the same product, estimating its global utility through aggregation. In decompositional models, which include conjoint analysis (Green & Rao, 1971), the individual reports the global preference from the product profile and the researcher estimates the importance of each attribute in the global perception of the individual.

Therefore, the conjoint analysis method has become an important tool in the evaluation of the preferences assigned by the consumer to the various attributes that comprise a good. It starts from the hypothesis that purchasing behaviour can be interpreted as a choice between several products or brands which, in turn have a set of differentiated attributes or characteristics.

In the field of agri-food research the applications of the conjoint analysis are numerous. In the case of olive oil, although the literature is not extensive, there are several papers that have examined consumer preferences in various countries.

One of the first papers that examined consumer preferences was by Fotopoulos & Krystallis (2001) who analysed Greek consumer preferences based on two attributes: price and the PDO characteristic. In turn, Van der Lans *et al.* (2001) centred their preference analysis on extra virgin olive oil, selecting the attributes of price, colour, origin and appearance. Garcia *et al.* (2002) offered a paper that analysed olive oil consumers' preferences in a non-producing country such as the UK. The authors concluded that extra virgin was consumers' preferred olive oil and that they especially valued price, size, format and the purchasing process. Ward *et al.* (2003) studied the impact of the place of origin on German consumers' evaluation of different variables of olive oil. The study concluded that the origin determined the evaluation of other olive oil variables.

Caporale *et al.* (2005) studied the impact of information on the origin of olive oil on the sensory perceptions of consumers with knowledge of different olive oils in Italy. The results confirmed the positive influence of

the origin on the sensory expectations of consumers familiar with the category of the product analysed.

Krystallis & Ness (2005) studied the preferences of Greek olive oil consumers. The most valued attributes and their respective levels were found to be origin and organic certification, while the least valued were price and glass bottle, in that order.

Espejel & Fandos (2008) analysed the perceived quality of olive oil with a PDO as a determinant of the loyalty and buying intention of consumers in Aragón (Spain). The results showed the special relevance of intrinsic attributes such as colour, flavour, form and appearance, while the origin was not found to be relevant in consumers' buying decisions.

Bernabéu *et al.* (2009) analysed Castile-La Mancha (Spain) consumer preferences for olive oil, choosing the attributes of price, production system, type and origin. The results showed that olive oil type (extra virgin) was the most valued attribute, followed by origin (domestic), then price and production system (organic).

Kavallari *et al.* (2009) studied the factors influencing demand for olive oil in Germany and the UK. The authors found a preference in both countries for bulk rather than packaged olive oil, allowing retailers to reap higher benefits in the supply chain.

Chan-Halbrendt *et al.* (2010) studied consumer preferences for olive oil in Albania. Although most of the survey respondents indicated a preference for locally produced olive oil, in reality a substantial amount of imported olive oil is consumed, which according to the authors is due to a lack of trust in the quality of the domestic product.

Dekhili *et al.* (2011) analysed the impact of origin on consumers' selection of olive oil in France and Tunisia. The origin was valued differently by consumers in the two different countries: while French consumers gave greater importance to the country of origin, Tunisian consumers gave more importance to the region. Regarding the price attribute, French consumers valued this more than both the country and region of origin. However, consumers in Tunisia valued price less than the region but more than the country of origin.

Menapace *et al.* (2011) studied the country-of-origin effect on Canadian consumer preferences for extra virgin olive oil. They found willingness to pay varies according to the product's country of origin.

Mtimet *et al.* (2011) analysed the country-of-origin effect on Tunisian consumer behaviour towards olive

oil. The results did not identify the origin attribute as one of the main determinants of Tunisian consumers' buying decisions and willingness to pay. In this sense, the most important attributes were type of olive oil, colour and price.

Erraach *et al.* (2014) analysed consumers' preferences for olive oil in Andalusia (Spain) using the following attributes: origin, price, colour and packaging. The most valued attribute was price, then origin, packaging and colour. The authors also studied the impact of sociodemographic factors on preferences, finding that older adults gave greater importance to the origin of the olive oil.

Yanguí *et al.* (2014) analysed consumers' preferences for extra virgin olive oil in Catalonia (Spain). The results showed that the most important attributes were price, origin, certification and brand. They also found that consumers with higher educational levels and greater purchasing power were less sensitive to price.

Identification of attributes and determining levels

Therefore, when analysing olive oil consumer behaviour there are several papers that led us in determining the attributes to be considered in this paper. In this sense, preference is conditioned by the type of olive oil. One of the first results that is deduced from revising the literature is that the extrinsic attributes of olive oil, for example price and origin, are the most important ones to the consumer in the act of purchasing. On the other hand, intrinsic attributes such as colour or flavour are relegated to second place.

In the case under study for olive oil, through the bibliography, interviews with experts and a previous questionnaire, the most representative attributes and levels were selected for the consumer Spanish olive oil purchasing process.

The origin of the olive oil was predetermined as Spanish, given the importance of this attribute for Spanish consumers (Espejel & Fandos, 2008; Bernabéu *et al.*, 2009; Erraach *et al.*, 2014; Yanguí *et al.*, 2014). The attributes (and their levels) identified as most important in quality olive oil were: *price* (2.90, 3.80 and 4.40 €/L), *type* (extra virgin olive oil, virgin olive oil

³ Extra virgin olive oil is maximum quality oil. It is obtained directly from olives in good condition, through mechanical procedures only, has perfect flavour and aroma, and is free from defects. The degree of its acidity is not over 0.8°, expressed as a percentage of oleic acid. Virgin olive oil follows the same quality parameters as extra virgin olive oil regarding production methods. The difference is that it cannot have more than 2° of acidity. Such defects should be practically imperceptible to the consumer. Lastly, olive oil is a mixture of olive oil with virgin or virgin extra olive oil. The degree of acidity of this olive oil cannot be over 1° (IOC, 2013).

and olive oil)³, *bottle* (glass, plastic), and finally, *production system* (organic, conventional).

Using these four attributes and their ten levels, 36 profiles were obtained. This is an excessive number of options and respondents might easily lose interest or become tired, impacting negatively on the quality of their responses. Consequently, an orthogonal design was used (SPSS Inc., 2012), which allowed the combinations to be reduced to nine⁴.

However, showing the respondent only nine cards entails a small loss of information, as the interactions between options are eliminated to favour obtaining the main effects. Nevertheless, as demonstrated by a number of authors (Kirk, 1982), the advantages of using an orthogonal design outnumber the drawbacks. The nine profiles are shown on Table 2.

The respondents were asked to value each of the hypothetical olive oil products from 1 to 10, depending on their preferences. The same score could be awarded to more than one product. The number 1 corresponded to the lowest degree of preference and 10 to the highest, according to the complete profile method. In this way, the most important attributes and levels for consumers when choosing one olive oil rather than another could be identified.

The empirical model

The conjoint analysis model is based on a hypothesis that explains how the total value awarded by a consumer to each olive oil, can be obtained as the sum of the values assigned individually to each attribute (Steenkamp, 1987). An additive model was used as the starting point, since in almost every case it explains a very high percentage, between 80% and 90%, of the

variation in individual preferences. Its formula is shown in the following equation:

$$Valuation = \beta_0 + \sum_{i=1}^3 \beta_i D_{1i} + \sum_{j=1}^3 \beta_j D_{2j} + \sum_{k=1}^2 \beta_k D_{3k} + \sum_{l=1}^2 \beta_l D_{4l}$$

where β_{1i} , β_{2j} , β_{3k} and β_{4l} are the coefficients associated to levels i ($i=1,2,3$), j ($j=1,2,3$), k ($k=1,2$), and l ($l=1,2$) of the attributes of price (1), type (2), bottle (3) and production system (4), respectively and where D_{1i} , D_{2j} , D_{3k} and D_{4l} are the fictitious variables for each attribute, considering the levels of each attribute as categorical.

The final result of the *Conjoint* program permits estimating the partial utilities of each attribute and the total utility of each profile. The relative importance (RI) of each attribute is calculated using the following expression (Hair *et al.*, 1999);

$$RI(\%) = \frac{\max U_i - \min U_i}{\sum (\max U_i - \min U_i)} \times 100$$

where $\max U_i$ is the maximum utility and $\min U_i$ is the minimum utility.

Later and on the basis of the relative importance that consumers gave different attributes individually (price, type, bottle and production system), a multivariate segmentation analysis of K-average conglomerates was made using the *Quick Segmentation Analysis* (SPSS Inc., 2012) algorithm.

Finally, market shares were determined by means of simulation for the olive oil that consumers evaluated more highly. The maximum utility model (MUM) was used in the process of simulation (Bretton-Clark, 1986). The MUM assumes that the consumer chooses that product which gives the maximum. Thus, the market share is obtained as the proportion of times that each

Table 2. Hypothetical olive oil cards shown to those surveyed.

Card number	Price (€/L)	Type	Bottle	System
1	2.90	Olive oil	Plastic	Conventional
2	3.80	Olive oil	Glass	Conventional
3	3.80	Virgin olive oil	Glass	Conventional
4	2.90	Virgin olive oil	Glass	Organic
5	4.40	Virgin olive oil	Plastic	Conventional
6	4.40	Extra virgin olive oil	Glass	Conventional
7	2.90	Extra virgin olive oil	Glass	Conventional
8	4.40	Olive oil	Glass	Organic
9	3.80	Extra virgin olive oil	Plastic	Organic

Source: Own elaboration.

⁴ However, the number of products evaluated by the consumers was 11; nine corresponded to the orthogonal design (those used in calculating the utilities) and two additional products (holdout cases) were for verifying the validity of the utility of the first nine products. Since the holdout cases were not significant, the orthogonal design was considered valid (Bernabéu *et al.*, 2012).

proposed product is chosen as the most preferred by everyone surveyed.

Results

Starting from the relative importance which individual consumers conceded to the attributes, segmentation was made of the total population. Two statistically significant consumer segments were detected that differed in their preference structure toward olive oil (Table 3). Taking the total population into consideration, the most relevant attribute is *price* (53.73%) in the formation of Castile-La Mancha olive oil consumer preferences. It is followed by the type of oil (26.98%) and at a distance by the production system (11.23%) and the bottle (8.06%). In short, according to our analysis, it can be said that the olive oil preferred by consumers is that with the lowest price, extra virgin, organic and in a glass bottle.

Within the type attribute, the most preferred level is extra virgin olive oil and the least preferred is olive oil. Regarding the production system, organic olive oil is preferred. Lastly, within the bottle attribute, glass is preferred over plastic, since it seems that consumers associate glass bottles with better quality products.

According to individual preferences, two significant segments ($p < 0.01$) of consumers were obtained. The first segment, which accounted for 67.1%, was characterised by particularly valuing the price. The second segment, which consisted of 32.9%, comprises consum-

ers who look for a certain quality-price ratio and for whom, although price is still the most important attribute, it is less so than for consumers in the first segment. Furthermore, in this segment both the oil type and the production system are especially valued. The bottle attribute was significant for both segments but does not appear to be a determinant in consumers' purchasing decisions.

The analysis of the significant differences revealed that the lowest price (2.90 €/L) was valued higher than the mean by consumers in segment 1 and lower than the mean by consumers in segment 2. The prices of 3.80 and 4.40 €/L were negatively valued by both segments. However, utility was more negative for the consumers who based their decision on the price than for those who based their decision on the type of oil. In this sense, the consumers who gave more importance to the type of oil attribute when purchasing olive oil, conceded less importance to high prices than the consumers who based their decision on the price.

In the type of oil attribute, significant differences appeared between segment 1 and segment 2. In fact, although the preferred oil for both segments was extra virgin, consumers in segment 1 are more likely to consume olive oil and those in segment 2 extra virgin.

Regarding the bottle attribute, despite significant differences between the two segments, the relative importance of this attribute is low, although both segments prefer a glass bottle to a plastic one.

In the production system attribute, significant differences appeared. While segment 2 valued organically produced olive oil as above the mean, segment 1

Table 3. Utilities assigned to attribute levels.

Attributes and levels ^[a]	Segment 1-Price (67.1%) ^[b]		Segment 2-Type (32.9%) ^[b]	
	RI (%)	U	RI (%)	U
Price***	61.85		37.17	
2.90 €/L		3.163		2.578
3.80 €/L		-1.079		-0.458
4.40 €/L		-2.084		-2.120
Type***	23.17		34.76	
Olive oil		-1.000		-2.007
Virgin olive oil		-0.017		-0.290
Extra virgin olive oil		1.017		2.297
Bottle***	7.81		8.57	
Glass		0.104		0.009
Plastic		-0.104		-0.009
System***	7.17		19.50	
Conventional		-0.250		-1.203
Organic		0.250		1.203

^[a] *** indicates significant differences with a maximum error of 1%. ^[b] Size of the segment. RI = relative importance; U = utility.

valued it as below the mean, even though organic production was positively valued by both segments.

To better identify consumers from each segment, their profile was analysed according to socio-economic characteristics (Table 4). With regard to the socio-economic characteristics of the segments of olive oil consumers, there were significant differences in the maximum level ($p < 0.01$) in the variables of educational level and monthly family net income, but there were none in the gender, age and work role variables. In this sense, the consumers in segment 1 who are

Table 4. Socio-economic characteristics of consumer segments (%).

Variables ^[a]	Segment 1 Price	Segment 2 Type
Gender		
Male	47.5	55.9
Female	52.5	44.1
Age (years)		
18-34	30.5	26.7
35-54	43.6	45.8
≥55	25.9	27.5
Education***		
Grade School	23.2	10.2
High School	43.2	39.4
College	33.6	50.4
Work role		
Housewife	13.1	8.7
Employee	52.1	60.6
Student	9.3	7.1
Businessman	8.5	9.4
Retired	11.2	11.0
Other	5.8	3.2
Monthly family net income (€)***		
< 900	6.6	3.9
900 to 1,500	30.5	18.9
1,500 to 3,000	44.0	48.8
>3,000	18.9	28.4

[a]*** correspond to 1% maximum error level. *Source:* Own elaboration.

mainly driven by price, are characterised as having a lower educational level and income than consumers in segment 2.

Once the consumer preferences were analysed, it was found that the preferred type of olive oil was extra virgin olive oil. Next the various commercial possibilities of extra virgin olive oil were evaluated depending on the production system (organic or conventional), the price (3.80 or 2.90 €/L) and the bottle (plastic or glass). These options can represent probable situations of commercial competition and meet the proposed objective (Table 5). As shown in this table, conventional is the preferred production system for consumers who most positively value price when choosing extra virgin olive oil. However, consumers who do not value price alone, are prepared to consume organic extra virgin olive oil, even if the price is higher. In any event, the type of bottle does not appear to influence consumer preferences although a glass bottle favours an increased market share.

Discussion

As has been revealed in other papers, the perception of the quality of olive oil varies among countries. In this sense, in an emerging market like the USA, consumers emphasize the price, available information and product reputation as the determinant factors in the purchase of olive oil (Delgado & Guinard, 2011). For example, in California consumers who have purchased and consumed local virgin extra olive oil confer greater importance to factors outside the product, such as the opinions of friends and acquaintances. Meanwhile those who have had access to imported olive oil are more influenced by factors such as the price (Santosa & Guinard, 2011).

As to the olive oil production system, Sandalidou *et al.* (2002), point out the high degree of overall sat-

Table 5. Market quotas (MQ) for extra virgin olive oil from different production systems (organic/conventional) calculated by the maximum utility model^[a].

Landscape / Product			Segment 1 Price MQ (%)	Segment 2 Type MQ (%)
System	Price	Bottle		
Organic	3.80 €/L	Glass	1.0	25.6
		Plastic	0.2	22.4
Conventional	2.90 €/L	Glass	60.0	31.1
		Plastic	38.8	20.9

[a] The maximum utility model implies that the consumer chooses the product that gives him the greatest satisfaction. Market quota is then obtained as the proportion of times that each product is chosen (Bretton-Clark, 1986).

isfaction that the consumption of organically produced olive oil has for the Greek consumer. Particularly, they emphasize the benefits for health as the main competitive advantage. At the same time they indicate advertising and distribution as principal weaknesses, indicating improvement in communication, label design and bottle quality as possible means for increasing the degree of consumer satisfaction.

In turn, Krystallis & Ness (2005) point out that Greek olive oil consumers grant no importance to the product brand. They simultaneously respond positively to quality marks, the mention of the country of origin and the glass bottle.

Tsakiridou *et al.* (2006) established that the demand for organic olive oil is strongly affected by socio-economic consumer characteristics, as well as by the volume of their income, their occupation, and to a lesser degree, by their attitudes toward organic products, food safety and the environment.

Coinciding with the aforementioned authors, we find there is no main attribute in consumer preferences. In some cases the preferred attribute is found to be the type of olive oil, if possible extra virgin (Garcia *et al.*, 2002; Bernabéu *et al.*, 2009; Mtimet *et al.*, 2011), while in other cases it is the origin (Ward *et al.*, 2003; Caporale *et al.*, 2005; Menapace *et al.*, 2011) and in others, the price (Erraach *et al.*, 2014; Yangui *et al.*, 2014).

When preferences are analysed for a predetermined type of olive oil (Menapace *et al.*, 2011; Erraach *et al.*, 2014; Yangui *et al.*, 2014), in some cases the main attribute consumers look for is origin, and in others, price. In all cases, when the study is conducted in olive oil producing countries and regardless of the relative importance of the origin attribute in consumer preferences, consumers choose domestically produced olive oil (Bernabéu *et al.*, 2009).

In this sense, when the country of origin of the olive oil is predetermined and in comparison with the previous study by Bernabéu *et al.* (2009), there is a significant difference in the relative importance of the main attribute considered. While in the previous study the main attribute was the type of oil (41.09%) and price was ranked third (33.35%), in the present work price is the main attribute (53.73%), followed by the type of oil (26.98%). This can perhaps be explained by the economic crisis in Spain which has caused a loss in consumer purchasing power and by the effects of substitution among various olive oils in search for the cheapest one.

Olive oil is a well-known product in a mature market, in the domestic Spanish market as well as in export markets where it is sent. It is necessary to reposition it with a quality image, to which the so-called Mediterranean diet already contributes.

However, although it is well known that does not imply that consumers have no difficulty in differentiating and relating its quality to the type of olive oil, so that frequently they show a clear preference for the purchase of undifferentiated olive oil at a low price.

With the object of reversing this situation, the Spanish olive oil sector should deal with a series of business strategies, which undertaken accumulatively and based on consumer preferences would raise the perceived quality of olive oil.

In this sense, the analysis of olive oil consumer preferences in Spain shows that the most valued combination is inexpensive olive oil, extra virgin, in a glass bottle and produced organically. However, the current economic crisis has caused the emergence of a segment of consumers (67.1%) who mainly value price and seem to be willing to substitute one type of olive oil with another of lower quality if this ensures the lowest price. There are, however, other segments of consumers (32.9%) who are not only driven by price, and are those who most value organically produced extra virgin olive oil.

In this sense, the differentiation of extra virgin olive oil depending on its production system seems to give it a comparative advantage over conventionally produced olive oil. Furthermore, a glass bottle, although not one of the attributes most highly valued by consumers, does seem to favour market share, which in turn helps differentiation.

To promote differentiation, the information available to the consumer should be increased and improved. Informing consumers regarding the extra virgin olive oil, their characteristics and benefits would be beneficial through communication and promotional activities. To this end, it is necessary to inform consumers and opinion leaders about the region of origin (characteristics and production techniques), promote the spread of scientific knowledge of the benefits of olive oil for health and encourage the appearance of leading members of society in promotion programmes for olive oil.

To conclude, it would be of interest in future papers to analyse other olive oil attributes that could represent possible sources of innovation for firms in the sector, such as the size and colour of the bottle, oil from other olive tree varieties, etc. The Mediterranean diet and quality of life should also be established from the consumer viewpoint.

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